

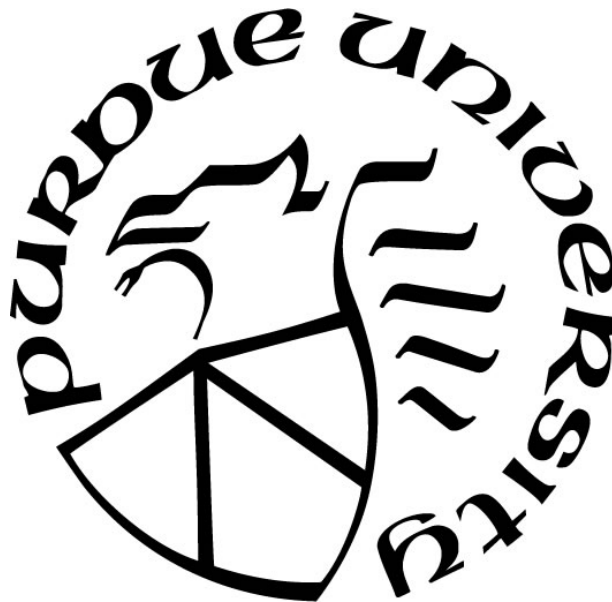
**A GREEN REVOLUTION FOR CHINA – AMERICAN ENGAGEMENT
WITH CHINA’S AGRICULTURAL MODERNIZATION (1925-1979)**

by
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A Dissertation

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I dedicate this work to all the people that I have been acquainted with throughout this wonderful journey for helping a common Chinese student to realize his American dream and write his own transnational history.

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My research is focused on the role of the United States in the first half of the twentieth century regarding China's agricultural development and international cooperation. I became interested in this research when I was in the master's program of the Institute of Chinese Agricultural Civilization at Nanjing Agricultural University (NAU). Professor Wang Siming, my supervisor in the master's program, led me, an English major who had little professional history training, into this broader world of history of science and technology. Under his professional guidance, I realized that most of the modern universities in China were created by westerners specifically most of them by Americans, who either worked as missionaries or for private foundations. They all tried to promote the development of higher education to help modernize China, and I finished my master's thesis on this topic under his supervision. I owe my sincere thanks to Professor Wang.

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research methods in the U.S., but also gain a broader world outlook. I learned that international communication with China also reshaped and transformed American's approach to the outside world. This counter effect taught me to view this U.S.-China transnational history as both an "insider" and "outsider." Under my committee's guidance and help, I have successfully passed my preliminary exams, defended my prospectus, and I am now ready to defend my final project—dissertation. My committee members navigated me step by step to develop specific research questions to guide my research and writing. Without their support, I cannot imagine what I could accomplish in the last five years. I owe Professors Hurt, Sally A. Hastings, Wei Hong, and Nancy Gabin an immense amount of thanks for providing me this important and precious training and learning opportunity.

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I dedicate this work to all the people that I have been acquainted with throughout this wonderful journey for helping a common Chinese student to realize his American dream and write his own transnational history.

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ABSTRACT

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Title: A Green Revolution for China—American Engagement with China's Agricultural Modernization (1925-1979)

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There were two-way and non-governmental communications between China and the United States in the field of agriculture throughout twentieth century. During the late nineteenth century, Chinese intellectuals already recognized the importance of western agricultural science and technology, and they began actively to court modern agricultural knowledge from western countries. The Plant Improvement Project (PIP) conducted by Cornell University and the University of Nanking from 1925 to 1931 was the groundbreaking agricultural cooperation in agricultural science and technology between the United States and China. Although most of the activities of this project were non-governmental, organized by two universities, and funded by the Rockefeller Foundation, the PIP broke new ground. In 1925, Professor H. H. Love of Cornell University was invited to the University of Nanking to lead a five-year cooperative program of crop improvement, which was called the PIP. From 1925 to 1931, Love along with C. H. Myers and R. G. Wiggans of Cornell University went to China to implement PIP. With the joint efforts of specialists from Cornell University and the University of Nanking, many high-yielding crop varieties were bred and distributed to farmers to improve yields and fight hunger; at the same time they trained a professional group of crop breeders and extension workers to continue crop breeding and distribution. PIP sought a new model for China's application of the American concept of the integration of agricultural research, education, and extension, which resulted in both success and failure. PIP, however, exerted profound influence on the follow-up work not only at Cornell and Nanking but also for the governments of United States and Nationalist China.

Following the PIP, in 1934, aiming to increase the well-being of rural populations, the Rockefeller Foundation (RF) trustee committee approved its first comprehensive program (China Program) for rural reconstruction in China. The RF established the North China Council for Rural Reconstruction (NCCRR) in 1936. By studying the policy, hopes, and outcomes of the NCCRR, this chapter provides a specific example of the problem western civil organizations faced in

reshaping non-western rural societies. The NCCRR developed techniques for modernizing rural Chinese society; however, constant warfare, political instability, and funding shortages hindered the success of this endeavor. Its impact on China's rural development remained after the termination of the China Program in 1944.

Then, to promote China's post-World War II economic reconstruction and hunger relief, the Chinese Ministry of Agriculture and Forestry developed their transnational cooperation with the International Harvester Company from 1945 to 1948. In 1945, the Agricultural Engineering Program for China was proposed by Dr. P. W. Tsou, then a member of the Executive Committee of the United Nations Food and Agriculture Organization and the resident representative of the Ministry of Agriculture and Forestry of the Nationalist government in the U.S., to the International Harvester Company. This initiative was supported by International Harvester Company to help China quickly achieve agricultural mechanization. This program was composed with Harvester Fellowships to sponsor Chinese students to learn agricultural engineering in the U.S. and from the committee's field investigations, demonstrations, and teaching in China. The Chinese Ministry of Education selected ten students who had graduated from agricultural universities and ten students who had graduated from the engineering universities with two to three years of practical work experience. In total twenty students went to the U.S. to study agricultural engineering. Those from engineering universities were sent to the University of Minnesota while those from agricultural universities received admission into master's program of Iowa State College (later Iowa State University). In two years' time, they took engineering courses and completed the master's degree in agricultural engineering. Then, they received a one-year internship at local farms to practice. In September 1948, the first student group returned to China. These twenty students were the first group of Chinese graduate students to study agricultural engineering in the United States. After they returned home, most of them became China's leading agricultural engineering experts for the People's Republic of China. In addition, four experienced agricultural engineers (Edwin L. Hansen, Howard F. McColly, Archie A. Stone, and J. Brownlee Davidson) in the United States formed the Committee on Agricultural Engineering to conduct extensive field investigations in China from January 1947 to December 1948 until political and military conditions were not suitable for them to stay in China.

Except for the cooperation with the private sectors in the U.S., the Nationalist government also proposed to the U.S. government cooperation to organize a joint program to provide economic

and technical assistance to China's agricultural industry. In June 1946, the China-United States Agricultural Mission initiated its work. The committee members from the U.S. included Claude B. Hutchison as the head of the U.S. delegation and Raymond T. Moyer as deputy head. Committee members from China included Zou Binwen as the head of the Chinese delegation and Shen Zonghan as the deputy head. After the investigation of fifteen provinces, delegation members provided their findings and suggestions on the reconstruction of Chinese agriculture in their reports. In 1947, the *Report of China-United States Agricultural Mission* was released by the two governments. This report is a comprehensive agenda for agricultural construction which put forward feasible and systematic plans for agricultural management, crop improvement, and rural education. This plan did not get adopted in mainland China, but it incubated an organizational structure for the Sino-American Joint Commission on Rural Reconstruction and provided a blueprint for agricultural reform in Taiwan. This mission had a profound effect on later cooperation in the field of agricultural science and technology between the two countries, which merits scholarly attention.

Final success of this transnational agricultural communication and cooperation was in Taiwan under the direction of the Sino-American Joint Commission on Rural Reconstruction from 1948 to 1979. This program, funded by the U.S. government, had a distinct success in agricultural development in Taiwan, but it eventually ended after the Carter Administration withdrew diplomatic recognition from Taiwan in 1979. Later this commission became part of the Council of Agriculture in the Executive Yuan of the Republic of China (ROC).

This agricultural communication and interaction between China and the U.S. made long-term impacts to China, the U.S., and the rest of the world. For the ROC and the PRC, these organized programs and cooperation gradually developed agricultural science and technology, increased agricultural production, and cultivated agricultural experts. These programs did not achieve their pre-set purpose to prevent communism from expanding in rural China, however, both the Nationalist government and the Chinese Communist Party (CCP) enjoyed those rewards. The ROC directly benefitted from this assistance while PRC also indirectly obtained agricultural science and technology through those trained experts who chose to stay in the mainland after the revolution.

For the United States, these attempts in China helped Americans to expand and reevaluate their global assistance and development projects and governmental agencies, including the

Marshall Plan, the Technical Cooperation Administration (TCA), the Economic Cooperation Administration (ECA), and later the United States Agency for International Development (USAID).

For the rest of the world, new global agricultural cooperation, such as Green Revolution agricultural science, eradicated starvation and famine in many developing countries such as India, Mexico, and the Philippines. Meanwhile, global agricultural cooperation generated new problems including environmental degradation and pesticide contamination. Further international cooperation and agricultural development can be tracked back to the U.S.-China agricultural cooperative experience.

INTRODUCTION

In the early twentieth century, China was an agricultural country. Approximately 85 percent of its population relied on agriculture for their livelihood. During China's process of industrialization, the government had neglected the needs and problems of such a large rural population. This was one of the major factors for China's backwardness since the Opium War of 1840. Aiming to increase the well-being of rural populations, many Americans sought to help China improve agricultural education and modernization.

First, missionaries taught agricultural technologies, established agricultural schools and experiment stations, and provided charity and philanthropy work to attract more people to Christianity. They realized that since 85 percent of Chinese population were farmers, to promote Christianity in China, they need to focus on rural China and agriculture. In the early twentieth century, missionary John L. Nevius brought American peanut, apple, pear, grape cultivars to Shandong. He attempted to grow these plants and graft them with native varieties. The famous variety "Yantai Banana Apple" was one of them. To appeal to local farmers, he distributed his new seed varieties to them and built his own demonstration farm. He was just one of many. In 1893, United States Department of Agriculture (USDA) started to investigate good soybean varieties in China. From 1893 to 1908, the USDA introduced fifty-eight varieties of soybean from China back to the United States. The USDA conducted field tests and later extended growing of soybean across the Midwest. By late twentieth century, soybean became one of the most important agricultural products in the United States.

During the late nineteenth century, Chinese intellectuals already recognized the importance of western agricultural science and technology, and they began actively to court modern agricultural knowledge from western countries. In the early stage, they spread western agricultural

knowledge by translating and introducing agricultural books and articles. Luo Zhenyu established the *Journal of Agriculture* in May 1897, to detail agricultural policies and situations of all provinces, and also translate foreign agricultural books and journals for reference. Later, a series of journals and newspapers were founded or published agricultural articles including those of *Shen Bao* and *Nong Xue Cong Shu*.

Gerow D. Brill was the first American adviser to teach agriculture and conduct land surveys in China. In 1898, with the help of Brill, Zhang Zhidong, a progressive reformer in the Qing Dynasty established Hubei Provincial Agricultural School. Following that, agriculturalists founded departments and colleges of agriculture in different missionary universities. In 1914 at the University of Nanking, for example, Joseph Bailie established the first department of agriculture in China. George Weidman Groff founded the department of agriculture at Linnan University. A group of agriculturalists graduated from U.S. universities came to teach in missionary universities including Charles W. Woodworth, John B. Griffing, John Lossing Buck, R. H. Porter, Charles H. Riggs.

Some of these agriculturalists from the U.S. also chose to conduct research in governmental agricultural extension organizations. In 1922, Charles W. Woodworth served as chief technician at Jiangsu Bureau of Insects. O. F. Cook also conducted his research in the cotton improvement and extension committee of Southeast University in that year. In 1923, C. W. Howard established Canton Provincial Sericulture Improvement Bureau at Linnan University.

We can see this was a two-way communication at the very beginning. Later, unofficial exchanges, religious extension, and individual cooperation gradually contributed to organized and evergrowing agricultural exchanges and cooperation between China and the United States. From 1925 to 1979 (the year that the Carter administration withdrew diplomatic recognition from the

Republic of China (ROC)), a series of joint agricultural programs developed. These included the Plant Improvement Project (PIP) conducted by Cornell University and University of Nanking (1925-1931); the North China Council for Rural Reconstruction (1936-1944) funded by the Rockefeller Foundation (RF); cooperation between the Chinese Ministry of Agriculture and Forestry and the International Harvester Company (1945-1948); the China-United States Agricultural Mission (1946-1948); and the Sino-American Joint Commission on Rural Reconstruction (1948-1979). U.S.-China agricultural cooperation extended and escalated from universities to private foundations, agricultural companies, and finally between two governments. This interaction and communication has its clear and unique pattern. By studying the policy, intent, and outcomes of these programs, historians are providing specific examples of the problems westerners have faced in reshaping non-western societies and adjusting to local conditions. These experiences and adjustments are of utmost importance to comprehend. Understanding this transnational history can help us not only better identify international cooperation and agricultural development during the Republic of China, but also redefine U.S. international aid projects during their first attempt outside of the United States. Its impact on the Green Revolution in world history is also worthy for scholars' exploration and reflection. In the People's Republic of China, many rural policies introduced by the Communist Party (CCP) were drafted by American-trained Chinese agriculturalists. The CCP also imitated the lessons of rural cooperation and governance during the Nationalist Era. The "Barefoot Doctor" program, for example, during the Cultural Revolution in the 1970s utilized the policy of rural public health promoted by the North China Council for Rural Reconstruction (1936-1943). Similarly, "Three into the Country" program, under which officials, doctors, scientists and college students went into the countryside to improve scientific and literacy knowledge and offer medical service to farmers, also originated from

previous cooperative experience between China and the U.S. during the ROC. In addition, the CCP initiated an educational policy of “integration of agriculture-science-education,” by directly utilizing these key policy patterns of the joint agricultural programs between China and the United States during the ROC.

Historians have argued about the assessment and impact of these U.S.-China agricultural programs and cooperation for decades. William I. Myers, dean of the New York State College of Agriculture and Life Sciences of Cornell University, admired the PIP as “the first notable example of international technical cooperation in agriculture.” He wrote that “the success of this program in training Chinese scientists to carry on a program of Plant Breeding and Crop Improvement in China led to the great expansion of University contracts under the foreign aid program of the United States in recent years.”¹ One of the members of the Department of State said that “the success of the Cornell-Nanking project was one of the basic reasons for the initiation of a more comprehensive program of cooperation between American colleges and their overseas counterparts as an important part of the technical aid program.”² From the Chinese side, He Shuqing argued that one of the PIP’s most important contributions was to introduce the triangle of agricultural education, research, and extension to Chinese universities.³ Bao Ping in his book also revealed that not only Chinese universities benefited from this program, but also American professors who participated gained practical experience and discovered new wheat varieties in

¹ H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (New York State College of Agriculture, Cornell University, 1964), iv.

² H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (New York State College of Agriculture, Cornell University, 1964), iv.

³ He Shuqing 何淑琴, “Meiguo nongkejia sanweiyiti moshi de yinru jiqi yingxiang yanjiu 美国农科教‘三位一体’模式的引入及其影响研究 [Introduction and Influence of the Trinity of Integration of Agriculture Production, Scientific Research and Education in America]” (master’s thesis, Nanjing: Nanjing Agricultural University, 2011), 42.

China.⁴ *The Annual Report of the Rockefeller Foundation* (1936) emphasized its own programs in China as “of potential significance not only for China but possibly for other countries as well.”⁵ Mary Brown Bullock in, *The Oil Prince's Legacy*, stated that the RF's non-governmental programs served as the model for the post-World War II Sino-American Joint Commission on Rural Reconstruction, which was a major success in Taiwan.⁶ Qiusha Ma, in *To Change China: The Rockefeller Foundation's Century-long Journey in China*, offered a positive assessment of the RF's rural reconstruction work. Qiusha Ma observed that the development of these cooperative programs, such as the RF's China Program, represented the conflict, communication, and cooperation between the Oriental and Occidental cultures. Shen Zhizhong, *The Sino-USA Exchange and Cooperation in Agriculture from 1897 to 1949*, argues that Chinese modern agricultural industry was born and grew up in this semi-colonial and semi-feudal society.⁷ Under extremely severe conditions, these agriculturalists demonstrated their patriotic enthusiasm and sense of responsibility via their dedicated work to vitalize agriculture and the rural economy. In 1949, after the ROC relocated to Taiwan, the JCRR played a vital role in land reform, agricultural modernization, and international assistance cooperation with the United States. The authors of the introduction of the archival collection of the JCRR at Academia Historica admired that Taiwan's success of agricultural construction was most outstanding in the mid-fifties. Why could Taiwan's agriculture recover so rapidly after World War II and Civil War? It did so only because of a

⁴ Bao Ping 包平, *Ershi shiji zhongguo nongye bianqian yanjiu* 二十世纪中国农业教育变迁研究 [Changes of Chinese Agricultural Education in 20th Century] (Beijing: China Three Gorges Press, 2007).

⁵ Rockefeller Foundation, *Annual Report, 1936* (New York: Rockefeller Foundation, 1937), 314.

⁶ Mary Brown Bullock, *The Oil Prince's Legacy: Rockefeller Philanthropy in China* (Washington, D.C.: Woodrow Wilson Center Press, 2011).

⁷ Shen Zhizhong, *The Sino-USA Exchange and Cooperation in Agriculture from 1897 to 1949* (Beijing: Three Gorge Press, 2008).

governmental agricultural policy that incubated industry, but also because the JCRR participated in agricultural work. It mediated between government and farmers as well as participated in decision-making and implementation. The JCRR also cultivated agricultural experts and brought U.S. economic aid to help through the shortage of necessities.⁸

Some scholars, however, criticize the effects and outcome of these programs, arguing they were doomed to failure. James C. Thomson Jr. contended in, *While China Faced West*, “The Rockefeller effort was the victim eventually of circumstance far beyond its own control.”⁹ He concluded that the RF’s gradualism required time to realize its blueprint “and time was the one element denied to the rural re-constructionists by external aggressor and internal rebel alike.”¹⁰ In the final report of the agricultural engineering educational program for China, those committee members also had to admit that as “a foundation laying program, the most important results . . . would come after a term of years The benefits which will accrue from the educational and demonstrational program of agricultural engineering techniques will depend very largely upon a continuing program.”¹¹ Charles Y. Hu in his review of the *Report of The China-United States Agricultural Mission* made this observation: “the report offers little new data concerning either the present state of affairs or concrete plans for its improvement.”¹² He argued that China’s urgent need was specific measures for implementation instead of general plans. He also revealed the

⁸ Academia Historica, *Introduction of the Archival Collection of the Chinese-American Joint Commission on Rural Reconstruction* (Taiwan: Academia Historica, year unknown), 1.

⁹ James Claude Thomson, *While China Faced West: American Reformers in Nationalist China, 1928-1937* (Cambridge MA.: Harvard University Press, 1969), 149.

¹⁰ *Ibid.*, 150.

¹¹ The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China* (Chicago: International Harvester Company, 1949).

¹² Charles Y Hu, “Review of the Report of the China-United States Agricultural Mission,” *Pacific Affairs*, 2 (1948): 204.

infeasibility and impracticality of those suggestions in the final report: “The margin of livelihood of farmers is so narrow that they simply cannot afford to risk a year’s crop or incur extra outlays on experiments unless success is assured.”¹³ Last, but not the least, in *The Stubborn Earth*, Randall E. Stross assessed these American agricultural assistance programs in China were “too often regarded merely as a technical challenge for the agronomist in the laboratory. The Americans failed to realize that changes in the wider polity, society, and economy were necessary.”¹⁴ Without political, economic, and social improvement, foreign technology aid alone cannot shoulder the responsibility to modernize Chinese agricultural industry and rural China.

Most of these scholars, however, focused on a single program or a certain time period, or they strongly relied on one side’s documents. Some recognized cooperation during this time, but they did not provide further analysis on how and why these programs were initiated between China and United States in the first half of twentieth century, such as the China-United States Agricultural Mission (1946-1948) and the cooperation between the Chinese Ministry of Agriculture and Forestry and International Harvester Company (1945-1948). Only program reports and some participants’ memoirs deal with the subject. There is a serious academic demand to draw historians’ attention on these gradualist programs. Secondly, language barrier (English, traditional Chinese, and simplified Chinese), length limitation, political context, geographical distance, and access to archives, have prevented significant study by previous scholars. Few scholars have utilized the archival sources in China, Taiwan, and United States. Therefore, more research is required to trace the significance of these joint programs via collecting as much primary or first-hand material as

¹³ Charles Y Hu, “Review of the Report of the China-United States Agricultural Mission, *Pacific Affairs*,” 2 (1948): 205.

¹⁴ Randall E Stross, *The Stubborn Earth: American Agriculturalists on Chinese Soil, 1898-1937* (Berkeley: University of California Press, 1986), 216.

possible from mainland China, Taiwan, and United States. The primary sources utilized for this study in the United States include telegrams, correspondences, reports, memoranda, and photographs relating to the JCRR and the China-United States Agricultural Mission, and the U.S. Consulate's reports on China during the ROC at the National Archives and Records Administration, College Park; the Harry H. Love Papers, Gerow D. Brill Papers, and the Department of Plant Breeding Records at the library of Cornell University; the Rockefeller Foundation annual reports, program evaluation reports, and the officers' diaries at the Rockefeller Foundation Archival Center, particularly, the Selskar M. Gunn and John B. Grant Diaries (both of whom were directly involved with the Foundation's work in China during that time period). The key primary sources studied in mainland China and Taiwan are the collections on the JCRR, the cooperation with the International Harvester Company, and the China-United States Agricultural Mission at the Archives of the Institute of Modern History at Academia Sinica, as well as journal and newspaper collections at the Archival Center of the Institution of Chinese Agricultural Civilization, and the archival collection of the Ministry of Agriculture of the ROC at the Second Historical Archives of China. These primary sources are not only unevenly distributed in different archives but also have some overlapping focus for these five programs.

Apparently, there were a large number of U.S.-China joint agricultural programs during the ROC. Some were nationwide and representative while others were regionally oriented. Compared to missionary agricultural communication driven by religious belief and famine relief, all of these programs developed and converged into the second stage of western learning, a unique historical trend, technical assistance. This dissertation analyzes the inner continuity and inheritance of various programs from universities, private foundations, corporations and finally, governments. By examining the five most organized cooperative programs between the United States and China

during the first half of the twentieth century from both the American and Chinese perspectives, this research can more comprehensively and persuasively enhance our understanding of U.S. and China agricultural communication and interaction in the twentieth century. Furthermore, this research on transnational agricultural history can contribute a new approach in the East-West discourse and literature about how western technocrats and social reformers attempted to reshape non-western society worldwide.

CHAPTER 1. THE SEED REVOLUTION, 1925-1931

As an ancient agricultural civilization, China has a profound and significant history of agriculture and farming. After the Opium War of 1840, however, Chinese agriculture suffered numerous problems and challenges, such as the decline of productivity and the stagnation in the development of agricultural technology. Therefore, some advanced foreign technology in agriculture was introduced into China, which gradually replaced the traditional technology to guide the development of agriculture. The early missionaries disseminated western agricultural science in China which triggered a series of agricultural revolutions. Most of the early technological exchange between China and the United States were non-governmental activities conducted by missionaries, merchants, and patriotic Chinese scholar-bureaucrats. Later, research institutions, agricultural universities and colleges, and the governments of both China and the United States played leading roles in agricultural exchange and cooperation.

1.1 The Historical Background of PIP

The Qing government after the first Sino-Japanese War of 1894-1895 faced many serious challenges, and therefore sought the modernization of its people by encouraging them to go abroad for further study. After 1908, the Qing government utilized the Boxer Indemnity Scholarship offered by the U. S. government to send a group of students majoring in agricultural science to study in American universities.¹⁵ These students became the pioneers for the agricultural modernization of China. J. J. Mott, a graduate of Cornell University, established the “Student

¹⁵ Cao Xingsui 曹幸穗, Wang Lihua 王利华, Zhang Jiayan 张家炎, and Qu Weimin 瞿为民, *Mingguo shiqi de nongye* 民国时期的农业 [The Agriculture in the period of the Republic of China] (Jiangsu: Editorial Department of Jiangsu Historical Accounts, 1993), 21.

Volunteers in Foreign Missionary Movement” at the end of 1888. Between 1888 to 1918, this organization sent more than 8,000 missionaries abroad, and 30 percent of them, about 2500 missionaries, went to China.¹⁶ J. L. Stuart and John L. Buck were included among them. While they were taking up missionary activities, they introduced western science and technology to those they met.

Meanwhile, Chinese scholar-bureaucrats recognized the importance of western agricultural science and technology, and they began to learn modern agricultural practices from western countries. In the earliest stages, they spread western agricultural knowledge by merely translating and introducing various books and articles. For instance, Luo Zhenyu established the *Journal of Agriculture* “to detail the agricultural policies and situations of all provinces, and also translate foreign agricultural books and journals for reference.”¹⁷ Everyone in these efforts began promoting western agricultural practices, along with plant breeding in China which transformed the conventional style of farming to a more distinct modern style. In 1914, agricultural scientists at the University of Nanking developed the first Chinese wheat variety with modern breeding techniques. They called it “Nanking No. 26.” The development of this variety proved the most important attempt to develop modern crop varieties.

Although dating from the early twentieth century, agricultural schools and colleges were already established across the country. These scattered nongovernmental exchanges between China and foreign countries, however, were not well-organized. Despite this these agricultural exchanges laid a foundation for future large-scale, well-organized cooperation between China and the United States. In 1911, however, a major development occurred. Joseph Bailie, a professor of

¹⁶ Gu Changsheng 顾长声, *Chuanjiaoshi yu jindai zhongguo* 传教士与近代中国 [Missionaries in Modern China] (Shanghai: Shanghai People's Publishing House, 1981), 257-258.

¹⁷ Brief in the *Agricultural Journal*, Archive of the Institution of Chinese Agricultural Civilization at Nanjing Agricultural University, Nanjing, Jiangsu, China.

English at the University of Nanking, organized the Volunteer Peasant Association to afforest the Purple Mountain, a suburb of Nanjing city, but he did not have adequate sources of funding for this work. In 1914, however, he helped establish the College of Agriculture and Forestry at the University of Nanking (CAFUN) and introduced a four-year undergraduate program in agriculture. The CAFUN became the first four-year agricultural college in China.¹⁸ Bailie became the first head of the Department of Agronomy. In the early period of the Republic of China (ROC), the University of Nanking could operate independently without the governmental regulation, because it was a missionary university established with American church donations. Thus, the CAFUN followed the examples of American agricultural colleges, especially the system of the College of Agriculture at Cornell University. Accordingly, the CAFUN established majors, courses, and policies for teaching and administration.¹⁹ Before the start of the Plant Improvement Project in 1924, the University of Nanking registered with the New York State Education Bureau, which meant that a bachelor's degree from the University of Nanking was equal to that from any university in the state of New York. Undergraduates of the University of Nanking could apply for graduate programs in any American university. The University of Nanking, among a very limited number of Chinese universities, enjoyed the same treatment as universities in Europe and North America. These policies also encouraged faculty and graduates at the University of Nanking to attend European and American universities. Compared with other Chinese universities, the University of Nanking played a leading role in the academic communication between China and the U.S.

¹⁸ Chen Yuguang 陈裕光, "Huiyi jinling daxue 回忆金陵大学 [Memories of the University of Nanking]," in *Jinling daxue jianxiao yibai zhounian jiniance* 金陵大学建校一百周年纪念册 The 100th Anniversary Autograph Album of the University of Nanking (Nanjing: Nanjing University Press, 1988), 1-2.

¹⁹ Editorial Board for School History of Nanjing Agricultural University, *Nanjing nongye daxue xiaoshi* 南京农业大学校史 [History of Nanjing Agricultural University] (Beijing: China Agricultural Science and Technology Press, 2004), 36.

Cornell University, established a few decades earlier than the University of Nanking, also took the leading position in agricultural science. Its College of Agriculture had enjoyed a good reputation for a long time in China. After the 1911 Revolution (the Chinese bourgeois democratic revolution led by Sun Yat-sen which overthrew the Qing Dynasty), many agriculturalists and officials, such as Jin Bangzheng, Zou Shuwen, Zou Bingwen, T. S. Guo, Xie Jiasheng, Ling Daoyang and Mu Ouchu, graduated from the College of Agriculture at Cornell University and returned to China.²⁰ These pioneers in the research and teaching of agriculture and forestry not only made great contributions to the agricultural science in China, but also strengthened the influence of Cornell University in China.

Cooperation between Cornell University and the University of Nanking dated to 1914, when Prof. J. H. Reisner taught agricultural courses at the University of Nanking. In 1916, when Joseph Bailie, the Dean of College of Agriculture at the University of Nanking, resigned to return to the United States, Reisner succeeded him. During his tenure, Reisner employed several students who had graduated from the College of Agriculture at Cornell University. In 1918, C. W. Woodworth from the United States took charge of setting up the Department of Sericulture in the College of Agriculture at Cornell University. Two years later, the University of Nanking invited Professor J. B. Griffing to be the director of the Department of Cotton Improvement, and later, in 1924, to be the director of the Department of Rural Education at the University of Nanking.²¹ In 1921, John L. Buck, an agricultural economist who graduated from Cornell University, held the post of the head of the Department of Agricultural Economics in the CAFUN. In 1924, Professor

²⁰ Shen Zhizhong 沈志忠, *Jindai zhongmei nongye keji jiaoliu yu hezuo yanjiu* 近代中美□□科技交流与合作研究 [The Sino-US Exchange and Cooperation in Agriculture] (Beijing: China Three Gorges Press, 2008), 45.

²¹ T. S. Kuo and John H. Reisner, Twelfth Annual Report of the College of Agriculture and Forestry and Experiment Station, Dec. 1926 Chinese Experimental Station Reports, 1925-1926, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

R. H. Porter, an American plant pathologist, taught courses about phytopathology, and also later, established a study group for phytopathology at the CAFUN. This interaction between Cornell University and the University of Nanking facilitated future official cooperation between the two universities.

1.2 The Implementation of PIP

In 1919, a severe drought in northern China caused major crop failure and famine, leading to large numbers of dead and suffering from starvation. Some Americans formed the American Committee for China Famine Fund to raise money to give relief to the people in the stricken areas, but not all of the funds were allocated properly.²² In 1922, learning that about one million dollars of the donation were left, Dean J. H. Reisner went back to America to ask the committee to allocate the money for the improvement of agriculture and forestry in China.²³ In 1925, Reisner invited H. H. Love to be the special professor at the University of Nanking. Soon thereafter, the University of Nanking, Cornell University, and the International Education Board established a five-year cooperation program for crop improvement, called the Plant Improvement Project (PIP). From April to September for the next five years, professors from the Department of Plant Breeding at Cornell went to China to conduct research on crop improvement. The University of Nanking provided the research facilities, and experimental stations. The International Education Board was responsible for covering the travel expenses for the Cornell representatives.²⁴ To expand their crop

²² John H. Reisner, *Agriculture and Forestry Notes*, No. 25, Nov. 1925, Pamphlets on Chinese Agriculture and the Rural Church 1920-1936, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

²³ H. H. Love, *Radio Talk-A Plant Improvement Program for China*, Dec. 31, 1929, Miscellaneous Dec. 1929-1930, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

²⁴ T. H. Shen, *University of Nanking, International Education Board-Cornell University Project for the Reorganization and Conducting of Plant Breeding Work in Nanking University*, Nanking, China, 1962, Material re. the Nanking Project, 1962, Box 8, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

improvement work nationwide, besides at the Nanking Station as the central station, there were several cooperative stations.²⁵ By the summer of 1925, a number of stations joined in working under one general plan for the improvement of the crops in China.²⁶ The University of Nanking took the responsibility of making technical plans and recommending technical staff. The University of Nanking also provided funding for all the cooperative stations except Yenching University's Agricultural Experiment Station and the Oberlin Shansi Memorial Schools.²⁷ In this way, professors from Cornell University, with research assistants from the University of Nanking, circulated among all of the cooperative stations and provided guidance for the local improvement of agriculture.

The PIP started in 1925 and came to an end in 1931. But during this period, the program was interrupted due to the unstable politics and war. In 1928, it was suspended for a year due to the disturbance of the war, then continued until 1931.²⁸ In these years, H. H. Love, C. H. Myers and R. G. Wiggins each went to China twice (Listed as Table 1). At that time, faculty and students of the CAFUN, such as T. H. Shen, S. Wang, C. M. Heh, Shen Xuenian, Dai Song'en, and Shen Shouquan, participated in this program, and most of them went to the College of Agriculture at Cornell for further study. Eventually, they returned to work at the University of Nanking, other agricultural colleges or universities, or government institutions conducting agricultural research.

²⁵ Including Nanhsuchow Station, Presbyterian Mission, Nanhsuchow, Anhwei; Shantung Agricultural and Industrial School, Yih sien, Shantung; Weihsien Station, Presbyterian Mission, Weihsien Station, Shantung; Cheeloo University, Jinan; Yenching University Agricultural Experiment Station, Peiping, Hopeh; Oberlin Shansi Memorial Schools, Taiku, Shansi.

²⁶ H. H. Love, Radio Talk-A Plant Improvement Program for China, Dec. 31, 1929, Miscellaneous Dec.1929-1930, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

²⁷ T. H. Shen 沈宗瀚, *Zhongnian zishu* 中年自述 [Readme in the Middle Age] (Taiwan: Taiwan Biography Literature Press, 1984), 137.

²⁸ C. W. Chang, Contributions which the College of Agriculture and Forestry has made toward Agricultural Improvement in China, Nov. 1939, Folder 180, Box 20, Series 601, Rockefeller Foundation Records, Projects, RG 1.2, Rockefeller Foundation Archives, Rockefeller Archival Center (RAC).

The improvement of crop varieties was the central task of CAUN which was supported with nearly 40,000 silver dollars each year, and came from the unallocated money of American donations for disaster relief in northern China. This funding covered most research expenses at the University of Nanking during this period. Yields of grain crops, including wheat, barley, grain sorghums, and rice, were increased by planting the improved crop varieties, especially wheat and grain sorghum in northern China.²⁹ Additionally, professors from the CACU taught courses at CAUN by giving lectures about crop breeding and providing instructions for field research.

²⁹ T. H. Shen 沈宗瀚, *Zhongnian zishu* 中年自述 [Readme in the Middle Age] (Taiwan: Taiwan Biography Literature Press, 1984), 137.

Table 1. Time List of the Visits of Professors from Cornell to China

Professors from Cornell	Main Instruction Fields	Years in China
H. H. Love	Small grains, Biostatistics	1925, 1929
C. H. Myers	Natural pollination grains (e.g. corn), Feed grains	1926, 1931
R. G. Wiggans	Vegetables, Feed grains	1927, 1930

The Plant Improvement Project had two main objectives.

The first was to organize and conduct a comprehensive research program, involving the principal food crops, such as wheat, barley, and rice in the famine areas of central and northern China. Second, this included work to improve breeding methods for rice and grain sorghum. It also included work to develop disease-resistant wheat.

The project intended to train a large number of Chinese workers about the principles, methods, applications, and organization of plant improvement, so they would be able to continue the investigations after the Cornell-Nanking Program ended. During wartime, the work of crop breeding was not stopped even if the scientists from Cornell could not go to China. From the beginning of the program, one important purpose was to leave in China a group of well-trained scientists who could carry on and expand breeding work after Cornell professors had left. Later, this program was expanded to other varieties of crops, such as cotton, which improved people's living standards to some extent.

Professor H. H. Love came to Nanking on April 10, 1925. He did not begin the PIP at once but first got acquainted with the faculty and colleagues at Nanjing. At that time, the facilities for crop breeding were simple but the space was abundant. An area of 220 acres of superior land

outside the city of Nanking was available for 8,000 head and rod row tests.³⁰ It was equipped with storage rooms, animal sheds, tool houses, kitchens, and quarters for workers. Love also reviewed the data records of current experiments and gave suggestions for recording future experiments to highlight the importance of standardizing plant breeding methods, collecting and organizing experimental data, and interpreting results.³¹

This was not only at the Nanking Station. Later, Love expanded the research for increasing the yields of wheat and barley at other stations in China. On May 18, Love with Professor G. E. Ritchey, the head of the Department of Agronomy, left Nanking for Yixian, Shandong. They inspected the work which had been conducted by K. M. Gordon at Shantung Agricultural and Industrial School where 134 selections were made from head rows planted in the autumn of 1924. Then, they continued to Kaifeng and Henan, where they inspected the wheat breeding and other crop experiments conducted by G. K. Middleton at the Kaifeng Baptist School. This station selected 2,000 heads of wheat for inspection, from which a selection of 208 heads were made in further rod tests. Most of these varieties continued to be tested in the PIP from 1925 to 1926.³² Leaving Kaifeng, Love went to Nansuzhou, Anhui, to review the wheat work at that station with H. H. White. After the field investigation in Shandong, Henan, and Anhui, Love understood better the situations of the different stations. With the large input of human and material resources in this program, he hoped the researchers would make breakthroughs in crop yields. The expansion of the program, however, was restricted due to the lack of techniques and funds.

³⁰ Head and rod row tests were the most commonly used methods for preliminary testing of small grain varieties and strains during the 1920s to 1930s.

³¹ John H. Reisner, Special Plant Improvement Number, Nov. 1925, Miscellaneous 1925-May1929, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

³² Report of Flag Smut written by Prof. R. H. Porter, Archive of the Institution of Chinese Agricultural Civilization at Nanjing Agricultural University, Nanjing, Jiangsu, China.

Love, then, suggested reorganizing the program at all the cooperative stations and providing them with support for research, because it was impossible to rely on crop breeding at the stations in Nanking alone. Therefore, it was essential to utilize the mission stations to expand the experimental work. Most of these mission stations were located in central and northern China. Through proper training procedures missionaries could take the responsibility as professional crop breeders. On September 25 and 26 of 1925, a conference was held at Nanking between representatives of the CAFUN and the mission stations.³³ Those who attended the conference included: Gordon K. Middleton from Kaifeng Baptist College, Kaifeng, Henan; H. H. White from Presbyterian Mission, Nansuzhou, Anhui; A. L. Carson from Presbyterian Mission, Weixian, Shandong; T. S. Guo, Chinese dean of College of Agriculture and Forestry, J. H. Reisner, American dean of College of Agriculture and Forestry, G. E. Ritchey, head of the Department of Agronomy from the University of Nanking; and H. H. Love, the Cornell representative. This conference indicated clearly that it would be much more efficient if all of the interested agencies joined in one comprehensive program of crop improvement under an expert's centralized supervision.³⁴ Soon, six mission stations entered into the program actively. The names of these stations and the Nanking Station, together with the crops tested in each are listed in Table 2.

³³ Memorandum of Understanding for Cooperative Work in Plant Improvement Between the College of Agriculture and Forestry of the University of Nanking, and Cooperating Agencies, Material Concerning Nanking, Box 6, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

³⁴ C. H. Myers, *Final Report of the Plant Improvement Project Conducted by the University of Nanking, Cornell University and International Education Board* (Nanjing: College of Agriculture and Forestry at the University of Nanking, 1934), 13.

Table 2. Cooperative Plant Improvement Project--Distribution of Crops³⁵

Station	Winter Crop	Major Summer Crop	Minor Summer Crop
Kaifeng	Wheat	Gaoliang	Beans(Millet)
Nansuzhou	Wheat	Beans	Gaoliang
Yixian	Wheat	Gaoliang	Beans
Weixian	Wheat	Gaoliang	Beans
Wuchang	Wheat	Gaoliang	Beans
Guide (Shangqiu)	Wheat	Cotton	Rice
Nanking	Wheat, Barley	Corn	Beans

During the PIP, the number of experimental stations kept growing. By 1931, four college-affiliated stations and thirteen cooperative stations provided experimental data on a regular basis: Anhwei Provincial Agricultural Experiment Station, Anqing, Anhui; Central China Teachers College, Wuchang, Hubei; College of Agriculture, Central University, Nanking, Jiangsu; Jefferson Academy, Tangshan, Hebei; Kaifeng Baptist School, Kaifeng, Henan; Kiangsu Wheat Experiment Station, Xuzhoufu, Jiangsu; Nanhsuchow Presbyterian Mission Station, North, Nansuzhou, Anhui; Oberlin Shansi Memorial Schools, Taigu, Shansi; Shantung Agricultural and Industrial School, Yixian, Shandong; St. Paul's Canadian Church Mission Hospital, Guide (now Shangqiu), Henan; Tsangchow London Mission, Cangzhou, Hebei; Weihsien Presbyterian Mission Station, Weifang, Shandong; and Yenching University Agricultural Experiment Station, Beiping.

³⁵ John H. Reisner, Agriculture and Forestry Notes, No. 18, Nov. 1925, Pamphlets on Chinese Agriculture and the Rural Church 1920-1936, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

In order to enhance the efficiency of selections in all stations, Love recommended that crop improvement in China would proceed more satisfactorily if the interested agencies would join together in one large cooperative plan, rather than for each individual or station to work separately. Moreover, the same plans for selection and testing the various crops would be used at each station so that the results would be comparable, and that the improvement work would be closely associated with the diseases of the crops studied.³⁶ Love and his colleagues at Nanking prepared a detailed memorandum for all stations to standardize the crop improvement methods.³⁷ They required all the stations to follow selecting and testing methods and procedures illustrated in their two instruction brochures, “General Suggestions for Methods of Selecting and Testing,” and “Methods for Rod Row Testing.” These instructions were translated into Chinese to assure all the breeders could follow them. This was the first time a research program used standardized methods for crop improvement in China. Meanwhile, all the stations cooperated to conduct the experiments systematically. Wheat was the major winter crop for breeding tests at all stations, but according to the different conditions, each station could choose one crop from kaoliang, soybeans, and corn as their secondary testing crop.

Myers, the second representative crop breeder from Cornell University to China, arrived in Nanjing on March 24, 1926, accompanied by T. H. Shen, a doctoral candidate at Cornell.³⁸ Shen accompanied Myers to China as his assistant. In May, Myers and Shen visited most of the cooperative stations. Approximately, 8,000 head rows of wheat were grown at the Nanking Tai-

³⁶ H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (Ithaca: New York State College of Agriculture at Cornell University, 1964), 16.

³⁷ John H. Reisner, *Agriculture and Forestry Notes*, No. 18, Nov. 1925, Pamphlets on Chinese Agriculture and the Rural Church 1920-1936, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

³⁸ T. S. Kuo and John H. Reisner, *Twelfth Annual Report of the College of Agriculture and Forestry and Experiment Station*, Dec. 1926, Chinese Experimental Station Reports, 1925-1926, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

ping-men Farm and several cooperative stations. After studying these selections 2,000 rows were selected for further tests. Myers also noticed that the Division of Vegetable Gardening at the University of Nanking had been raising vegetables and selling seeds to farmers. He recommended the addition of some vegetables, such as cabbage to the program, so that more improved vegetable varieties could be distributed for planting among farmers. Myers also suggested adding millet to the program because it was one of the major food crops in northern China. Owing to the careful observation and strong recommendation of Myers, the PIP made great progress in China by the late 1920s.

In the spring of 1927, Wiggans was the third representative from Cornell University to visit China. At that time, the Nationalist army was marching from south China to central and northern China. It was guaranteed that the troops around Nanking would pass the city without any disturbance. But situations near Nanking had experienced great changes, forcing foreigners to leave the city. Therefore, Wiggans arrived in Shanghai instead of Nanking to meet with the Chinese staff responsible for the project. During his stay, Wiggans regularly made arrangements for the program and the experimental stations. Because of the chaotic political situation, Wiggans returned to Cornell after one month in Shanghai. His colleagues were disappointed that he shortened his visit, but his encouragement to the Chinese staff and the plans made for the PIP were conducive to the advancement of the program.

The Nationalist's second Northern Expedition in 1928 made it inadvisable for a Cornell professor to visit the University of Nanking that year. University officials decided that the program should come to a pause and restart in 1929. Even so, the plans for the PIP to be planted in the autumn of 1928 and in 1929 were carried forward in a highly satisfactory manner.

On April 19, 1929, Love reached Shanghai making his second trip to China. He was concerned about the progress of crop breeding; however, he was informed that the experimental work had neither been interfered with at the University of Nanking nor at any of the cooperative stations despite the wars. Seeds had been divided into two lots to be stored in different places for further tests in case of wartime destruction. CAUN required all stations to keep the records of breeding experiments. These records indicate that the Chinese staff conducted the work with care, and Love felt satisfied that the Chinese scientists themselves were carrying the PIP forward during his one-year absence.

Wiggans also returned to Nanking on March 29, 1930, for his second trip to China, and stayed until October 29. He spoke highly of Chinese colleagues in the PIP which as he noted, “The personnel in charge were so thoroughly interested in the work and impressed with its importance that no sacrifice was too great in order to prevent loss.”³⁹ The PIP achieved such great success that in the fall of 1930, the president of Yenching University, J. L. Stuart, asked the University of Nanking to take over the work of its Department of Agriculture. Yenching University had received 250,000 dollars from the United States to establish agricultural stations. Thereafter, the University of Nanking had the responsibility to establish and reorganize the stations.⁴⁰ Yenching hoped that the future work of its Department of Agriculture in Yenching University would be confined to agricultural improvement. In December of 1930, T. H. Shen, the representative of the University of Nanking, went to the station at Yenching University to investigate its research conditions and to discuss a reorganization plan. Shen suggested to J. L. Stuart that livestock raising and fruit tree planting should be stopped so that all the human and material resources could be concentrated on

³⁹ R. G. Wiggans, *Annual Special Report of the Plant Improvement Project*, unpublished, 1930.

⁴⁰ T. H. Shen 沈宗瀚, *Zhongnian zishu* 中年自述 [Readme in the Middle Age] (Taiwan: Taiwan Biography Literature Press, 1984), 150.

the breeding work of wheat, kaoliang, corn, millet, and soybeans. In this way, improved varieties and methods could be distributed to farmers in five to six years.⁴¹ President J. L. Stuart approved Shen's recommendation, and both universities reached an agreement. C. H. Myers was asked to arrive as soon as possible at Yenching University to study the situation as well as to give his recommendation. Myers reached Nanking on February 20, 1931, and remained until October 2. He went to Yenching University on March 18 to start the improvement work proposed by Yenching University. Based on consultations with scientists at both universities and his own investigations, Myers suggested that the improvement work at Yenching University should be limited to one major crop. He also maintained that the work in Yenching University should be one of the specific programs in the PIP, but at the same time Yenching University had the complete control of its agricultural experiment station's land, financial resources, and its personnel. On May 26, 1931, his report was approved by the two universities and the China Famine Fund Committee established by the National Government. This agreement demonstrated that the crop improvement work at Yenching University officially was now part of the PIP.

In July and August of 1931, a disastrous flood occurred in central and eastern China. It was one of the major calamities of the twentieth century for China, and disrupted a rural population of 25 million in the Yangtze and Yellow River basins. This disaster resulted in a tremendous loss of life and property. Nanking did not escape from the disaster. Many low-lying parts of the city were under water to a depth of three feet. Thousands of acres of fertile land outside the city were submerged for months. Not only were growing crops destroyed, but also it was impossible to plant wheat, the main food crop of that region, in the fall of that year. Furthermore, parts of the experimental farm at the University of Nanking were also submerged. Fortunately, experimental

⁴¹ T. H. Shen 沈宗瀚, *Zhongnian zishu* 中年自述 [Readme in the Middle Age] (Taiwan: Taiwan Biography Literature Press, 1984), 150.

materials were not destroyed owing to careful arrangements by the program's staff. Some of the rice experiments in the field were damaged while reserved seed supplies were available for renewing the improvement work. The experiments of other crops were not seriously destroyed. Myers believed that, "The fact that the Plant Improvement Project was relatively so little permanently affected by the flood is evidence of its stability and the loyalty and efficiency of the trained Chinese associates responsible for its execution."⁴²

By 1931, Myers noted that conditions in the CAUN had greatly improved. In the Department of Agronomy, for example, eighteen men functioned efficiently in carrying on the crop breeding program. With the guidance of professors from Cornell, the number of testing crops increased significantly at all stations. The testing methods became increasingly standardized. In 1927-1928, there were eight stations with 46,229 plants being tested. In 1929-1930, the number of stations increased from eight to thirteen, and the total tested plants increased to 96,799, which was about twice the number planted in 1927-1928.⁴³ The tested crops included wheat, rice, soybeans, barley, corn, cotton, kaoliang, and millet. The testing methods included head row tests, rod row tests, and genetic research, which proved that the PIP was progressing rapidly in all respects.

Agricultural scientists from Cornell University provided much technical assistance to the program, formulating the development plans for Chinese agricultural research, guiding the crop breeding work, and helping to foster agricultural talents by discussing the theories of crop breeding through lectures and book publications. In the beginning, just basic knowledge concerning crop growing methods, genetics, biometrics, and field techniques were presented to the Chinese staff. Later the crop improvement became so complex that it needed more scientific knowledge to ensure

⁴² H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (Ithaca: New York State College of Agriculture at Cornell University, 1964), 26.

⁴³ Data from *The Cornell-Nanking Story*

its progress. Thus, it was imperative to increase more courses in the program. Accordingly, courses regarding cytogenetics, advanced biometrics, techniques of field design, crop physiology and ecology, research about special crops and major crops, and chemical analysis of agricultural products were established. In this way, Chinese staff and students gained a systematic understanding of breeding.⁴⁴

Love was the first representative from Cornell who participated in the PIP. He attached more importance to the implementation of breeding in a scientific way. He asserted that, “As for the major crops in China, the quantities and qualities of these crops would be greatly increased if scientific breeding methods were used for their improvement.”⁴⁵ Love made a practical plan to ensure that the improvement of crop breeding continued to function after the program ended. The emphasis on standardizing crop-breeding methods was a breakthrough for Chinese agricultural science and technology.

R. G. Wiggans also emphasized the significance of scientific systems for crop breeding. In his lectures, he contended that crop taxonomy was of great importance in the PIP. At that time, in some western countries, such as the U.S., Great Britain, Germany, and Netherlands, there had been a common phenomenon that one crop had different names or some crops shared the same name because of the lack of clear classifications for crop varieties, which hindered the scientific research and promotion of crop breeding. China had a long history of crop cultivation. Crops were widely grown in different regions while no one classified crop varieties. Therefore, just as in some western countries, historically speaking, there also was no tradition to sort crop varieties in China. It was

⁴⁴ Department of Agronomy at the University of Nanking, “Nongyixi zhi guoqu yu weilai □□系之□去与未来 The Past and Future of Department of Agronomy,” *Nonglin xinbao* □林新□ [Gazette of Agriculture and Forestry] Collections No. 1 to 3 (1930): 10-11.

⁴⁵ H. H. Love and Chen Yanshan □燕山, “Kexue duiyu nongye zhi zhongyao xu 科学□于□□之重要□ The Importance of Science to Agriculture,” *Nonglin xinbao* □林新□ Gazette of Agriculture and Forestry No. 255 (1931): 391-394.

particularly important to carry on research about classifications of crop varieties, and then put the research findings into practice.⁴⁶ Wiggans and his colleagues created a course about crop taxonomy, which provided the comprehensive theories for program development.

As the last representative from Cornell University, C. H. Myers played a key role in the project. To ensure that the crop improvement would be continued and expanded by Chinese staff after the program ended, Myers made his trip to China to inspect the work and to train the researchers in person. In the Summer Institute of 1931, he arranged meetings with the members from the stations that he had not visited. In these meetings, they discussed the problems and techniques of management and made plans for future work. He realized it was he that should be responsible to organize and describe the future plans. While he recognized the great achievements made by members from both countries, Myers provided advice to the Department of Agronomy so that the program would progress continuously and successfully. Myers, for example, recommended the creation of a standing project committee of the College of Agriculture with the Dean as an ex-officio member. It would serve as an individual institution of the college taking the responsibility of all the crop improvement related work in different departments. This committee could break the barriers between administrative institutions to lead crop-breeding work systemically and comprehensively.

Not only did the three professors make great contributions to the project, but a large number of well-trained Chinese and American faculty and staff at Nanking, such as George E. Ritchey, T. H. Shen, Zhang Zhiwen, S. Wang, T. S. Kuo, C. M. Heh, R. H. Porter, and Qian Tianhe, played a

⁴⁶ Zhang Jiawei 张家蔚, "1930 nian shuangshijie weigen boshi yanjiang zuowu fenlei zhi yaozhi 1930 年双十□魏根博士演□作物分□之要旨 [Outlines of Prof. R. G. Wiggans' Report about Crop Classification on October 10, 1930]," *Nonglin xinbao* □林新□ [Gazette of Agriculture and Forestry] No. 233 (1931): 70-71.

vital role.⁴⁷ It is worth mentioning that T. H. Shen, after receiving a master's degree at the University of Georgia, entered Cornell University in 1924 for a doctoral degree in Plant Breeding and Genetics. Soon after arriving in China, the scientists from Cornell found it essential for Chinese students studying abroad to return to China, and to assist them with the work of crop breeding. So, a proposal was presented to the International Education Board. The board agreed to cover travel expenses for T. H. Shen so that he was able to accompany C. H. Myers to China during his Ph.D. program at Cornell. When Shen graduated from Cornell in 1927, he went to work in the CAUN to continue this project. His most remarkable achievement was the improved variety of wheat, Nanking No. 2905. The work from selection to distribution with Nanking No. 2905 took eight years between 1925 and 1933.⁴⁸ Shen also spent eight years on head selections and field tests at the Nanking Station outside the Tai-ping-men of Nanking, and he compared Nanking No. 2905 with 537 foreign varieties at the Nanking Station and the Nansuzhou Station. Finally, in the summer of 1934, Nanking No. 2905 was proved to be the superior variety of wheat and the first promising variety found with the pure line breeding method established by the PIP.

T. H. Shen was a typical representative of Chinese crop breeders. Actually, faculty and students from the University of Nanking and co-workers at all cooperative stations were certainly the mainstay of the program. Without their commitment and hard work, the PIP would have not made such great achievements in the few years it did. In the *Final Report* by C. H. Myers, he evaluated the Chinese staff saying that, "This report would be incomplete without especial mention of the services of Mr. T. H. Shen. His knowledge of China and his acquaintanceship with

⁴⁷ John H. Reisner, *Agriculture and Forestry Notes*, No. 18, Nov. 1925, Pamphlets on Chinese Agriculture and the Rural Church 1920-1936, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁴⁸ T. H. Shen 沈宗瀚, *Zhongnian zishu* 中年自述 [Readme in the Middle Age] (Taiwan: Taiwan Biography Literature Press, 1984), 140.

educational leaders everywhere made possible many contacts that would otherwise not have been made.”⁴⁹

During the PIP, promising varieties of crops, such as wheat, soybeans, rice, kaoliang, millet, and barley, were cultivated and then distributed among farmers. According to the Statement of Project made by Reisner in 1931, until then, twenty-eight improved strains and varieties of wheat, millet, gaoliang, corn, and cotton had been put into more fields and had already been distributed.⁵⁰ Even more varieties were to be distributed in the following years after the PIP ended. This project made great achievements in terms of the improvement of seed varieties and the increase of food supply at a time when people suffered from serious food shortage. Planting improved varieties seemed to be a shortcut of solving the grain problem in China.⁵¹ The standard methods of crop improvement were formulated in China for the first time, and then extended to the whole country. Meanwhile, the program cultivated a group of well-trained agricultural scientists and technicians with professional knowledge and creativity, who were able to carry on and expand the work after the Cornell professors had left.

1.3 Wheat

In 1925, workers from the University of Nanking, under the guidance of Love, made thousands of selections in wheat through 20,222 head and rod rows tests with 465 varieties of

⁴⁹ C. H. Myers, *Final Report of the Plant Improvement Project Conducted by the University of Nanking, Cornell University and International Education Board* (Nanjing: College of Agriculture and Forestry at the University of Nanking, 1934), 13.

⁵⁰ John H. Reisner, What Cornell-University of Nanking-International Education Board Cooperative Crop Improvement Project has Accomplished, 1931, Folder 74, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁵¹ T. H. Shen 沈宗瀚, “Gaijin pinzhong yi zengjin zhongguo zhi liangshi 改良品种以增中国之粮食 [Increase Food Yield by Improved Varieties in China],” *Zhonghua nongxuehui bao* 中国农学会报 [Agricultural Journal of China] No. 90 (1931): 1-6.

foreign wheat included in the test.⁵² This was one of the largest wheat experimental planting work undertaken anywhere worldwide at that time.⁵³ Eight superior varieties were selected in the region of Nanking. During the period from 1927 to 1931, yield tests had been done on these varieties. The results showed higher yields for these varieties than for standard varieties. The varieties by selection and hybridization proved superior in yield, disease resistance, and other important characteristics.

Full responsibility for the wheat research at Nanking resided with Shen, after he graduated from Cornell University in 1927. Under his direction, the wheat project made substantial progress at Nanking and at the cooperative stations. In 1931, Shen made regional tests on selected wheat and rice varieties to get information as to the range of their adaptation. Then, in 1934, after nine-years of breeding tests, CAUN decided to distribute Nanking No. 2905 to farmers. Similar results had been obtained at the Kaifeng Cooperative Station, where the yields of four new varieties, tested for six breeding years from 1926-1931, showed gains ranging from 12 to 23 percent over the standard variety. The new variety, known as Kaifeng No. 124, was distributed to many farmers. In 1931, these new varieties of wheat proved of good quality in milling tests made at the Shanghai Research Association. The Nansuzhou Station (Nanhsuchow Station) also developed a new variety, Nanhsuchow No. 61. When this variety was compared with traditional farmers' varieties over a three-year period, it showed an average gain of 27.83 percent. In 1931, multiplication of Nanhsuchow No. 61 also was made, and later it was distributed to farmers in this region.

⁵² John H. Reisner, Special Plant Improvement Number, Nov. 1925, Miscellaneous 1925-May1929, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁵³ John H. Reisner, Agriculture and Forestry Notes, No. 18, Nov. 1925, Pamphlets on Chinese Agriculture and the Rural Church 1920-1936, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

The wheat selection program indicated that it was possible to select promising varieties in a brief amount of time. As the program progressed, however, the PIP breeders recognized that hybridization had to be used to cultivate superior varieties because the selection project would reach a stage where no further progress could be made. That meant there were no superior varieties left when most productive individual varieties had been sorted out with the rare exception of unplanned mutations. These occurrences in wheat, however, were rare. Thus, in 1926, a special program of crossing wheat began at the Nanking Station. The first crossing was made between Japan Bearded, Early Arcadian, and Honor wheat. In 1931, in the comparative yield tests of varieties from these hybrid experiments, some were proven superior to the varieties mentioned above. In order to obtain strains of even higher yield and better resistance to flag smut, the PIP breeders made a series of hybridizations to the third generations. Meanwhile, the genetic studies were conducted by Shen at Nanking Station. The studied characters included the shape of the head, height of the plant, double spikelet, compound spikelet, reaction to flag smut, reaction to nematode, hairy leaf, and awn characteristics. These studies were of great significance in terms of their possible application to breeding work and their value for providing illustrative material for teaching.



Figure 1. PIP staff selecting Cornell hybrid wheat in the summer of 1928 at Taipingmen Farm, Nanjing.⁵⁴

Nanking No. 2905 was one of the most successful improved varieties in the PIP. This wheat variety was a selection made in the farms of Tong-ji-men southeast of the city of Nanking by Love and Shen. By 1931, a considerable amount of Nanking No. 2905 was available. That year, one of the most serious floods China had experienced in modern times destroyed thousands of crop acres in the Yangtze and Yellow River basins. Many farmers lost their wheat, so more seed was needed to be distributed for sowing. It was possible for workers of the program to supply farmers near Nanking with this new seed variety. Reports after the 1932 harvest revealed that the yields were at least 40 percent higher than before, which proved that Nanking No. 2905 merited further

⁵⁴ Annual Report of the Department of Agronomy, Dec. 1928, Miscellaneous 1925-May 1929, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

extension. In 1934, the Extension Department was set up in the CAUN for expanding the new variety of wheat, Nanking No. 2905. Yields of Nanking No. 2905 wheat compared with Nanking No. 26 are listed in Table 3. When the comparisons were made, the average yield of Nanking No. 2905 over a five-year period was 30 bushels per acre. The gain over the Nanking No. 26 averaged 6 bushels per acre, or about 25 percent. Numerous tests showed that Nanking No. 26 yielded about 7 percent more than the traditional varieties, therefore Nanking No. 2905 wheat would yield about 32 percent more than the farmers' varieties if grown under similar conditions. Nanking No. 2905 was also the variety of wheat grown with the largest acreage in China because of the resistance to lodging, early maturity, and the resistance to rust at that time. After ten years of testing from 1925 to 1934, Nanking No. 2905 was continued in Nanking until 1938, and then this variety was extended in Sichuan until 1943. Its total acreage of extension amounted to roughly 1.3 million acres, which indicated that Nanking No. 2905 had the most acreage of extension among all the improved varieties.⁵⁵ After the Sino-Japanese War, Nanking No. 2905 was planted in Jiangsu, Anhui, Sichuan, Shansi, Hubei, and other provinces.⁵⁶

⁵⁵ Jin Zichong 靳自重, "Jinda 2905 hao xiaomai zhanlan jingguo 金大二九零五号小麦展□□□ [Exhibition of Nanking No.2905 Wheat]," *Nonglin xinbao* □林新□ [Gazette of Agriculture and Forestry] Collections No. 4 to 9 (1931): 25.

⁵⁶ Cai Xu 蔡旭, "Jinnian zhongguo maichan gaijin gongzuo gaikuang 今年中国麦□改□工作概况 [Summary of Improvement Work of Wheat]," *Nongye tuiguang tongxun* □□推广通□ [Newsletter of Agricultural Extension] No. 6 (1945): 1.

Table 3. The Comparison of Nanking No. 2905 Wheat with Nanking No. 26⁵⁷
(Bushels per Acre)

Year	Actual yield+	Gain over No. 26
1927*	42.8	19.8
1928	29.4	8.8
1929*	53.3	26.9
1930	40.8	9.7
1931	23.4	-5
1932	28.1	7.7
1933	28.3	4.3
Average	30	6.0=25.0%

The average yield for Nanking No. 2905 is based on the data of 1928, 1930, 1931, 1932 and 1933. The yield data in 1927 and 1929 are excluded because that from 1927 was based on the two-rod row test, which was only preliminary, and in 1929, the yield of Nanking No. 26 was unusually low which should not be compared with Nanking No. 2905 for that year.

1.4 Soybean

R. G. Wiggans believed that it was important to conduct an adequate soybean program, since soybean was one of the main food crops in China. Before the PIP, soybean improvement work had never been significantly studied in China. In 1923, researchers began improving soybean varieties at Nanking, when G. E. Ritchey, the head of the Department of Agronomy at the

⁵⁷ H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (Ithaca: New York State College of Agriculture at Cornell University, 1964), 29.

University of Nanking, collected sixty varieties from different parts of Henan, Hebei, and Shansi to plant at the Nanking Station for a variety of tests. Sui Wang of the Department of Agronomy at Nanking also gave special attention to soybean work. Wang made detailed plans of certain crosses which helped not only to determine the mode of inheritance of some characters but also the obtaining of certain new combinations of economic importance.⁵⁸ From 1924 to 1930, a large number of soybean selections were made at all the cooperative stations (see Table 4).

Table 4. Soybean Selections at Cooperative Stations⁵⁹

Year	No. of selections	Province
1924	407	Jiangsu
1925	600	Henan
1925	1080	Jiangsu
1925	100	Anhui
1925	909	Shandong
1925	61	Shandong
1925	52	Nanjing
1929	500	Jiangsu
1930	2500	Jiangsu
Total	6209	

⁵⁸ R. G. Wiggans, Report of the Second Year's Work, 1928, Reports from Myers & Wiggans, 1926-1928, Box 4, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁵⁹ C. H. Myers, *Final Report of the Plant Improvement Project Conducted by the University of Nanking, Cornell University and International Education Board* (Nanjing: College of Agriculture and Forestry at the University of Nanking, 1934), 43.

During the tests, Wang pointed out that the soybean was more sensitive to environmental changes than other crops, such as wheat and gaoliang. That was to say the soybean does not have strong adaptive capacities, which meant different strains of soybeans would have to be planted in different regions. In the meantime, adequate regional tests had to be made before distribution. Wang also conducted a study on the correlations existing between different characters of soybeans such as plant height, sizes of seed, number of seeds, dates of maturity, and yield. As the program proceeded, the improvement work on soybeans at Nanjing achieved important progress. At the Nanking Station, Wang made comparative tests on those selections from their experimental fields and local farms, among which one was named Nanksoy No. 332. Nanksoy No. 332 had an outstanding performance. The results from a five-year test are given in Table 5. During a five-year period, the average gain over the standard variety was 5.46 bushels per acre. Subtracting this figure from the average yield of Nanksoy No. 332, 17.68 bushels per acre, the average yield of the standard variety was 12.22 bushels per acre. Regarding this figure as a baseline, Nanksoy No. 332 had an average gain of 44.68 percent. Therefore, the value of soybean's improvement was self-evident. This new variety of soybean with high yield and good quality was distributed to farmers for planting in the surrounding area of Nanjing. Although experimental work with soybeans was carried on and expanded in 1929, the tests at the Nanking Station were almost a total failure that season because of the unusually dry weather. Most of the soybean flowers dropped with only a small amount of seed collected and because of this there is no data for 1929 in Table 5. In 1930, seed for sowing came from the remaining seed that had been stored, which emphasized the importance of reserving seed every year.

Table 5. Yield of Nanksoy No. 332 Compared with the Check Variety⁶⁰

(Bushels per Acre)

Year	Actual Yield of Nanksoy No. 332	Gain Over Check
1926	20.3	9.6
1927	24.3	6.7
1928	15.4	4.1
1930	13.8	5
1931	14.6	1.9
Average	17.68	5.46/44.68%

Since 1932, Nanksoy No. 332 became the standard variety in comparative tests of soybeans in China, which was also called Nanking Soybean in other countries. Undoubtedly, Wang's research played a vital role in improving yields of soybeans.⁶¹ In 1939, Wang continued his research at Chengdu. Wang and Yuhua Ma conducted a series of further studies on soybean. They cultivated four new strains of pure lines at Chengdu, some of which had higher yields and protein contents than Nanksoy No. 332. They also developed a new variety of soybean, Nanhsuchow No.647, at the Nanhsuchow Station.⁶²

⁶⁰ H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (Ithaca: New York State College of Agriculture at Cornell University, 1964), 38.

⁶¹ Jiang Mudong 蒋慕□, *Ershi shiji zhongguo dadou fazhan yanjiu* 二十世纪中国大豆发展研究 [Research about the Development of Chinese Soybean in 20th Century] (Beijing: China Three Gorges Press, 2008), 32.

⁶² C. M. Heh 郝□□, "Jinda ershi yunian lai zhi nongzuowu zengchan gaishu 金大二十余年来之作物增产概述 [Overview about Crop Yield Gain for 20 Years at the University of Nanking]," *Nonglin xinbao* 农林新报 [Gazette of Agriculture and Forestry] Collections No. 29 to 30 (1930), 1.

1.5 Rice

Scientists at the CAUN cultivated very few superior varieties of rice in China. The College of Agriculture was responsible for a large rice breeding research program based on variety observations, head row tests, rod row tests, two-rod tests, five-rod tests, and ten-rod tests⁶³ The breeding method of head-row and pure lines put forward by H. H. Love achieved success at all cooperative stations when applied for the first time, and then it was widely extended. The specific breeding process was described as follows: individual selection (1st year), single-row test (2nd year), double-row test (3rd year), five-row test, (4th year), ten-row test (5th year), advanced test (6th year), and multiplication and extension (7th year).⁶⁴ Rice improvement work was developing both at the Nanking Station and at the Wuchang Cooperative Station. In 1924, the University of Nanking started the breeding work of rice but with only comparative tests of different varieties. Later, a new strain, Nanking No. 1386, was cultivated with the method of pure-line selection. Since 1927, the experimental work at Nanking had been under the direction of T. H. Shen. Because the experimental land of the University did not include a large area suitable to grow rice, the work with rice had been limited. Selection work with rice conducted at Nanking, however, developed well. Some new varieties gave yield increases ranging from 14.6 percent to 29.6 percent over a good farmers' traditional variety. The improved rice varieties included Nanking No. 909, Nanking No. 946, and Nanking No. 1386, with the latter variety averaging yields of about 300 catties per mu.⁶⁵

⁶³ Xia Rubing 夏如兵, *Zhongguo jindai shuidao yuzhong keji fazhan yanjiu* 中国近代水稻育种科技开展研究 [Rice Breeding Technology in Modern China] (Beijing: China Three Gorges Press, 2009), 144.

⁶⁴ Bai Hewen 白文, *Zhongguo jindai nongye keji shigao* 中国近代农业科技史稿 [History of Agricultural Science and Technology in Modern China] (Beijing: China Agricultural Science and Technology Press, 1996), 47.

⁶⁵ Data from *The Cornell-Nanking Story*. Catty is a Chinese measure equal to 500 grams. Mu is a Chinese measure equal to 0.0667 hectares or 0.11 acres.

1.6 Grain Sorghum (Gaoliang)

Gaoliang, a grain sorghum, was an important food crop adapted to the drought conditions of north central and northwestern China. It was one of the main food crops in the northern part of China. Before the PIP, no breeding work with gaoliang had ever been attempted in China.⁶⁶ In 1925, Extensive selections were made at Yixian, Kaifeng, Nansuzhou, and Weixian, all these northern cooperative stations, totaling 1248 varieties and strains.⁶⁷ Nanking was located beyond the area where Gaoliang was usually grown; therefore, the purpose of the work with kaoliang at Nanking was just for study of varieties and types.⁶⁸

In 1929, under the direction of T. H. Shen, breeders in the program began studying the effect of Gaoliang's self-fertilization. They tested thirty-eight varieties of Gaoliang. To determine the effect of self-fertilization, breeders took abundant notes each year on the yield, the number of ears per strain, the percent of grain in the ear, and the average weight of grain. The data from 1929 to 1930 convincingly revealed that self-fertilization for two generations did not give rise to any appreciable loss of Gaoliang's quality and vigor. These results proved that the self-fertilization of Gaoliang had no direct correlation with whether the new variety was either superior or inferior to the original variety.

To obtain promising varieties of Gaoliang, selecting experiments began at stations in central and north central China. Stations at Nansuzhou, Kaifeng, Yixian, Yenching and Taigu conducted most of the selections with Gaoliang. Wiggans and C. M. Heh, the head of the Department of Agronomy then went to Suiyuan, Jinan, and Baoding to study the specialties and

⁶⁶ R. G. Wiggans, Report of the Second Year's Work, 1928, Reports from Myers & Wiggans, 1926-1928, Box 4, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁶⁷ John H. Reisner, Special Plant Improvement Number, Nov. 1925, Miscellaneous 1925-May 1929, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁶⁸ Annual Report of the Department of Agronomy, Dec. 1928, Miscellaneous 1925-May 1929, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

characteristics of gaoliang. During the selections of gaoliang, Wiggans emphasized the importance of the accuracy in the comparative tests. What is an accurate comparative test? The areas for testing must be different in terms of climate and soil. The soil in experimental fields must be typically representative of the regions, including both dry land and irrigated land, with scientific methods used in the tests.⁶⁹ According to the statistics, six new varieties of gaoliang were selected at Nansuzhou Station. At the Kaifeng Station, four varieties had been obtained whose yield averaged about 20 percent higher than the farmers' traditional variety. Very promising varieties had also been obtained at Yixian. In a four-year test, these selections ranged from 28 to 48 percent more than farmers' varieties grown in the same tests. The two leading selections had 47 to 48 percent increases.⁷⁰

In 1931, the PIP breeders made plans to place these new varieties into regional tests at stations of Kaifeng, Yenching, Nansuzhou, and Yixian. Within two or three years, it would be possible to start general distribution of one or two of these varieties that had higher yields and better adaptability depending on their performance in the regional tests. After a seven-year test, Yenching No. 129 was obtained, which yielded 5 times more than the average of local varieties. Then Yenching No. 129 was distributed at the beginning of the 1940s. Other new varieties included Nanhsuchow No. 33184, Kaifeng No. 2612, Ding County No. 33, and Nanhsuchow No. 2642.⁷¹

⁶⁹ R. G. Wiggans and T. H. Shen 沈宗瀚, "Huabei nongye shicha baogao 华北农业视察报告 [Inspection Report of Agriculture in North China]," *Nonglin xinbao* 农林新报 [Gazette of Agriculture and Forestry] 229 (1931): 2-5.

⁷⁰ Data from *Final Report of the Plant Improvement Project Conducted by the University of Nanking, Cornell University and International Education Board*.

⁷¹ Lu Yan 吕彦, "Jinlin daxue nongxueyuan dui zhongguo jindai nongye de yingxiang 金陵大学农学院对中国近代农业的影响 [Influence of College of Agriculture at the University of Nanking on the Modern Chinese Agriculture]," (master's thesis, Nanjing Agricultural University, China, 2005), 43.

1.7 Millet

Millet was also a crop adapted to the drought conditions in northern China. It was one of the most important food crops in this region. Similar with gaoliang, Nanjing was not an ideal planting area of millet. At the Nanking Station, however, two studies on breeding methods of millet were conducted under the direction of C. M. Heh. One was to determine the effect of self-fertilization. Started in 1929, the subsequent results showed self-fertilization did not result in any noticeable loss of millet's quality and vigor. The second study was a comparative test of millet to determine the proper row pitch and number of times multiplication was possible-- a so-called blank test. To obtain new varieties of millet, selection work was made at the stations of Kaifeng, Yenching, Qilu, Taigu, and Nansuzhou. The most elaborate tests with millet were conducted at the Yenching Station, where 5849 selections were under test in 1931. Three of them produced a gain over the standard variety from 28 to 34 percent.⁷² The experimental results from these stations indicated that new selections were superior in yield comparing with the varieties commonly grown by the farmers. For the PIP breeders, the ultimate aim for millet improvement was to obtain promising seed so that farmers could gain higher yields from their land without substantially changing their tillage methods. In 1936, on the basis of the selection tests with millet in the PIP, a new variety, Yenching No.811, was cultivated by the CAUN. This variety had better resistance to disease and lodging, and also higher yields, which has an increase of over 17.8 percent.⁷³ In 1937, Yenching No.811 was distributed on a large scale for planting on 13,000 mu in the regions surrounding Beijing. Its total yield increases came to about 600,000 catties. Thus, it showed that the PIP achieved profound influence after its ending in 1931.

⁷² Data from *Final Report of the Plant Improvement Project Conducted by the University of Nanking, Cornell University and International Education Board*.

⁷³ Shen Shouquan 沈寿全, "Gailiangu 'jinda yanjing 811' 改良谷'金大燕京 811' [Improved Soybean—Yenching No.811]," *Jinling xuebao* 金陵学□[Journal of the University of Nanking] Vol. 7 No. 1(unknown), 1.

1.8 Barley

Although barley was not top on the list for improvement, the PIP still made some progress in this aspect. The stations of Nanking, Nansuzhou, and Kaifeng conducted research to improve barley. At the Nanking Station, S. Wang directed both the selection and hybridization of barley. At the other two stations, only selection work was done. The CAUN made selections with domestic barley varieties since 1925. The work and outcome was not satisfying. Therefore, from 1925 to 1928, American varieties from Texas and Wisconsin were introduced into the tests by S. Wang. After the harvest of 1930, Wang found that these American varieties of winter barley were slightly better in yield than the average domestic ones. They were too late in maturity, however, to adapt to the cropping system practiced in the Yangtze Valley. In addition, the selections had not been made in sufficient number or over a wide enough range to obtain outstanding strains. Thus, in the summer of 1931, S. Wang made large-scale selections from 10,000 strains of hull-less barley and 1027 strains of hull barley for the fall planting.⁷⁴ Then, in 1932 after the ending of the PIP, S. Wang went to the Department of Breeding at Cornell University for further study on barley selection. At Cornell, he developed a new variety with a strong resistance to mildew and rust. This variety was named after S. Wang as “Wong Barley.”⁷⁵ In the tests for yield comparison of four varieties of winter barley conducted by the CACU at Ithaca from 1939 to 1942, the average yield of Wong was 50 bushels per acre, which was higher than the varieties of Kentucky No.1, Michigan Winter, and Poland.⁷⁶ The CACU promoted this variety widely in New York state contending that,

⁷⁴ Wang Shou 王□, “Damai yichuan zhi yanjiu 大麦□□之研究 [Inheritance in Barley],” *Zhonghua nongxue huibo* 中□□学会□ [Journal of Chinese Agriculture] No.148 (1936): 1-16.

⁷⁵ Wang Shuyu 王淑玉, “□念父□——王□ In Memory of My Father—S. Wang,” in *Jinling daxue jianxiao yibai zhounian jiniance* 金陵大学建校一百周年□念册 [The 100th Anniversary Autograph Album of the University of Nanking] (Nanjing: Nanjing University, 1988), 210.

⁷⁶ H. H. Love and W. T. Craig, Wong, A Winter Barley for New York, unknown, Wong, A Winter Barley for New York, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

“those farmers who want to grow winter barley may find that Wong is the most desirable sort.”⁷⁷

This successful research on barley proved that while China benefited from the PIP with agricultural expertise from Cornell, American agriculturalists practiced the theories and methods too. As Love once stated on the radio, “we in New York State should be very thankful to this Chinese plant breeder who, while developing better varieties for China, has produced something that is so promising for New York agriculture.”⁷⁸ Those new varieties of crop and improved research methods gained from their experiences in China benefitted American farmers as the PIP findings were implemented in the U.S. The PIP was not just a one-sided technology output with unilateral benefits. This is another form of the global contribution and significance of the PIP.

⁷⁷ H. H. Love and W. T. Craig, Wong, A Winter Barley for New York, date unknown, Wong, Folder A Winter Barley for New York, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁷⁸ H. H. Love, The Past and Probable Future of Winter Barley in New York State, Radio Talks, 1942, Box 6, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.



Figure 2. Typical Heads of Wong Barley⁷⁹

Along with the breeding work with barley, Wang made more genetic studies on the characteristics of awn. He discovered a new character of awn. In addition, the Kaifeng Station developed a new barley variety, Kaifeng No.313. After years of improvement work, the yield of

⁷⁹ H. H. Love and W. T. Craig, Wong, A Winter Barley for New York, date unknown, Folder Wong, A Winter Barley for New York, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

this variety reached 113 catties per mu. It had a gain of 44.9 percent over the standard variety and a gain of 82.7 percent over farmers' varieties.⁸⁰ Meanwhile, at the Kaifeng Station, after a five-year observation, three varieties of barley were determined worthy for further regional tests and distribution.

1.9 Corn

In 1914, J. H. Reisner began the selections with corn when he went to China. He followed the head-row method used at most experimental stations in America at that time, and developed the variety known as Nanking Yellow for distribution along the Yangtze Valley. Then for a long time, no further reach focused on corn again until 1930, when R. G. Wiggans conducted breeding work at the stations of Nanking and Yenching, utilizing the new corn breeding method developed in the U.S. The new method focusing more on the inbreeding, single crosses, and double crosses, was totally different from that of 1914. Wiggans placed more emphasis on the breeding of all open-pollinated crops. In 1930, Wiggans inbred 868 individual ears of corn collected from many locations in China and from many strains introduced from the U.S. to compare their yields. The results of that year, however, were surprising. Only two of the introduced American varieties yielded as much or more than Nanking Yellow while the inbred varieties from native pure line ones out-yielded Nanking Yellow. There are limitations that can be expected by the introduction of high-yielding varieties of an open-fertilized crop into an entirely new and different environment.⁸¹ The work done under the direction of Wiggans in 1930 revealed that better varieties of corn might be among the native inbred lines, because none of the introduced varieties

⁸⁰ Data from *The Cornell-Nanking Story*

⁸¹ R. G. Wiggans, *Annual Special Report of the Plant Improvement Project* (unpublished, 1930), 50, Rockefeller Center Archives.

proved superior to the Nanking Yellow. This is also the lesson the PIP taught. It is a common belief that some superior varieties when placed in other regions will have the same high performance in new local conditions. The truth, however, is that different organisms cannot be so easily adapted into new geographic regions without considering needed adjustments.

In 1928, the University of Nanking and Yenching University cooperated to carry on breeding work with corn, and, in 1933, two double-cross varieties were developed. In the cooperation between the University of Nanking and Oberlin Shanxi Memorial School, the famous Oberlin Golden Queen was selected among American corn varieties.⁸² Besides this, the improved varieties included Tingsien (Dingxian) No. 51, Yenching No. 206, Yenching No. 236.⁸³ Because the improvement work with corn achieved great success in northern China due to proper climate, the improved varieties were accepted by farmers quickly.

1.10 Cotton

Before the PIP, with the financial support from foreign cotton mills and Cotton Anti-adulteration Association in Shanghai, a Cotton Department was already established at Nanking in 1920. The head of the department, John B. Griffing, began improvement work with cotton in the same year.⁸⁴ They made more than 50,000 selections, among which one proved superior to others for yielding ability and quality of lint. Known as “Million Dollar,” many farmers accepted the seeds of this new variety which had been distributed along the coast from Shanghai south to

⁸² C. M. Heh 郝□□, “Jinda ershi yunian lai zhi nongzuowu zengchan gaishu 金大二十余年来之□作物增□概述 [Overview about Crop Yield Gain for 20 Years at the University of Nanking],” *Nonglin xinbao* □林新□ [Gazette of Agriculture and Forestry] Collections No. 29 to 30 (1930), 29-30.

⁸³ Lu Yan □彦, “Jinlin daxue nongxueyuan dui zhongguo jindai nongye de yingxiang 金陵大学□学院□中国近代□□的影响 [Influence of College of Agriculture at the University of Nanking on the Modern Chinese Agriculture],” (master’s thesis, Nanjing Agricultural University, China, 2005), 42.

⁸⁴ Chen Yien-Shan, Report of Cotton Improvement in the Department of Agronomy, College of Agriculture and Forestry of the University of Nanking, December 1929, Folder 17, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

Ningbo, as well as from the coast to the interior. In 1926, A. J. Bowen, the president of the University of Nanking, firmly believed that there was more continuous work to be done on crop improvement because, “If Million Dollar and the others isn’t degenerating, there is a Two Million Dollar variety to be yet found.”⁸⁵ Due to bad business in the cotton mill industry, however, the financial support for the Cotton Department was cut off in 1923.⁸⁶ Their department became self-supporting which meant it was too heavy a burden for Griffing to do both breeding and extension work with cotton on his own without help. Griffing had to leave Nanking and head back to the States in 1927.

In 1926, Reisner wrote to Griffing proposing that since the program was able to accumulate a reserve of a few thousand dollars for the cotton work, it would be more efficient to have the cotton improvement work brought into the Department of Agronomy as part of the PIP.⁸⁷ After that, cotton breeding work became part of the Plant Improvement Project. Under unified administration, there was no need for cotton breeding work to compete with other crop breeding work for labor and land.⁸⁸ The PIP conducted tests on both domestic cotton and American cotton varieties in northern China. The results showed that some varieties from the U.S. had good performance. Trice Cotton, for example, grew well while Stoneville No. 4 came to be a more popular variety in the area around Peking and Hebei. After years of improvement work and tests in the PIP, results indicated that the Trice Cotton was suitable for growing in the Yellow River Basin, while the Yangtze River Basin, especially Nanjing and surrounding areas, was perfectly

⁸⁵ A. J. Bowen to John H. Reisner, March 1926, Folder 65, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁸⁶ Chen Yien-Shan, Report of Cotton Improvement in the Department of Agronomy, College of Agriculture and Forestry of the University of Nanking, December 1929, Folder 17, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁸⁷ John H. Reisner to J. B. Griffing, March 1926, Folder 65, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁸⁸ John H. Reisner to H. H. Love, May 1926, Folder 65, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

suited for the cultivation of the Acala Cotton.⁸⁹ Million Dollar was generally accepted around the coastal area in Jiangsu and Zhejiang Provinces. The prices of these three variety cottons were five or six yuan higher than for traditional varieties, which proved their high quality and wide acceptance.⁹⁰



Figure 3. Acala cotton at the Shen-tsa-men Farm, 1928⁹¹

To develop more new varieties, the PIP breeders also collected additional varieties for further breeding purposes, consisting of twenty-seven American varieties obtained from Arkansas,

⁸⁹ Chen Yien-Shan, Report of Cotton Improvement in the Department of Agronomy, College of Agriculture and Forestry of the University of Nanking, December 1929, Folder 17, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁹⁰ T. H. Shen 沈宗瀚, "Jieyong meimian xingtuiguang gailiang mianzhong 借用美棉推广改良棉种 [Improving Cotton with the Extension of American Varieties]," *Nonglin xinbao* 林新 [Gazette of Agriculture and Forestry] No. 285 (unknown), 280.

⁹¹ C. M. Heh, Annual Report of the Department of Agronomy, Dec. 1928, Miscellaneous 1925-May 1929, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

Georgia, and Oklahoma, and thirty-two varieties of Chinese cotton from the provinces of Hebei, Shandong, Jiangsu, Anhui, Jiangxi, Zhejiang, Hunan and Hubei. They also made a large number of individual selections from their own stock in an effort to obtain superior strains. Cotton improvement, however, was also unique compared with other crop improvements because one wanted not only yield but also length of lint that would meet the conditions and requirements of the manufacturer.⁹² A summary of the work showed that in the 300 mu of land planted in cotton, 2,834 individual selections were tested. In the cotton tests, two major indicators were staple length and lint index.⁹³ Later, selections of pure lines were made from varieties introduced from the U.S. Consequently, two strains of U. N. Acala 481 and U. N. Acala 149 were cultivated. Along with the U. N. Trice, these new varieties were then distributed along the Yangtze River Basin and the Yellow River Basin respectively.⁹⁴ By 1931, the cotton improvement work was a major research focus of the PIP.

⁹² H. H. Love to Wang Sheo, May 1930, Folder 890, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁹³ C. H. Myers, *Final Report of the Plant Improvement Project Conducted by the University of Nanking, Cornell University and International Education Board* (Nanjing: College of Agriculture and Forestry at the University of Nanking, 1934), 50.

⁹⁴ Qian Ganting 钱澍庭, "Quanguo gailiang mianzhong tuiguang diaocha 全国改良棉种推广□□ [Survey about the Extension of Improved Varieties with Cotton]," *Nongye tuiguang tongxun* □□推广通□ [Newsletter of Agricultural Extension] 4, No. 6 (unknown).



Figure 4. Cotton Harvest at Nanjing⁹⁵

The cotton work did not come to an end when the program ended, however, because the CAUN conducted numerous cotton experiments during the 1930s, including the selection and comparison of pure lines, hybridization, the selection of early maturing varieties, and quality comparison. Moreover, in terms of cotton planting, other research had to be done, such as crop rotation tests, fertilizer tests, and genetic studies on cotton's characteristics. The breeding work of cotton at the University of Nanking played a vital role in the modern cotton research of China, which made great contributions to cotton's yield increase and agricultural development as a whole.⁹⁶

⁹⁵ C. H. Myers, *Final Report of the Plant Improvement Project Conducted by the University of Nanking, Cornell University and International Education Board* (Nanjing: College of Agriculture and Forestry at the University of Nanking, 1934), 61.

⁹⁶ C. M. Heh 郝□□, "Jinling daxue mianzuo gaijinsuo jinkuang 金陵大学棉作改□所近况 [Recent Improvement of Cotton at the University of Nanking]," *Nonglin xinbao* □林新□ [Gazette of Agriculture and Forestry] No. 418 (date unknown).

1.11 Seed Multiplication and Distribution

The objective of the PIP was not only to produce new varieties of high yielding crops but even more importantly to make available to farmers seeds of better varieties. As Reisner pointed out, China not only needed scientific knowledge for solving her agricultural difficulties, but also extension work to pass this knowledge to help farmers improve their agricultural practices.⁹⁷ Therefore, farmers might obtain higher yields from their land without changing appreciably their cultural methods. This was one of the most difficult parts of the program. For one thing, farmers in China were too cautious to accept the new varieties. They preferred to plant traditional varieties with old methods passed on for generations, even though the traditional varieties and methods received less production, moreover, unless the seeds from an improved variety were maintained in high purity by the growers, the effort in improving the yield of crops and resistance to diseases would end in failure because the new variety might be mixed with average varieties or not planted with the scientific methods. Therefore, after the end of selections, the detailed and systematic distribution work became a complex and arduous task that needed to be accomplished successfully during the PIP.

In 1924, the Extension Department was set up in the CAUN to focus on the training of workers conducting distribution work. According to the records, from December 1, 1927 to December 1, 1928, around 277.93 piculs of improved seeds of wheat, corn, and cotton were distributed by the Department of Agronomy along.⁹⁸ With the guidance and institutional support from the agricultural extension at CAUN, the seed distribution program continued to expand even

⁹⁷ Brayton C. Case to Ralph A. Felton, Feb. 1929, Folder 2, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

⁹⁸ C. M. Heh, Annual Report of the Department of Agronomy, Dec. 1928, Miscellaneous 1925-May 1929, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY; Picul is a unit of weight, used in China, equal to about 60 kilograms or 133 pounds.

during the war years. As is shown in Table 6, during the period from 1923 to 1930, the CAUN distributed a large amount of seeds of cotton, wheat, and corn to farmers through the Department and all the cooperative stations.

Table 6 Seed Distribution of Improved Varieties from the University of Nanking⁹⁹
(catty)

Year	Cotton	Wheat	Corn
1923-1924	9,966	5,625	90
1924-1925	16,132	5,997	1,200
1925-1926	20,000	*	4,000
1926-1927	9,808	14,063	4,216
1927-1928	4,739	12,974	4,000
1928-1929	12,411	16,876	990
1929-1923	6,300	19,528	3,665
Total	79,356	75,063	18,161

*no data that year

Most seeds sold at a flat price, just a little higher than the market price, to regions where the seeds were actually used for planting. Therefore, many farmers benefited from improved seeds, which encouraged them to advocate more for the PIP.¹⁰⁰ Excluding the influence of natural disasters and wars, seed distribution expanded rapidly to northern and eastern China during the program, even after the program officially ended. Farmers in these areas planted the new varieties on a comparatively large scale, which played a crucial role in increasing the yield of grain crops and relieving the crisis of food shortage in China as a whole.

⁹⁹ T. H. Shen 沈宗瀚, "Gailiang pinzhong yi zengjing zhongguo zhi liangshi 改良品种以增中国之粮食 [Increase Food Yield by Improved Varieties in China]," *Zhonghua nongxue huibao* 中国农学会会报 [Journal of Chinese Agriculture] No. 90 (1931): 1-6.

¹⁰⁰ C. M. Heh, Annual Report of the Department of Agronomy, Dec. 1928, Miscellaneous 1925-May1929, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.



Figure 5. The mule cart hauling improved seed wheat for distribution to the lower part of Yangtze Valley, fall of 1928¹⁰¹

C. H. Myers initiated a plan for seed distribution in his lectures to the Summer Institute in 1931. He recommended that only a few new varieties needed to be distributed at the same time. He recommended a selection of certain areas where the farmers had showed a willingness to take part in this program, rather than distributing small amounts of seed over a larger area. If the results were satisfactory, the plan would be expanded to the surrounding area where the seed was first distributed. The extension staff in CAUN and the extension groups at all the cooperative stations mainly took the responsibility of distributing the seeds. The extension workers went to the villages

¹⁰¹ C. M. Heh, Annual Report of the Department of Agronomy, Dec. 1928, Miscellaneous 1925-May1929, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

and farmers' homes for distribution. There were staff stationed in the villages to give lectures, pass out leaflets, and make planting demonstrations. These on-site staff members explained the scientific planting methods and the merits of the new varieties from the perspective of a fellow grower instead of a salesman. They could also answer farmers' questions directly which helped solve many practical problems on site. These humanistic approaches convinced many farmers to adopt new seed varieties.

1.12 The Training Program

The training of workers was one of the most important elements in the PIP. When considering the program long before the first Cornell representatives arrived in China, all the PIP professors agreed that efforts to produce better crops would be of little value unless well-trained people could work independently and continue the program years after the last Cornell professor had returned home.¹⁰²

The training was carried out by choosing breeders at different experiment stations to attend a series of summer institutes. Love attached considerable importance to the selection of participants. He asserted that the participants should possess at least three qualities: first, have a deep sense of service; second, they must be interested in agriculture; and third, the participants must have at least some knowledgebase on the growing habits and planting methods of local crops.¹⁰³ This summer institute was originally planned only for members in the PIP. In 1926, there were twenty-three enrolled for full time work and sixteen visitors who took part of work.¹⁰⁴ With

¹⁰² H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (Ithaca: New York State College of Agriculture at Cornell University, 1964), 6.

¹⁰³ H. H. Love and Chen Yanshan 燕山, "Nongxue yanjiu dian shifan 研究典示范 [Example of Agricultural Research]," *Zhonghua nongxue huibao* 中农学会 [Journal of Chinese Agriculture] No. 89 (1931): 1-4.

¹⁰⁴ T. S. Kuo and John H. Reisner, Twelfth Annual Report of the College of Agriculture and Forestry and Experiment Station, Dec. 1926 Chinese Experimental Station Reports, 1925-1926, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

the increasing influence of the PIP, however, many organizations, such as missionary stations, government agencies, and colleges of agriculture, also sent their representatives to take part in the institutes every year. Altogether around ninety coworkers and staff from CAUN and cooperative stations joined the summer institute annually under the strict selection standard. Certainly, the summer institutes greatly strengthened the work that were being undertaken with mission, private, and governmental experiment stations across China.¹⁰⁵ The three-week intensive workshop included formal lectures in the college, field observation trips, and informal discussions and conferences. As Myers discussed at the summer institute of 1931, the purpose of the summer institutes was to enhance working efficiency by formulating experimental methods and exchanging experimental materials, and meanwhile arousing people's interest in agricultural studies.”¹⁰⁶

Myers conducted the first Summer Institute from July 12 to August 4, 1926. H. H. Love directed the second in 1929; the third was held from July 18 to August 5, 1930, at Yenching University under the direction of R. G. Wiggans. The fourth was held from July 6 to 24, 1931, under the direction Myers.¹⁰⁷ The courses given in these Summer Institutes were about plant breeding, genetics, and plant pathology. A description of four main courses taught in these Summer Institutes follows as illustrated in the *Cornell Nanking Story*. First, elementary plant breeding was given by T. H. Shen in Chinese, including elementary principles of genetics and practical methods of crop improvement. This course was for those who had no previous training in plant breeding and did not understand English. Second, F. L. Tai from the Division of Plant Pathology offered a

¹⁰⁵ John H. Reisner to A. R. Mann, August 1926, Folder 66, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

¹⁰⁶ Dai Song'en 戴松恩, "Mayasi boshi zhi yanci □ 雅思博士之演 □ [Speech of Prof. C. H. Myers]," *Nonglin xinbao* □ 林新 □ [Gazette of Agriculture and Forestry] No. 252 (1931): 349-350.

¹⁰⁷ John H. Reisner, What Cornell-University of Nanking-International Education Board Cooperative Crop Improvement Project has Accomplished, 1931, Folder 74, Box 1, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

course in Plant Disease. This included diseases of crop plants, methods of control, and their relation to crop improvement. Third, C. H. Myers gave a course in Advanced Plant Breeding for those who had previous training in this field and spoke English. It included the principles of Genetics as applied to Plant Breeding, the development of methods of breeding, and the analysis and interpretation of data. Fourth, in 1931, H. H. Love as Agricultural Adviser to the National Agricultural Research Bureau gave a course in Biometry which included methods of calculations and application of statistics.¹⁰⁸

Among the ninety-one regularly registered students and twenty visitors to the Summer Institute in 1931 (except for the twenty-four upper-classmen of Nanking), all were engaged in teaching or experimental work at their respective institutes.¹⁰⁹ This revealed the high academic level of the summer institutes. For these Chinese students, this institute served as a Graduate School of Agriculture in the field of plant breeding. During the summer institutes, intensive courses of instruction in genetics and plant breeding and related subjects were offered to the Chinese students who had little or no training in these fields. In addition, the summer institutes brought the cooperators together to discuss the problems arising at their stations and to suggest measures to address various problems. By the end of the formal cooperation between Cornell and Nanking, it was estimated that over 125 men, who had little or no previous experience, had been trained to conduct independently crop improvement experiments.¹¹⁰

¹⁰⁸ H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (Ithaca: New York State College of Agriculture at Cornell University, 1964), 49-50.

¹⁰⁹ C. H. Myers, *Final Report of the Plant Improvement Project Conducted by the University of Nanking, Cornell University and International Education Board* (Nanjing: College of Agriculture and Forestry at the University of Nanking, 1934), 37.

¹¹⁰ H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (Ithaca: New York State College of Agriculture at Cornell University, 1964), 42.

1.13 Significance and Influence of PIP

In the field of modern agriculture in China, the success of the PIP proved that the integration of the trinity of agricultural production, scientific research, and education could be transferred from the United States to China. In this system, the cooperative stations took the responsibility for distributing the improved varieties to farmers, at the same time, extension workers at these stations conducted research and demonstrations of improved crop raising methods. The distribution work was conducted at the county level, however, at some occasions two or three small counties' work were combined. The Nanking central station, however, frequently kept contact with these stations to direct their work.¹¹¹ Under the guidance of the professors from Cornell, the University of Nanking followed the patterns of American universities, especially Cornell University, where agricultural education, research, and extension were integrated. At Nanking, the university was responsible for selecting new varieties, studying experimental methods, and training researchers. All the cooperative stations took charge of conducting experiments, collecting data, and doing distribution work. As a result, the improvement program trained a group of professional breeders. Then, these breeders developed promising varieties. Next, through these cooperative stations, improved varieties were distributed to farmers. The value of this systematic cooperation is that the same varieties or selections of plants could be tested at different regions of China under different conditions and if any varieties appear superior at one of the cooperating stations, they could be made immediately available for trial by all the stations and the CAUN in the nationwide system.¹¹² This new mechanism following Cornell's pattern of the

¹¹¹ H. H. Love and Chen Yanshan 燕山, "Kexue duiyu nongye zhi zhongyao xu 科学之于农业之重要" [The Importance of Science to Agriculture], *Nonglin Xinbao* 农林新报 [Gazette of Agriculture and Forestry] No. 255 (1931): 391-394.

¹¹² T. S. Kuo and John H. Reisner, Twelfth Annual Report of the College of Agriculture and Forestry and Experiment Station, Dec. 1926 Chinese Experimental Station Reports, 1925-1926, Box 5, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

integration of agriculture production, scientific research and education became standard practice in China. The University of Nanking also placed increasing emphasis on experimental study and field research. As a result, other colleges of agriculture in China began to imitate the CAUN's integration of agriculture production, scientific research, and education.¹¹³ This greatly contributed to the overall development of agriculture in the period of the Republic of China.¹¹⁴

The PIP has exerted considerable influence on the follow-up work at Cornell. The Cornell agricultural experts taught scientific methods and theories on agricultural education and research in China which enhanced CAUN's scientific research work. In addition, they all expressed some appreciation that the improvement work in China also enriched their experience and research techniques brought back to Cornell.¹¹⁵ This kind of win-win cooperation met the agricultural research, extension, and educational needs of both Cornell and Nanking, which laid the foundation for later international cooperation in the field of science and technology via different channels between Cornell and other universities worldwide. As W. I. Myers, former dean of the CACU, stated in a letter, "The success of the Cornell-Nanking program was one of the factors that led to a decision on the part of the New York State College of Agriculture at Cornell to undertake an extensive program in cooperation with the College of Agriculture at Los Banos in the Philippine Islands."¹¹⁶

¹¹³ He Shuqing 何淑琴, "Meiguo nongkejia sanweiyiti moshi de yinru jiqi yingxiang yanjiu 美国科教'三位一体'模式的引入及其影响研究 [Introduction and Influence of the Trinity of Integration of Agriculture Production, Scientific Research and Education in America]" (master's thesis, Nanjing: Nanjing Agricultural University, 2011), 42.

¹¹⁴ Bao Ping 包平, *Ershi shiji zhongguo nongye bianqian yanjiu* 二十世纪中国农村教育变迁研究 [Changes of Chinese Agricultural Education in 20th Century] (Beijing: China Three Gorges Press, 2007), 118.

¹¹⁵ H. H. Love, The Past and Probable Future of Winter Barley in New York State, Radio Talks, 1942, Box 6, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

¹¹⁶ H. H. Love and J. H. Reisner, *The Cornell-Nanking Story* (Ithaca: New York State College of Agriculture at Cornell University, 1964), 56.

In China, before the PIP, both in academic communities and business circles, people were grasping at phony solutions to low food production and starvation, such as blind introduction of foreign varieties into China and promiscuous plantation with no scientific guidance. The PIP attempted to correct these false approaches. H. H. Love contended that although planting foreign varieties was a way to improve wheat production in China, planting experiments had to be conducted on a small scale first to achieve the best results.¹¹⁷ The Nanking Station and all cooperative stations conducted many experiments with foreign varieties to determine which varieties were adaptable to local climate, soil conditions, and planting traditions in China. Along with reorganizing the breeding work at Nanking, this program also built cooperative relationships with thirteen provincial agricultural experiment stations. Taking China's geographical conditions, rural situations, and material needs into consideration, the faculty and students at the University of Nanking conducted the PIP with the latest scientific methods, making effective improvement on crop varieties as well as greatly benefiting farmers in China.¹¹⁸

The PIP both directly and indirectly trained a group of crop specialists who devoted themselves into the modern agricultural industry in China. As Love once pointed out, the PIP was one of the biggest ventures not only in China but also in the world where so many men worked together toward one common end.¹¹⁹ During the program, the teaching of theories in the classroom and practical training in the field aroused students' enthusiasm for the crop improvement work. After the program ended, some of these students remained at the university as faculty or staff,

¹¹⁷ H. H. Love, "Meimai zuozhong wenti 美麦作种□□ [Planting of American Crop Variety]," *Nonglin xinbao* □林新□ [Gazette of Agriculture and Forestry] No. 257 (1931): 419.

¹¹⁸ Luo Shengping □昇平, "Erli zhinian de jinda nongxueyuan 而立之年的金大□学院 [Development of College of Agriculture at the University of Nanking for 30 years]," *Nonglin xinbao* □林新□ [Gazette of Agriculture and Forestry] Collections No. 4-9 (1932): 37.

¹¹⁹ H. H. Love to Wang Sheo, Feb. 1929, Folder 890, Box 2, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

while others went to the cooperative stations to continue their work. Also, many of them went to universities in the western countries, especially the United States, for further study and returned to China after receiving a master's or doctoral degrees. These pioneers made great contributions to the crop improvement work by sharing their advanced knowledge on crop breeding and genetics learned abroad. They became the most important crop breeders during the Republic of China and even in the People's Republic of China. According to the incomplete statistics, the list of names are as follows:¹²⁰

1. Shou Wang (1897-1972), born in Mixian, Shanxi, earned his master's degree of science at Cornell University in 1933. He became a professor at the CAUN in 1934. He was a founder of Crop Breeding and Biostatistics in China. During the PRC, Wang served decades as the president of the Shanxi Provincial Agricultural College (Shanxi Agricultural University).
2. Wu Shaokui (1905-1998), born in Jiashan, Anhwei, earned his doctoral degree at the University of Minnesota Twin Cities in 1938. He became a professor at the CAUN after returning to China. He was the founder of Corn Breeding in China. After the Revolution of 1949, he became the vice president of the Henan Provincial Agricultural College.
3. Shen Xuenian (1906-2002), born in Yuyao, Zhejiang, earned his master's degree of science at Cornell University in 1935. After returning to China, he became the head of the department of agronomy at the Northwest Agricultural College. He was a founder of Cultivation Science in China. After 1949, he remained as a professor at the College of Agriculture of the Zhejiang University.
4. Dai Song'en (1907-1987), born in Changshu, Jiangsu, earned his doctoral degree at Cornell

¹²⁰ China Association for Science and Technology, *Zhongguo kexue jishu zhuanjiazhuanlue-nongxuebian-zuowujuan* 中国科学技术专家略· 农业· 作物卷 [Chinese Experts in Science and Technology: Agriculture-Crop] (Beijing: China Science and Technology Press, 1993), 1.

University in 1936. After returning to China, he served as a researcher in the National Agricultural Research Bureau at Nanjing. He was a specialist of crop breeding and genetics in China. After 1949, he continued to conduct research in the Chinese Academy of Agricultural Sciences. In 1980, he was appointed as the vice dean of the Graduate School of the Chinese Academy of Agricultural Sciences.

5. Xu Tianxi (1907-1971), born in Shanghai, earned his master's degree at the University of Minnesota Twin Cities in 1935. He became a specialist of crop breeding at Zhejiang University and later Guangxi University. After 1949, Xu served as a professor in the Shenyang Agricultural College.
6. Mei Jifang (1908-1983), born in Funing, Jiangsu, became a professor at the University of Nanking from 1934 to 1943. Mei went to the U.S. to further his research at Cornell and Washington State University from 1945-1946. He was a specialist of wheat breeding and farming. After 1949, he became a senior researcher at the Jiangsu Academy of Agricultural Sciences.
7. Yang Hongzu (1911-1979), born in Chengdu, earned his master's degree of science at the University of Minnesota Twin Cities in 1940. After returning to China, he worked as a researcher at the National Agricultural Research Bureau, and then, as a professor at Sichuan University. He was a specialist on tuber crop breeding. After 1949, he worked in the Sichuan Academy of Agricultural Sciences.
8. Sun Qu (1911-1975), born in Weifang, Shandong, graduated from the University of Nanking in 1936. He taught soil science at many universities in China. In 1945, Sun furthered his research as a visiting scholar at the Ohio State University, Cornell University, and the University of California for a whole year. Then, in 1948, he came back to the

University of California again, where he wrote his famous textbook in China, *Pedology*.

After 1949, he focused on investigation and reform on cultivation across China.

9. R. H. Ma (1912-1996), born in Haifeng, Canton, earned his master's degree at the University of Illinois at Urbana-Champaign (UIUC) in 1946. After coming back to China, he became the head of the Department of Agronomy at Peking University. Then, he returned to UIUC to pursue a doctoral degree in 1948. After earned his doctoral degree in 1950, Ma returned to mainland China to serve as the head of the Department of Agronomy at the University of Nanking. Ma was a specialist of soybean genetics and crop breeding.

The PIP served as a model for agricultural cooperation with other countries during the middle and late period in the Republic of China. The success of the program stimulated government support for crop breeding research in China. As the program developed, not only did the crop improvement work at the University of Nanking become standardized, but also National Central University, Yenching University, and Lingnan University began crop improvement research. That was not enough. Love's goal was to develop a national program for agricultural improvement to coordinate research work at provincial experiment stations and agricultural colleges of different regions in China.¹²¹ Furthermore, the PIP stimulated the Chinese government to establish the National Agricultural Research Bureau of the Ministry of Industry in 1931, which made great improvements in agricultural production in China through scientific research and agricultural extension services later.¹²² Influenced by the program, a series of official Sino-US exchange

¹²¹ H. H. Love, *The Importance of Science to Agriculture*, 1932, Pamphlets-Plant Breeding in China, 1932-1934, Box 6, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

¹²² T. H. Shen 沈宗瀚, "Zhongmei nongye jishu hezuo 中美□□技□合作 [Sino-US Cooperation in Agricultural Science and Technology]," *Zhonghua nongye shilunji* 中□□□史□集 [Collected Papers about Agricultural History in China] (Taipei: Taiwan Biography Literature Press, 1979), 473.

activities in modern agricultural technology occurred, such as the North China Council for Rural Reconstruction (1936-1943) funded by Rockefeller Foundation, the cooperation between the Chinese Ministry of Agriculture and Forestry and International Harvester Company (1945-1948), and the China-United States Agricultural Mission (1946-1948). All these exchanges and communications greatly promoted the agricultural modernization in China and international cooperation between China and the United States.

The PIP also has crucial significance in contemporary China's scientific research and education, and the international cooperation of science and technology. The breeding practices in agricultural science and technology developed in the PIP are often out of date now, but the triangular integration of agricultural production, scientific research, and education with Chinese characteristics developed in the PIP remains important for the advancement of agricultural research and education in China's modern society. Since the revolution in 1949, however, a planned national economy and ideological difference prevented China's progress for international cooperation. Educational institutions, scientific research centers, and administrative sections cannot cooperate with each other. It is hard to change the current situation because they have been working independently for a long time.¹²³ Institutionally speaking, there is a grim situation of decentralization, disjunction, and separation of powers and responsibilities between different sectors. Nevertheless, the PIP from the 1920s to 1930s provides a model for "industry-university-research cooperation" that the Chinese government has vigorously advocated in recent years.

Moreover, the scientific management system introduced from Cornell University provided a practical reference for the development of management in science and technology in China. Viewed from a historical perspective, the success of this program was not only due to the

¹²³ Bao Ping 包平, *Ershi shiji zhongguo nongye jiaoyu bianqian yanjiu* 二十世纪中国□□教育□□研究 [Changes of Chinese Agricultural Education in 20th Century] (Beijing: China Three Gorges Press, 2007), 119.

introduction of modern breeding techniques, but also because of an equally important factor of the establishment of a systematic management system concerning crop improvement work. For the common good and an urgent humanitarian need, Cornell transferred its technical knowledge to the University of Nanking and to China as a whole. Both American and Chinese agriculturalists jointly supervised the PIP achieving remarkable success with most of the expenses covered by the International Education Board. After the program ended, well-trained Chinese agriculturalists were capable of carrying on crop improvement work independently. Indeed, the PIP developed a successful scientific management system in China. Today, most of the modern exchanges between China and any other country in science and technology are focused on introducing experts, crop varieties, and advanced knowledge, which belongs to the range of productivity. What these exchanges lack is the innovation of productive relations especially with high-level scientific management systems. Statistics have shown that the scientific and technological achievements in agriculture exceed 6,000 specific innovations every year in China, while only 30 to 40 percent are transformed into productive forces and fewer than 20 percent formed effective impact.¹²⁴ The current Chinese institutional systems are one of the main factors leading this issue. Only through improving the management system can the scientific and technological achievements be transformed into productive forces that will improve economic development in rural areas.

Last but not least, the PIP had a unique advantage in the international cooperation of science and technology. Obviously, the PIP gained abundant achievements under the cooperation of scientists from both Cornell University and the University of Nanking with sufficient financial aid from the International Education Board. It must be admitted that such cooperation in science

¹²⁴ Wang Siming 王思明, *Zhongmei nongye fazhan bijiao yanjiu* 中美□□□展比□研究 [Comparative Studies about Agricultural Development in China and America] (Beijing: China Agricultural Science and Technology Press, 1999), 116-117.

and technology has increased the technology transfer from western developed countries to the developing countries, not only providing developed countries valuable practical experience of technique applications, but also improving people's livelihood in developing countries. As one member in the U.S. Department of State admired, the PIP "was one of basic reasons for the initiation of a more comprehensive program of cooperation between American colleges and their overseas counterparts as an important part of the technical aid program."¹²⁵ The PIP set an excellent example for international cooperation with mutual benefits in contemporary times.

¹²⁵ George W. Gray, *A History of the International Board 1923-1938, Concerns Manuscript-Correspondence, Changes, and Corrections, 1963-1964*, Box 6, Harry H. Love Papers, 1907-1964, Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY.

CHAPTER 2. ROCKEFELLER FOUNDATION'S AGRICULTURAL PHILANTHROPY IN RURAL CHINA

Since the establishment of the Rockefeller Foundation (RF) in 1913, it always had a great interest in conducting philanthropy to help China. In 1921, the RF invested considerable financial support for Peking Union Medical College (PUMC), the first western medical school in China. This move was highly praised by John D. Rockefeller, Jr. as creating “a Johns Hopkins for China.” China at the time was an agricultural country. In the early twentieth century, approximately 85 percent of its population relied on agriculture for their livelihood.¹ In China's modernization transition and its process of industrialization, the needs and problems of such a large rural population had been neglected, which was one of the major factors for China's perpetual backwardness since the Opium War of 1840. In hope to increase these rural populations' living standard, the RF trustee committee approved its first rural reconstructive “China Program” in the year of 1934. By studying the goals, progress, and ultimately, denouement of the RF's rural reconstruction work in China, the RF's rural philanthropic initiatives in the developing world throughout the twentieth century become apparent. This is of utmost importance to comprehend. The RF sought out a modest philanthropic path for modernizing rural Chinese society, however, complicated circumstances far beyond its control hindered the success of this endeavor. Although the RF terminated its investment in rural reconstruction work in 1944, its historical legacy in rural China still requires more scholarly attention.

Historians have argued about the assessment and impact of the RF's rural reconstruction program for decades. In the Annual Report of the Rockefeller Foundation (1936), the RF

¹ Editorial, “Huabei nongcun jianshe xiejinhui gongzuo dagang fulu 华北农村建设协进会工作大纲(附录) [Outline of the NCCRR],” *Minjian* 民间 [Folk] 3, No. 23 (1937): 15.

emphasized its own programs in China as “of potential significance not only for China but possibly for other countries as well.”² Mary Brown Bullock in *The Oil Prince's Legacy*, stated that the RF's non-governmental programs served as the model for the post-World War II Sino-American Joint Commission on Rural Reconstruction which was a huge success in Taiwan.³ Qiusa Ma, in *To Change China: The Rockefeller Foundation's Century-long Journey in China*, offered a positive assessment of the RF's rural reconstruction work, “The China program was an important turning point for the Foundation's work in China. The Foundation shifted their emphasis from the education of elites, a plan that had been aimed at changing the intellectual assumptions of Chinese society, to the project of rural reconstruction, which was supposedly designed to solve the key problem of Chinese society-- the ‘peasant problem.’”⁴ She pointed out that the development of the RF's China Program represented the conflict, communication, and cooperation between the Eastern and Western cultures.

Some scholars criticize the RF's China Program, however, arguing that it was doomed to failure. James C. Thomson Jr. contended in *While China Faced West*, “The Rockefeller effort was the victim eventually of circumstance far beyond its own control.”⁵ He concluded that the RF's gradualism required time to realize its blueprint; “and time was the one element denied to the rural re-constructionists by external aggressor and internal rebel alike.”⁶ In *The Stubborn Earth*, Randall E. Stross assessed the RF's rural programs in China negatively by showing that none of the policies

² Rockefeller Foundation, *The Rockefeller Foundation Annual Report 1936* (New York: Rockefeller Foundation, 1937), 315.

³ Mary Brown Bullock, *The Oil Prince's Legacy: Rockefeller Philanthropy in China* (Washington, D.C.: Woodrow Wilson Center Press, 2011).

⁴ Ma Qiusa 马秋莎, *Gaibian zhongguo: luo ke fei ji jin hui zai hua bainian* 改变中国: 洛克菲勒基金会在华百年 [To Change China: The Rockefeller Foundation's Century-long Journey in China] (Guilin: Guangxi Normal University Press, 2013), 372.

⁵ James Claude Thomson, *While China Faced West: American Reformers in Nationalist China, 1928-1937* (Cambridge Mass.: Harvard University Press, 1969), 149.

⁶ James Claude Thomson, *While China Faced West: American Reformers in Nationalist China, 1928-1937* (Cambridge Mass.: Harvard University Press, 1969), 150.

attempted to solve the issues of land reform, ineffective distribution of new seed varieties, and lack of availability of new agricultural technology for common farmers.⁷

Most of these scholars, however, focused on Peking Union Medical College and rural public health issues. An overview of both the American and Chinese perspectives, however, can provide a more comprehensive and persuasive understanding of the RF's presence and its efforts to modernize Chinese agricultural practices.

2.1 Background

The question one naturally asks is why did the Rockefeller Foundation attempt to shape the Chinese rural administration, in the first place? The answer is that it perceived the creation of favorable social and political circumstances in China.

John B. Grant, who was the representative of the International Health Division of the RF in China, said in his report that “[China] is one of the few countries in which the government is itself trying to institute marked social-economic changes.”⁸ Moreover, RF officials believed that the current Chinese government encouraged and guided non-governmental aid and cooperation at different levels and in diverse forms. “There is a growing group of Chinese leaders in the field of reconstruction who might welcome assistance from the RF and to whose thinking in turn the RF might lend some helpful direction.”⁹ This was true. At that time, many Chinese intellectuals believed that the rural reconstruction work was the sixth national salvation movement after the Taiping Heavenly Kingdom, the Hundred Days’ Reform, the 1911 Revolution, the May Fourth

⁷ Randall E. Stross, *The Stubborn Earth: American Agriculturalists on Chinese Soil, 1898-1937* (Berkeley: University of California Press, 1986).

⁸ J. B. Grant, Principles for the China Program, March 1935, P1, Folder 469, Box 22, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁹ J. B. Grant, Principles for the China Program, March 1935, P1, Folder 469, Box 22, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

Movement, and the National Revolutionary Army's Northern Expedition.¹⁰ This rural reconstruction would fix the most important problem in the previous movements—a lack of education for most Chinese, that is, rural farmers. The Chinese Nationalist Government increasingly realized the importance of strengthening its power and expanding its influence in the vast rural areas of their country. Mayling Soong Chiang (Madame Chiang Kai-Shek) highly praised the RF's rural reconstruction work for embodying the spirit of the Nationalist Party's New Life Movement. She professed that “we shall do everything possible to make this program of rural reconstruction an outstanding success.”¹¹ Selskar M. Gunn, vice president of the Rockefeller Foundation and the president of its China Program, believed that “It is fair to state our relatively small efforts in this direction during the past year have a significance entirely beyond the financial outlay.”¹²

The second reason was the RF's confidence that it could successfully cooperate with universities in the United States and China. The International Education Board, as a subdivision of the RF, successfully funded the Plant Improvement Project between the University of Nanking and Cornell Nanking between 1925 to 1931. This project's success marked a good starting point for broader communication and interaction between academia in China and the U.S. At that time, universities in the United States, including Harvard, Syracuse, North Carolina, and Minnesota, were developing a growing interest in the application of social science theory to actual society, at least in certain fields and at particular levels of administration. Administrators at these institutions believed that this approach enabled professors to obtain the first-hand experience needed to study

¹⁰ Qian Jianju 千家驹 and Li Zixiang 李紫翔, *Zhongguo xiangcun jianshe pipan* 中国乡村建设批判 [Criticism of China's Rural Construction] (Shanghai: Xinzhi Shudian 新知书店, 1937), 23.

¹¹ Mayling Soong Chiang to S. M. Gunn, Feb. 1937, Folder 458, Policy General 1932-1945, Box 21, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

¹² S. M. Gunn to Raymond B. Fosdick, September 1936, P1, Folder 469, Box 22, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

social and economic problems. Social scientists were given opportunities that they could not gain on campuses, unlike their colleagues in the natural sciences with their laboratories. Furthermore, through some collaborative programs, university undergraduate and graduate students were allowed to conduct their own observations and investigations. This gave them an opportunity to develop ideas around socio-economic mechanisms and phenomena to make better preparations for their future public policy positions. The RF was making many contributions to these universities, all of which were in keeping with a larger trend in the United States of applied social science research.

After the Rockefeller family entered China, it started to build the Peking Union Medical College (PUMC) in 1917.¹³ From that time, it generously sponsored university aid programs and philanthropic activities in China, including the Plant Improvement Project conducted by Cornell University and the University of Nanking (Nanjing), Nankai Institute of Economics at Nankai University (Tianjing), and the College of Applied Social Sciences at Yanjing University (Beijing) via different funding channels. Among them, the PIP with a relatively small amount of funding from the International Education Board had been most important in strengthening China's economy which "provided a starting point for the comprehensive program for rural reconstruction" work carried by the RF since 1934.¹⁴ This led the RF to realize that "the opportunities along these lines are now being developed and in some respects they are even greater than in the United States."¹⁵ It was even possible for universities to obtain actual administration and operation of local governments, at least at the grassroots level. University professors were recommended to

¹³ Rockefeller Foundation, *The Rockefeller Foundation Annual Report 1917* (New York: Rockefeller Foundation, 1917), 224.

¹⁴ Agricultural Progress in China, April 1943, Page 11, Folder 474, Nanking1935-1945, Box 23, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

¹⁵ Items in connection with current China Program were presented, together with a statement of progress, April 1937, Page 3, Folder108, Box 10, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

certain administrative positions, such as “magistrates, commissioners of education, civil affairs, etc.”¹⁶ The RF was convinced that these positions of control were fundamental and essential to the early stage of social experimentation. Therefore, the Rockefeller Foundation confidently predicted that “the experiment of the North China Council may be significant outside of China.”¹⁷ This was a major development in the thinking of the RF, because this model of influencing government would influence later RF’s activities around the developing world.

The RF, however, did not want to engage in direct relief for famine and disasters. Instead, the thinkers and policy experts in the RF were interested in larger institutional change, to reshape the very fabric of Chinese society. In the early twentieth century, China had experienced several severe famines, particularly in the rural areas. The RF’s ongoing public health program and its Peking Union Medical College could not and more importantly did not want to solve these specific and isolated issues. Instead, they were interested in how medicine could improve the vast rural Chinese populations’ livelihoods on a national scale. The RF did not attempt to conduct the missionary’s charity work to feed a certain area, or to relieve only particular groups of rural populations via the dispensation of food. It was more ambitious, and therefore applied science to rural administrations in attempts to modernize rural China. They believed if they could set a successful and representative pattern for modernization, they would be able to generalize and extend those programs nationwide. By not focusing on immediate relief, they believed they could rescue this backward and undeveloped country as a whole, and therefore decrease the need of continued aid.

¹⁶ Items in connection with current China Program were presented, together with a statement of progress, April 1937, Page 3, Folder108, Box 10, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

¹⁷ Items in connection with current China Program were presented, together with a statement of progress, April 1937, Page 3, Folder108, Box 10, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

After the outbreak of the September 18th Manchurian Incident, the Chinese Communist Party (CCP), under the support of the Soviet Union, established the Soviet Republic of China in Ruijin County of Jiangxi province on November 7, 1931. The CCP's transfer and founding of a separate nation in a remote rural area aroused vigilance among both the Nationalist government and the Rockefeller Foundation. To prevent China's vast countryside from falling into the hands of the CCP, the Nationalist government developed its own New Life Movement as an anti-Communist campaign to unify China under Chiang Kai-Shek's ruling. The Nationalist Party cooperated with the RF's rural reconstruction programs, aiming to strengthen its governance at the grassroots level and stabilize the impoverishment and unrest throughout the country. Party leaders believed that the RF's rural reconstruction work could help Chiang Kai-Shek's New Life Movement to extend successfully to rural China.¹⁸ Ironically, the RF would ultimately fail in its efforts to modernize the rural areas of China. It would be with the eventual victory of the CCP that these policies of rural reconstruction would come to fruition. Therefore, as the western capitalist entities, along with their Nationalist allies, attempted to offset communist gains, it would be the followers of Mao and their government that would eventually succeed.

2.2 NCCRR, 1936-1944

Under the auspices of the North China Council for Rural Reconstruction (NCCRR), the RF brought together these various concerns and goals to begin implementation of its policies. Yet, prior to the inauguration of the NCCRR, many important initiatives were developed under different institutions aiming at these rural problems. As early as 1927, Tao Xingzhi, a renowned Chinese education reformer, established the Xiaozhuang School at Nanjing as the first experimental

¹⁸ Editorial, "Xinshenghuo yundong zai xiangjian 新生活运动在乡间 [The New Life Movement in the Countryside]," *Minjian* 民间 [Folk] 3, No. 23 (1937): 19.

institution to reform rural China.¹⁹ Then, in 1928, with the financial support from the RF, the Department of Sociology at Yenching University conducted a small-scale rural survey and follow-up social experiment at Qinghe, Hebei Province.²⁰ Later, in 1929, Y. C. James Yen established the “First Rural Social District” at Dingxian, Hebei Province, to conduct his rural reconstruction work and literacy campaign.²¹ In 1931, Liang Shuming, a Chinese philosopher, founded Shandong Rural Reconstruction Research Institute at Zouping, Shandong Province, which led the rural reconstruction movement coming to a climax.²² In total, there were even more than one hundred institutions claiming they were focusing on rural reconstruction work including social organizations, local governments, universities, vocational schools, and religious organizations.²³ Despite their different lines of approach, including economic, cultural, or political, their goals’ were the same in terms of improving farmers’ livelihood, uniting farmers for self-governance, and banishing illiteracy from the Chinese population.²⁴ Without proper integration and a stable funding source, however, these isolated endeavors could not contribute to comprehensive rural change with national influence.

In hoping to provide assistance, the RF funded many of these Chinese institutions engaged in rural reconstruction. The China Program, for example, was inaugurated at the meeting of the Rockefeller Foundation Trustees on December 21, 1934. Under the direction of S. M. Gunn, the

¹⁹ Kong Xuexiong 孔雪雄, *Zhongguo jinri zhi nongcun yundong* 中国今日之农村运动 [China’s Rural Movement Today], (Shanghai: Zhongshan Wenhua Jiaoyuguan 中山文化教育館 [Sun Yetsen Cultural Education Press], 1934), 281.

²⁰ Chen Xujing 陈序经, “Xiangcun jianshe yundong pingyi 乡村建设运动平议 [Discussion on the Rural Construction Movement],” *Nongcun jianshe* 农村建设 [Rural Construction] 1, No. 2 (1938): 69.

²¹ Zhen Dahua 郑大华, *Minguo xiangcun jianshe yundong* 民国乡村建设运动 [The Rural Reconstruction Movement of the Republic of China] (Beijing: Social Sciences Academic Press, 2000), 77-108.

²² Yang Kaidao 杨开道, “Xiangcun jianshe yudong guoqu de jiantao 乡村建设运动过去的检讨 [A Review of the Past of the Rural Construction Movement],” *Xiandai duwu* 现代读物 [Modern Books] 4, No. 8 (1939): 8.

²³ Qian Jianju 千家驹, *Zhongguo de xiangcun jianshe* 中国的乡村建设 [Rural Construction in China] (Unknown: Dazhong wenhuashe 大众文化社, 1937), 12.

²⁴ Editorial, “China’s Rural Reconstruction,” *The China Critic* 27, No. 4 (1939): 58.

vice president of the RF, the China Program established its headquarters in Shanghai in 1935.²⁵ This China Program received an allocation of \$1,000,000 for a three-year period.²⁶ A number of national universities, mission colleges, and other organizations had been allocated approximately \$556,000 in the first two years of the China Program, including Yenjing University, Nankai University, Tsinghua University, Peiping Union Medical College, and the Chinese Mass Education Movement.²⁷ In November 1935, the University of Nanking was allocated to \$41,750 by the RF, including L.C. \$55,000 and \$5,500 to its Department of Agricultural Economics and L.C. \$17,500 to its Department of Science.²⁸ There were urgent needs for these pioneering educational institutions to control community facilities with a concrete and coordinative plan to apply their research and teaching directly to practical problems of rural reconstruction.

Therefore, the North China Council for Rural Reconstruction (NCCRR), a cooperative organization of these forward-looking institutions was established in Peiping (Beijing) on April 2, 1936. Y. C. James Yen, the founder of the National Association of Mass Education Movements (MEM) was appointed as the president of the NCCRR.²⁹ Mei Yiqi, the president of Tsinghua University and Robert Lim (Lin Kesheng) of the PUMC, were appointed as the vice presidents of the NCCRR.³⁰ Six institutions constituted the NCCRR, and each agreed to supervise efforts in a particular field of training, investigation, and demonstration. Tsinghua University carried the

²⁵ China and the Rockefeller Foundation, April 1944, P6, Folder 458, Policy General 1932-1945, Box 21, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

²⁶ Adjusting for inflation that is over eighteen million in today's currency.

²⁷ China Program, May 1938, Folder 469, Box 22, Series 1, Rockefeller Foundation Archives, RAC, NY.

²⁸ University of Nanking-Agriculture, April 1936, Folder 474, Nanking 1935-1945, Box 23, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY; L.C. \$ stands for Legal Currency Dollar which was an official currency issued by the Nationalist government. Its exchange rate to U.S. Dollar fluctuated dramatically throughout the ROC.

²⁹ Ye Mao 叶茂, "Zuzhi huabei nongcun jianshe xiejinhui 组织华北农村建设协进会 [To Organize the NCCRR]," *Shiyebu yuekan* 实业部月刊, 2, No.2 (1937):261.

³⁰ Ye Mao 叶茂, "Zuzhi huabei nongcun jianshe xiejinhui 组织华北农村建设协进会 [To Organize the NCCRR]," *Shiyebu yuekan* 实业部月刊, 2, No.2 (1937):261.

responsibility for engineering, Nankai University for education and social administration, Peiping Union Medical College for social medicine, the University of Nanking for agriculture, and the Chinese National Association of the Mass Education Movement for the literacy campaign. Therefore, the Council members also included Zhang Boling from Nankai University, Lu Zhizhang from Yenching University, Xie Jiasheng from the University of Nanking, Zhang Zhiwen from the National Agricultural Research Bureau, Zhang Hongjun from Yenching University, and Chen Zhiji for social hygiene.³¹ Accordingly, six departments were set up under the NCCRR's leadership. The heads of each department were appointed by the NCCRR upon nomination of the institution supervising that field.³² Then, the heads recommended staff in each department.

³¹ North China Council for Rural Reconstruction, *Huabei nongcun jianshe xiejinhui xunlian weiyuanhui jilu* 华北农村建设协进会训练研究委员会纪录 [Record of Training Research Committee of the NCCRR], (Peiping, North China Council for Rural Reconstruction, unknown), 24.

³² North China Council for Rural Reconstruction Announcement, 1936-1937, Folder 113, Box 11, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.



Figure 6. Faculty and Students of the North China Council for Rural Reconstruction at Jining, Shandong Province.³³

The Council members considered themselves “an extension of Y. C. James Yen’s Mass Education Movement,” however more representative and comprehensive.³⁴ While the council’s Central Secretariat was based in Peiping (Beijing), its experimental field work was mainly conducted in two Siens (prefectures), Tingsien (Ding Xian) in Hebei Province and Tsining (Jining) in Shandong Province from 1936 to 1937. Work on education, agriculture, and social medicine was mainly conducted at Tingsien where the existing Mass Education Movement provided already established facilities and consultations.³⁵ Engineering, economics, public works, social

³³ “Zhuxi lilin jining shicha yu huabei nongcun jianshe xiejinhui jiaoxueyuan shying jinian (ershiliu nian sanyue shiri) 主席莅济宁视察与华北农村建设协进会教学员摄影纪念(廿六年三月十日) [the Photography Memorial of Chairman came to Jining to inspect the NCCRR (March 10, 1937)],” *Yanda Yousheng* 燕大友声 3, No. 7 (1937): 8.

³⁴ Confidential Monthly Report to Trustees, January 1937, P10, Folder 478, Box 23, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

³⁵ North China Council for Rural Reconstruction Announcement, 1936-1937, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

administration, and civil administration was concentrated at Tsining. The intimate relationship with local authorities provided a more favorable political environment for effective policy support.³⁶ From the academic year of 1936 to 1937, the Council offered four categories of course including social health, civil administration, economics, and education.³⁷ Then for the next academic year, it included courses of agriculture and engineering.³⁸ The undergraduate and graduate students first registered in one of these participating institutions. Then, they choose one of these two stations for course work and field training, where they were expected to engage in three types of learning activities. First, direct observation and study of rural problems and needs; Second, reading, interviews, and discussions with their field instructors; Third, participation in real daily work of rural administration and reform under the supervision of their field instructors.³⁹ In respect to agriculture, for example, the University of Nanking took over administrative responsibility for agriculture in the ten prefectures of the Greater Jining Area.⁴⁰ Professor Y. W. Chang of the University was appointed as the head of the Agriculture Department at Jining. It established an agricultural station to provide improved seed supply to local farmers and offer courses and field training to their undergraduate and graduate students. Later, the Council integrated the personnel and facilities to establish a controlled community station which was also named the Rural Institute.⁴¹ The council's budget was covered by the RF through its Shanghai

³⁶ North China Council for Rural Reconstruction Announcement, 1936-1937, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

³⁷ Editorial, "Huabei nongcun jianshe xiejinhui gongzuo dagang fulu 华北农村建设协进会工作大纲(附录) [Outline of the NCCRR]," *Minjian* 民间 3, No. 23 (1937): 17.

³⁸ Editorial, "Huabei nongcun jianshe xiejinhui gongzuo dagang fulu 华北农村建设协进会工作大纲(附录) [Outline of the NCCRR]," *Minjian* 民间 3, No. 23 (1937): 17.

³⁹ NCRR Program of Instruction, 1936-1937, Folder 113, Box 11, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁴⁰ Recommendation for Approval of Local Fellowships, Feb. 1937, Folder 108, Box 10, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁴¹ National Council for Rural Reconstruction, June 1938, Page 7, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

Office. “The council has been given the power of nominating its personnel to official government posts” by a few provincial authorities as one document attested.⁴² Therefore, university departments lost their different identities and functioned collaboratively for the whole council. At the same time different universities were assigned different fields, which avoided unnecessary duplication and overlapping work. Also, the NCCRR allocated considerable amounts of funding for various local and foreign fellowships and research aid grants to promote rural education and training.

The Rockefeller Foundation’s aid to the China Program also amounted to \$394,875 for the year of 1937-1938. In addition to the RF’s appropriation, both provincial and local governments also provided substantial funds for the expense of training and administration. The work which the council attempted to accomplish was very down-to-earth though it did make ambitious blueprints. “When the Council talks about making [the] Chinese literate, it means teaching the farmer to read and write a thousand Chinese characters.”⁴³ A trained village health worker “has been taught to use a first-aid box containing a skin ointment, an eye ointment, castor oil, calomel, aspirin, and sodium bicarbonate.”⁴⁴ In this way, university students could practice the professional knowledge they learned in the classroom, while at the same time, they also provided basic rural public services and facilities to local farmers.⁴⁵ The RF not only provided training in public administration and agriculture via funding the NCCRR, but also set up local and foreign fellowship programs to support students and rural reconstruction workers to study in leading Chinese and American

⁴² North China Council for Rural Reconstruction, April 1937, Page 147, Folder 478, Box 23, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁴³ Confidential Monthly Report to Trustees, January 1937, Page 11, Folder 478, Box 23, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁴⁴ Confidential Monthly Report to Trustees, January 1937, Page 11, Folder 478, Box 23, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁴⁵ Bing 冰, “Huabei nongcun jianshe xiejinhui nianhui 华北农村建设协进会年会 [Annual Meeting of the NCCRR],” *Minjian* 民间 3, No. 23 (1937): 20-21.

universities and institutions. For the year of 1936 and the first half of 1937, the RF allocated a grant of \$10,884.85 (L.C. \$35,920.00) to the NCCRR. This local fellowship program which included ten renewal fellowships to the Nankai Institute of Economics, five renewal fellowship on social medicine to the PUMC and the MEM, five renewal fellowships on Rural Education to Yenching University, and twenty new fellowships at the rate of L.C. \$600 per year with an additional allowance for travel.⁴⁶ What is even more promising was that “the council had already been accorded recognition by the Division of Higher Education in the Ministry of Education.”⁴⁷ The council was optimistic that experimental work in these two prefectures would lead to the Nationalist government’s interest in joining the rural reconstruction program and popularizing its pattern on a nationwide scale.

In 1937, the Japanese invasion of China, however, discontinued the council’s work. Both prefectures’ stations had to be abandoned in November, just before the occupation of the Japanese army.⁴⁸ After several months, however, the majority of the council eventually evacuated and re-established itself at Guiyang, the capital of Guizhou Province at the heart of the Chinese southwest. The participating universities also relocated themselves westward. Nankai and Tsinghua re-established themselves at Kunming, the capital of Yunnan Province while Nanking relocated to Chengdu, the capital of the Sichuan Province in 1938.⁴⁹ The Mass Education Movement was

⁴⁶ S. M. Gunn, Recommendation for Approval of Local Fellowships, Sep. 1936, Folder 479, North China Council for Rural Reconstruction, 1936-1937, Box 23, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁴⁷ North China Council for Rural Reconstruction. April 1937, Page 147, Folder 478, Box 23, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁴⁸ Duan 端, “Benhui xiangzheng xueyuan ershiliu niandu gongzuo baogao 本会乡政学院二十六年度工作报告 [Annual work report of the National Rural Service Training Institute in 1937],” *Nongcun jianshe* 农村建设 1, No. 2 (1938): 71.

⁴⁹ S. M. Gunn, “Report on China Program,” April 1938, Page 2, Folder 458, Policy General 1932-1945, Box 21, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

headquartered at Changsha in Hunan Province.⁵⁰ Due to poor conditions of transportation and communication in western China during the Sino-Japanese War, most these universities lost effective contact with the NCCRR. Under this emergency situation, the RF still insisted that its program in China remained of continuing and evergrowing importance. With China's industrial eastern provinces falling to the Japanese troops and its access to the Pacific severed, China hoped to survive by relying on the development of vast rural areas and the agricultural economy. This rural development had always been the focus of the RF's China Program. The importance of rural reconstruction was heightened by Japan's military occupation. As Gunn indicated in his report, those leading individuals engaged in rural reconstruction activities in China had been brought together collectively under the NCCRR which made further contribution to the training of public administration. "It would be unfortunate if this personnel should be scattered and largely get out of touch with the rural reconstruction field," Gunn stated.⁵¹ The war, nevertheless, necessitated the reorientation of the Council's agenda and schedule. The Council's general goal during the war, became to "collaborate with the national-provincial institutes in Kweichow [Guizhou] province where the Council is located for the training of field personnel and for the technical cooperation."⁵² On April 29th of 1938, an emergency meeting of the Council was called by the Chairman, Dr. Franklin L. Ho, a professor of economics at the Nankai Institute of Economics. The purpose of the meeting was to reconstitute the council to continue its existence during the war. An emergency committee and a standing executive committee was created to serve as the directing body of the

⁵⁰ S. M. Gunn, "Report on China Program," April 1938, Page 2, Folder 458, Policy General 1932-1945, Box 21, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁵¹ China Program, December 1937, Page 427, Folder 46, Box 22, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁵² National Council for Rural Reconstruction, June 1938, Page 4, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

Council during the Japanese invasion.⁵³ Meanwhile, since the Council relocated its headquarters to Guiyang at the heart of the Chinese southwest, the original name of the Council was no longer accurate. Officials, therefore, changed the title from “North” to “National,” thereby changing their group to the National Council for Rural Reconstruction (NCRR).

The Council supported two sections of work, the National Rural Service Training Institute which was previously known as the Rural Institute, and the Wartime Socio-Economic Program Division which was the former Council’s Central Secretariat transferred from Peiping to Guiyang. The National Rural Service Training Institute was located in Tingfan, a prefecture 55 kilometers south of the city of Guiyang. The institute was composed of six departments including Social and Civil Administration, Economics, Social Medicine, Agriculture, Education and Engineering.⁵⁴ It mostly served, however, as a community service division. As an organization, it had the power to nominate its personnel to positions in the local government of the Tingfan prefecture. As Franklin Ho stated, a majority of the staff of the National Rural Service Training Institute had participated in the administrative work of the Tingfan Hsien Government.⁵⁵ Therefore, they were able to carry out comprehensive civil- service measures, such as the opium prohibition campaign, wartime civilian military training, small pox vaccination, and anticholera vaccination.⁵⁶

⁵³ National Council for Rural Reconstruction Emergency Committee, June 1938, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁵⁴ National Council for Rural Reconstruction Emergency Committee, June 1938, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁵⁵ Franklin L. Ho to J. B. Grant, Feb. 1939, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁵⁶ Ma Qiufan 马秋帆, “Kangzhan ernian laidexiangcun jianshe yundong 抗战二年来的乡村建设运动 [Rural Reconstruction Movement in the Two Years since the War of Resistance against Japanese Aggression],” *Xiandai duwu* 现代读物 4, No. 8 (1939): 20.



Figure 7. Military Mobilization Poster of the National Rural Service Training Institute: Fighting the Japanese enemy at the frontline, and producing and cooperating in the rear area.⁵⁷

The Wartime Socio-Economic Program Division located in Guiyang was composed of four departments including Social Medicine, Agriculture, Cooperation, and Hydraulic Engineering.⁵⁸ Its main agenda was to develop joint programs for personnel training and technology cooperation with provincial institutes in Guizhou province, including the Guizhou provincial water conservancy personnel training class, wartime health personnel training class, and agricultural

⁵⁷ Yang Chengfeng 杨乘风 and Zhao Deshun 赵德舜, *Hezuo Chuanxipian (Tuhua wenda) 合作传习片(图画问答)* [Cooperative Training Pictures (Q&A)] (Tingfan: The National Rural Service Training Institute, 1940), 5.

⁵⁸ National Council for Rural Reconstruction Emergency Committee, June 1938, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

extension personnel training class.⁵⁹ This division was also in charge of regularly issuing two periodicals including a house organ entitled the *Council Monthly* and an academic journal named *Rural Reconstruction Bi-monthly*.⁶⁰ The Council was not discouraged by this remote and backward region of southwest China. Quite the opposite. It highly appraised the area as “a more or less circumscribed locality offering unique advantages toward the attainment of the objectives for which the Council was founded.”⁶¹ The Council’s technical adviser, Dr. John B. Grant wrote to S. M. Gunn “the Council is favored with an excellent location, a fundamental program of work for training and research, and full-hearted political and financial support from the central, provincial and Hisen [prefecture’s] government.”⁶²

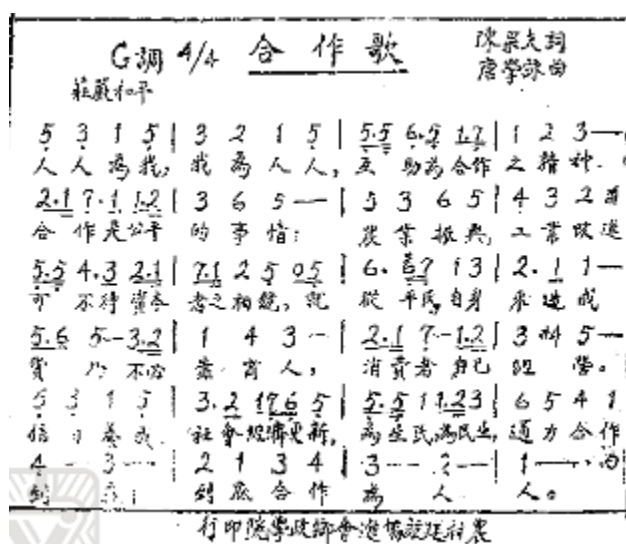


Figure 8. The National Rural Service Training Institute taught local farmers the Cooperative Song.⁶³

⁵⁹ Ma Qiufan 马秋帆, “Kangzhan ernian laidexiangcun jianshe yundong 抗战二年来的乡村建设运动 [Rural Reconstruction Movement in the Two Years since the War of Resistance against Japanese Aggression],” *Xiandai duwu* 现代读物 4, No. 8 (1939): 20.

⁶⁰ Program of Work and Budget for the National Council for Rural Reconstruction, 1939-40, April 1939, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁶¹ China Program, Exhibit I, May 1938, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁶² NCRR, May 1938, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁶³ Yang Chengfeng 杨乘风 and Zhao Deshun 赵德舜, *Hezuo Chuanxipian (Tuhua wenda) 合作传习片(图画问答)* [Cooperative Training Pictures (Q&A)] (Tingfan: The National Rural Service Training Institute, 1940), 3.

Therefore, the RF continued its support for the local fellowship program to allocate \$ 22,424.24 to the NCRR even during 1937 and the first half of 1938.⁶⁴ It did not suspend the funding budgets, though, and thereby used existing grants to keep those key members in the Council employed. From 1935 to 1939, even during the war, around 400 Chinese students or rural workers received training on local fellowships.⁶⁵ The NCRR also continued to support Chinese students to study rural reconstruction in U.S. universities and institutions under its foreign fellowship program. According to incomplete statistics of the RF, from 1935-1943, this program sponsored at least thirty-eight Chinese students to study in American institutions, including Harvard University, University of Chicago, Cornell University, Johns Hopkins University, Yale University, University of Minnesota, University of Rochester, University of Wisconsin, Northwestern University, Iowa State College, and Tennessee Valley Authority.⁶⁶ The fields these fellows studied were also very broad but closely related to the immediate need of rural reconstruction work in China, including public administration, social welfare work, rural sociology, social anthropology, agricultural economics, agricultural extension, hydraulic and sanitary engineering, plant physiology, plant pathology, agricultural entomology, biochemistry and nutrition, and public health.⁶⁷ The Council remained hopeful about the prospect of rural

⁶⁴ S. M. Gunn, China Program-North China Council for Rural Reconstruction -Local Fellowships, Sep. 1936, Folder 479, North China Council for Rural Reconstruction, 1936-1937, Box 23, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁶⁵ The China Program in Time of War, December 1938, Folder 143, Box 14, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁶⁶ Fellowships for Foreign Study awarded under the Rural Reconstruction Program, 1935-1943, Folder 151, Box 15, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁶⁷ Fellowships for Foreign Study awarded under the Rural Reconstruction Program, 1935-1943, Folder 151, Box 15, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

reconstruction after the war. The RF Executive Committee continued to appropriate \$ 272,600 to the NCRR for the year 1938-1939 and \$198,860 for the year 1939-1940.⁶⁸

These idealists, however, were too optimistic. Tingfan as a previous military outpost had its unique biracial community inhabited by both Han and Miao tribes. Coupled with its extreme underdeveloped economy and society, Tingfan was “a certain type of locality in the Southwestern provinces” but not a representative experimental station for rural reconstruction programs in China as a whole.⁶⁹

Besides, located in an isolated prefecture in southwest China, the council could not establish effective communication with cooperating institutions. As the fighting between Chinese and Japanese armies penetrated deeply into the southwestern interior of China, the transportation problem became extremely critical. As Rockefeller representative, Dr. M. C. Balfour described in his letter, he saw hundreds of trucks immobilized along the lifeline of the Free China as known as the Haiphong-Nanning-Kweiyang Road. Tingfan was on this paralyzed traffic line.⁷⁰ Because of the military demands and local Chinese currency inflation, the gas price skyrocketed to about \$1.00 per gallon in the southwest of China which disastrously increased the cost of car travel two or three times that of air fares.⁷¹ Due the great difficulty to maintain contact with those cooperative institutions scattered in different localities of western China, the Council failed its function of leadership in rural reconstruction. Within the five departments of the Institute, there were no full-

⁶⁸ China Program, April 1940, Page 175, Folder 469, Box 22, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁶⁹ Minutes of Conversation by members of the Executive Committee on the Reorganization of the National Council for Rural Reconstruction, Feb. 1940, Folder 2, Rural Reconstruction, 1936-1939, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁷⁰ M. C. Balfour to S. M. Gunn, January 1940, Folder 2, Rural Reconstruction, 1936-1939, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁷¹ M. C. Balfour to S. M. Gunn, January 1940, Folder 2, Rural Reconstruction, 1936-1939, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

time senior heads of any department.⁷² The part-time heads made occasional visits to Tingfan. Therefore, the lack of local leadership led to the NCRR facing the most difficult problems in administration.⁷³ In addition, there were only sixteen graduate students for 1940-1941, and no one from cooperating institutions.⁷⁴ Without faculty and students support from cooperative institutions, Tingfan became the lonely island for the NCRR.

The constitution of the Institute also limited its effectiveness. Theoretically, the prefecture government should have functioned under the direction of the Institute. RF officials noted, however, that “no legal provision has ever been made for the Institute to exercise any authority over it.”⁷⁵ In reality, the Council and the Institute lacked adequate prefectural and provincial support during the turmoil caused by the war.

In 1941, the Council attempted to cooperate with the MEM to establish a new Institute for Rural Research and Training at the Baxian Prefecture in Sichuan Province, 80 kilometers from Chongqing, the secondary capital of China during the Sino-Japanese War.⁷⁶ Because the MEM had already raised a certain amount of funding, and was allocated land at Xiemachang, Beibei, the NCRR’s work was gradually incorporated into the MEM.⁷⁷ As the cooperating institutions promised to provide a reasonable share of funding, which was L.C. \$60,000 of the total budget of L.C \$260,000 for the year of 1940-1941, the RF agreed to meet the balance of the budget.⁷⁸ These

⁷² N.Y. letter No. 86, April 11, 1941, Page 2, Folder 2, Rural Reconstruction, 1936-1939, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁷³ Franklin L. Ho to J. B. Grant, Feb. 1939, Folder 1, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁷⁴ N.Y. letter No. 86, April 11, 1941, Page 2, Folder 2, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁷⁵ Memorandum on the Reorganization of the National Rural Service Training Institute, February 1940, P 1, Folder 149, Box 14, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁷⁶ Franklin L. Ho to M. C. Balfour, March 1940, Folder 2, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁷⁷ S. Y. Chu to M. C. Balfour, Nov. 1940, Folder 2, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁷⁸ M. C. Balfour to S. M. Gunn, January 1941, Folder 2, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

institutions' long-term habitual dependence on large sums of financial support, however, stimulated the RF to firmly and realistically reconsider the Council's finance. Seeing no hope for self-dependent rural reconstruction work during the endless war, the RF could do nothing but prepare to conclude its NCRR program in China. As Balfour said in his "face-saving" letter sent back to the RF, "I am neither disillusioned nor disappointed in China and our colleagues there, but have gotten to the stage of being a realist, or 'hard-boiled,' as the case may be."⁷⁹

One thing the RF should have learned from the case of the National Council for Rural Reconstruction was that despite all of its solemn promises to write and send the Foundation specific proposals and financial estimates, the projects proved to be a bottomless pit, demanding endless support. Since 1934 when the China Program was inaugurated, a total amount of \$1,885,560 had been appropriated for rural reconstruction work. In 1944, the RF terminated its rural reconstruction work before the civil war between the Nationalist Party (GMD) and Chinese Communist Party (CCP).

2.3 NCCRR's Significance to China, the RF, and the Developing World

As a nontraditional and experimental philanthropic program, the NCCRR brought together the leading professors from various disciplines in different universities into intimate contact with rural reconstruction activities. The program provided intellectuals with the necessary funding to conduct research and, even more importantly, prevented them from unemployment and turmoil during the war. As Gunn pointed out the most important contribution of the NCCRR's work was to provide personnel of high quality for social reconstruction and public administration as a whole

⁷⁹ M. C. Balfour to S. M. Gunn and T. B. Appleget, April 1941, Folder 2, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

in China.⁸⁰ Therefore, after the war, the majority of them did not lose the continuity of their research and became well-known Chinese scientists, which allowed them to continue making contributions to the country.

Witnessing the success and lessons of the NCCRR, there was a growing voice that urged the Nationalist government to set up a directing committee in the Executive Yuan to coordinate rural reconstruction work nationwide as soon as possible.⁸¹ The Rockefeller Foundation's sustained effort on rural reconstruction brought the Nationalist government's attention to rural development and international cooperation, including the cooperation between the Chinese Ministry of Agriculture and Forestry, and the International Harvester Company from 1945 to 1948, as well as the Joint China-United States Agricultural Mission in 1946. As a forerunner of Sino-U.S. transnational cooperation, the NCCRR set a model for later bilateral communication and cooperation. This is often considered as an original pattern for the post-World War II Sino-American Joint Commission on Rural Reconstruction, which had a distinct success in Taiwan.

Before the China Program, the RF had spent more than \$37,000,000 in China since 1913.⁸² It was the largest amount that had ever been spent in any country outside the United States. People inside and outside the RF argued that "is it the welfare of mankind best served by enlarging investment in China?"⁸³ However, the RF insisted aiding the NCCRR and other institutions involved in rural reconstruction. Although the Rockefeller Foundation eventually suspended the NCCRR in 1944, it continued sponsoring the Peking Union Medical College (PUMC) which was

⁸⁰ S. M. Gunn, Report on China Program, April 1938, Page 9, Folder 458, Policy General 1932-1945, Box 21, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁸¹ Mao Qijun 毛起鵠, "Xiangcun jianshe yundong zhi jiantao 乡村建设运动之检讨 [Review of the Rural Reconstruction Movement]," *Dongfang zazhi* 东方杂志, Vol. 33 No.13 (1936): 157- 166.

⁸² The report of Committee on Appraisal and Plan, December 1934, Page 107, Folder 469, Box 22, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁸³ The report of Committee on Appraisal and Plan, December 1934, Page 107, Folder 469, Box 22, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

its primary funding entity, and teaching and research in other universities until 1949. With the foundation of the People's Republic of China, the RF withdrew its aid programs from the country, and turned its concentration to other nations including Mexico, India, and other South American countries.

The RF's efforts on rural reconstruction in China also provides valuable lessons that followers learned or should have learned for their future work. First of all, within the agenda of the NCCRR, both representatives from the Rockefeller Foundation and professors from Chinese universities never addressed or dealt with the fundamental issues—the ownership of the land and the urgent need for modern agricultural technology. First, according to a landownership investigation conducted at Dingxian in 1937 which surveyed 14,617 rural farming families, less than 3 percent of farming families controlled one-fifth of the arable land in that prefecture.⁸⁴ This was the primary reason both land-holding farmers counting 70 percent total farmer population and tenants counting 5 percent of total farmer population lived in extreme poverty in Dingxian. As the majority, they lacked sufficient arable land to feed their families. Dingxian was just one from thousands of prefectures on the North China Plain. The rural reconstruction movement did not focus on land reform which can and will fundamentally motivate impoverished farmers. Instead, these urban intellectuals looked forward to reeducating those farmers to devote themselves to fieldwork.⁸⁵ “They were politically opposed to radical economic solutions,” as Thompson argued.⁸⁶ During the war, however, it was the farmer families in the countryside bearing the cruel burden of the

⁸⁴ Qian Jianju 千家驹 and Li Zixiang 李紫翔, *Zhongguo xiangcun jianshe pipan* 中国乡村建设批判 [Criticism of China's Rural Construction] (Shanghai: Xinzhi shudian 新知书店, 1937), 40.

⁸⁵ Yan Shudan 阎树柅, “Xiangcun jianshe de yijian gengen jianshe 乡村建设的一件根本建设 [A fundamental Construction for Rural Reconstruction],” *Xinbeichen* 新北辰 2, No. 1 (1936): 31.

⁸⁶ James Claude Thomson, *While China Faced West: American Reformers in Nationalist China, 1928-1937* (Cambridge Mass.: Harvard University Press, 1969).

recruitment of soldiers and the supply of resources with no return or compensation.⁸⁷ Under the circumstances, farmers without land naturally lost their fundamental interest in rural reconstruction. Second, although the social science approach, like the rural administration training or literacy campaign, as important for rural China, it proved too slow to show obvious effects at a time when the country's economy and farmers' livelihood were both at the fringe of collapse. The current work should have been focusing on the most immediate aspects of increasing agricultural production and farmers' incomes.⁸⁸ The adoption of modern agricultural science and technology was the most important and quickest factor to achieve this aim. The RF's rural philanthropy, however, failed to provide effective help on this aspect.

Secondly, the NCCRR was the victim of complicated circumstances far beyond the control of both Chinese universities and the Rockefeller Foundation. Different social and cultural forces complicated the NCCRR's approach. Some opponents claimed that the NCCRR's rural reconstruction work backed by U.S. dollars was a puppet of American Dollar Diplomacy that could not extend to the rest of rural China.⁸⁹ To them, the NCCRR rural philanthropic practitioners' prescription could not cure China of its fundamental problems, such as imperialist aggression or feudal exploitation.⁹⁰ The program pointed to the modest ways institutes conducted rural reform yet, these gradual reformers were not offered enough time to fully implement their plans. For the RF, as a private foundation, the basic principle of its implementation was limited objectives but not unlimited liability. The task of reviving China's rural economy was too heavy to bear.

⁸⁷ Zhang Jiwu 章辑五, "Zengyang congshi nongcun jianshe xiashu gongzuo 怎样从事农村建设下属工作 [How to be Engaged in Subordinate Work of Rural Reconstruction]," *Nongcun jianshe* 农村建设 1, No. 1 (1938): 22.

⁸⁸ Zhou Liang 周亮, "Lun meiyuan de yongtu 论美援的用途 [On the Use of US Aid]," Feb. 1947, P 50, Folder 2660, Box 1, Series 23, Second Historical Archives of China, Nanjing.

⁸⁹ Yang Dahua 杨大华, "Nongcun jianshe de jige wenti (weiwan) 农村建设的几个问题(未完) [Several Problems in Rural Reconstruction (unfinished)]," *Huabei hezuo* 华北合作 4, No. 10 (1938): 7-9.

⁹⁰ Ling Chen 凌琛, "Zhongguo xiangcun jianshe pipan 中国乡村建设批判 [Criticism of China's Rural Construction]," *Zhongguo nongcun* 中国农村 2, No. 6 (1936): 95.

Therefore, even the RF had to admit that continuing the China Program and rural reconstruction work was “pretty largely a gesture under the present circumstances.”⁹¹

Besides, China was not politically and socially ready for this new attempt. With the Nationalist government, the Chinese Communist Party, and different regional military regimes, China was far from a united nation. Even the Nationalist Party (GMD) was split into at least three political wings with distinct differences. The struggle for power was intense inside of the GMD, not to mention the long-term conflict between the GMD and CCP. The ultimate fate of CCP, either as a defeated enemy, regional power, or eventual national leader, was impossible to foretell. The only option for the RF rested on the cooperation with the Nationalist government. The RF, missionary universities, and the Nationalist government, however, had distinctly different aims and interests. The private institutions promoted rural reconstruction experiments to set a representative pattern for the Nationalist government to extend to the whole country and standardize rural administration and education. When they had disagreements, no side could convince the others, which usually ended further progress on fundamental changes of rural China. The real power remained in the hands of warlords and bureaucrats. Unfortunately, Gunn realized later that “the Chiang Kai Shek group, with its New Life Movement, appears to me to be tending towards a Fascistic state with the accompanying regimentation of the population and a good deal of lip service for National Reconstruction.”⁹² The fact was that no political group at that moment really cared about the RF’s rural reconstruction.

Additionally, the university-community philanthropic concept did not work in rural China. In the early twentieth century, most western people who worked for the RF’s different aid programs

⁹¹ Joseph H. Willits to J. M. Barker, April 1944, Page 2, Folder 458, Policy General 1932-1945, Box 21, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁹² S. M. Gunn to Mr. Fosdick, February 1937, Page 3, Folder 469, Box 22, Series 1, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

stayed mainly in the offices of urban cities including Beijing and Shanghai, as well as overseas in New York City where they attempted to assist academic communities in reforming the political institutions in rural China.⁹³ Therefore, they were almost exclusively in contact with “westernized” Chinese intellectuals and the upper class with whom they thought they could trust and cooperate. Then, it turned out during a wartime emergency, despite their idealism and devotion to the rural reconstruction work, all these westernized middlemen could offer were “mostly words, words, words.”⁹⁴ For the other side, the RF representatives may have resided in China for years, but they never realized that despite the “westernized” Chinese elite surrounding them, “there exist the ‘Chinese’ Chinese who make up the backbone, power, and authority of the large part of China, including the entire rural regions where 85 percent of the people live.”⁹⁵ These “Chinese” Chinese were landlords, gentries, and usurers in the country who saw no advantage in the technological development, transparent administration, enlightenment campaigns, and agricultural mechanization. A debt-free rural population was a natural enemy to their golden bowl—the sharecropping tenancy system. The RF’s rural program had no choice but to cooperate with this rural ruling power and sought to graft western knowledge on this machine. Eventually it ended in failure.

With the outbreak and spread of World War II, the majority of the Rockefeller Foundation’s philanthropic programs in China and Europe were discontinued or terminated, due to the intense international situation. Therefore, the foundations turned to other developing countries to conduct their philanthropic work. From the 1940s to the 1960s, the Rockefeller Foundation and the Ford

⁹³ Editorial, “Nongcun xiaoxi 农村消息 [Rural News],” *Tianjia Banyuebao* 田家半月报 4, No. 3 (1937): 2.

⁹⁴ M. C. Balfour to S. M. Gunn, January 1940, Folder 2, Rural Reconstruction, 1936-1939, Box 1, Series 601, Rockefeller Foundation Archives, Rockefeller Archival Center, NY.

⁹⁵ S. M. Gunn to Mr. Fosdick, February 1937, Page 2, Folder 469, Box 22, Series 1, Rockefeller Foundation Archives, RAC, NY.

Foundation sponsored a series of joint crop breeding programs, known as the “Green Revolution” in Mexico, the Philippines, India, and later, parts of Africa. During this time, however, they took the lessons that they learned from their Chinese experiences and began cooperating with the native government instead of academics at the universities.

The RF adopted a concentrated approach to rely on high-yielding agricultural technology, instead of social science approaches to public policy. The RF, therefore, attempted to increase productivity to meet food sufficiency, and abandoned what it had come to believe was an unrealistic aim of comprehensive rural rebuilding in China. Although under various criticism, no one could deny the Green Revolution’s huge success, and contribution in agricultural production and food security, much of this continued development can be traced back to the lessons in China during these years. As for rural China, both the Nationalist Party in Taiwan and the Communist Party in mainland China eliminated the landlord class on behalf of the vast farmers’ interests in the 1950s. In the end, they accomplished the Rockefeller Foundation’s unfinished business.

CHAPTER 3. NEW IMPLEMENTS FROM THE INTERNATIONAL HARVESTER COMPANY, 1945 – 1948

After the creation of the International Harvester Company (IHC) in 1902, the company and its principal predecessor the McCormick Company were ambitious to extend their agricultural machinery worldwide. Since 1905, Russia became the IHC's most important foreign market due to tariff exemption and favorable agricultural resources.¹ The IHC also desired to extend its implement empire to China in the 1910s. Since the IHC had an office at Vladivostok, the far east area of Russia, company officials set their eyes on the open land of northwestern China, Manchuria. As Charles H. Haney, the supervisor of foreign sales of the IHC, stated, Manchuria was "probably the most progressive and probably the most likely to develop trade in our line than any of the other provinces in China."² If IHC implements sold in Manchuria ever need repairs or maintenance, local Chinese smiths could duplicate broken parts while replacement castings could be made in the IHC's warehouse at Vladivostok and Omsk.³ After the Qing Dynasty overthrow by the 1911 Revolution, however, China was dominated by military warlords like Yuan Shikai, while a regional warlord, Zhang Zuolin, controlled Manchuria. Military operation and political instability led to long economic depression and social chaos. From 1912 to 1913, the IHC was only able to send approximately 100 walking plows and a few mowing machines, disk harrows, drills, and rakes.⁴ Along with the advent of the World War I in 1914, the IHC suspended its plans for Manchuria. After the World War I, however, the IHC continued its business in Manchuria. In

¹ Fred V. Carstensen and Richard Hume Werking, "International Harvester in Russia: The Washington-St. Petersburg Connection?" *Business History Review* 57, No. 3 (1983): 354.

² Couchman to International Harvester Company, Vladivostok, April 5, 1909, Folder 786, International Harvester Archives, Wisconsin Historical Society, Madison, WI.

³ Randall E. Stross, *The Stubborn Earth: American Agriculturalists on Chinese Soil, 1898-1937* (Berkeley: University of California Press, 1986), 56.

⁴ Randall E. Stross, *The Stubborn Earth: American Agriculturalists on Chinese Soil, 1898-1937* (Berkeley: University of California Press, 1986), 59.

August 1924, because IHC implements and machinery proved effective for land reclamation in Manchuria, local Chinese farmers invited the IHC to send their Russian employees to Manchuria to conduct demonstrations.⁵ The IHC sent six of its Russian employees in the Far East to Manchuria in April 1925.⁶ Then, in 1930, they were able to send two of their Russian employees to Manchuria again to help assemble and adjust the new agricultural machinery imported from the U.S.⁷

Not only did the IHC continue to sell its implements and machinery in Manchuria, but also its products were sold into other regions of China during the 1920s and 1930s. In 1924, the Dayou Farming and Animal Husbandry Company at Taolin, Chahar Province, bought five cultivators from the IHC. The cultivators' motors turned up 15 to 30 horsepower, which could cultivate four hectares per day.⁸ In 1929, in northwestern China, the Shanxi Provincial Agricultural Experiment Station also acquired trucks, disk harrows, drill seeders, and combine harvesters, from the IHC.⁹ In the Yangtze River Region, from 1924 to 1925, the Anderson Meyer & Company imported the IHC's 3-horsepower water pumps to sell to farmers in Jiangsu and Zhejiang provinces.¹⁰ The IHC also appointed the Oriental Motors as its local sales agent to promote its trucks. Because of their

⁵ Zhong Shiming 钟世铭, "Lin gexian zhishi: Baozheng meishang wanguo nongju gongsi e xingyuan youli 令各县知事: 保护美商万国农具公司俄行员游历 [To Each County Magistrate: Protect the travel of Russian Employees of the United States International Harvester Company]," *Fengtian Gongbao* 奉天公报 No. 4451 (1924): 2.

⁶ Gao Qinghe 高清和, "Lin gexian zhishi: Baozheng meishang wanguo nongju gongsi e jishi youli 令各县知事: 保护美商万国农具公司俄机师游历 [To Each County Magistrate: Protect the travel of Russian Employees of the United States International Harvester Company]," *Fengtian Gongbao* 奉天公报 No. 4690 (1925): 1-4.

⁷ Wang Ruihuan 王镜寰, "Waijiaobu zhu liaoning tepaiyuan banshichu xunlin: di 205 hao 外交部驻辽宁特派员办事处训令: 第二〇五号 [Order of the Special Commissioner's Office of the Ministry Of Foreign Affairs in Liaoning: No. 205]," *Liaoningsheng Zhengfu Gongbao* 辽宁省政府公报 No. 99 (1931): 6.

⁸ Unknown, "Taolinxian xibei defang zhi kenzhi gongsi 陶林县西北地方之垦殖公司 [Tao Lin County Northwest Area Reclamation Company]," *Zhongwai Jingji Zhoukan* 中外经济周刊 No. 156 (April 1926): 48.

⁹ Wang Hongyi 王红谊, Zhangkai 章楷, and Wang Siming 王思明, *Zhongguo jindai nongye gaijin shilue* 中国近代农业改进史略 [History of Agricultural Improvement in Modern China] (Beijing: China Agriculture Science Technology Press, 2001), 87.

¹⁰ Zhouxin 周昕, *Zhongguo nongju fazhanshi* 中国农具发展史 [History of Development of Farming Tools in China] (Jinan: Shandong Science and Technology Press, 2005), 834.

long durability and economic qualities comparing with other brands, from 1925 to 1935, hundreds of International trucks were placed in service in China.¹¹ Later, the IHC officially hired the Anderson Meyer & Company as its sales agency at Shanghai. On a greater platform at Shanghai, the IHC was able to sell various products, such as diesel engines, grain drills, cotton pickers, plows, manure spreaders, harvesters, irrigation machines, and threshers. According to statistics, among all the foreign countries, the U.S. exported most of agricultural implements.¹² The IHC without doubt was one of the most important agricultural implement exporters. Therefore, the IHC had a potential broad market in China.

Even if IHC's mechanized implements were imported to China, however, it does not mean machinery from the U.S. had extended across China. According to the statistics from the Department of Finance of the Manchurian government, for example, the total amount of imported agricultural implements and tools reached U.S. \$52,086 in 1934 while there were U.S. \$37,254 of imports were from Japan.¹³ These imports from Japan were just ordinary implements including plows, hoes, rakes, and forks. Therefore, even until 1936, only a few Manchurian farmers used tractors or binders. According to the statistics from the Harbin branch of International Harvester Export Company, there were about 100 binders and 250 reapers in use in north Manchuria while the numbers on south Manchuria farms were even smaller.¹⁴ Due to long-term chaos caused by war, even though farmers were eager to learn about almost any new machinery imported from the U.S., they had very low purchasing power and could not afford them without external help.

¹¹ "International Trucks Widely Used in China," *The China Press* (1925-1938) (Jan 20, 1935): 4.

¹² Beijing Agricultural Engineering University 北京农业大学, "Zhongguo nongye jixiehua zhongyao wenxian ziliao huibian 中国农业机械化重要文献资料汇编 [Compilation of Important Literature on Agricultural Mechanization In China]," (Beijing: Beijing Agricultural University, 1988), 1337.

¹³ Mechanized Agricultural Plans in Manchuria, June 1936, Page 7, Folder China-Mechanization 1936-1941, Box 54, Entry 5, Record Group 166, Narrative Reports (1920-1941), National Archives II, College Park, MD.

¹⁴ Mechanized Agricultural Plans in Manchuria, June 1936, Page 6, Folder China-Mechanization 1936-1941, Box 54, Entry 5, Record Group 166, Narrative Reports (1920-1941), National Archives II, College Park, MD.

Common farmers in Manchuria did all the farming, including cultivating, planting, and threshing, by hand or with the aid of animal power. Considering Manchuria was one of the most industrialized areas in China during the early Republic due to Japanese colonial and semi-colonial ruling, the rest of China probably had a similar or even worse situation.

American agricultural engineering companies, represented by the IHC, were confident that, when the political and social situation stabilized, they were in a right position to ensure success because of the excellent quality of their products.¹⁵ Things are not always as they seem. In addition to the farmers' scarcity of funds, these machinery companies also faced other challenges in China. The specific conditions of rural China were not very helpful, including small size of land holdings, scarcity of Chinese familiar with internal combustion engines, cheap Chinese labor, and a general lack of knowledge of modern agricultural engineering.¹⁶ As early as in 1920s, Zhang Hongjun, a professor of sociology at Yenching University and the council member of the North China Council for Rural Reconstruction (NCCRR), bought various American agricultural implements for field experiments on his ranch at Tongliao of the Inner Mongolia Autonomous Region.¹⁷ Zhang claimed the results proved that "seeders and cultivators were absolutely not suitable for farming in the northeastern China."¹⁸ This kind of suspicion became more comprehensive and systematic until 1930s. Qu Zhaowen, for example, summarized that China could not adopt large-scale agricultural

¹⁵ Paul M. Dutko, "Factors in North Manchuria Enlarging Field for American Tractors and Farm Machinery, January 1929," Folder Manchuria, 1928- , Mechanization, Box 125, Entry 5, Record Group 166, Narrative Reports (1904-1939), CHINA (Manchuria), National Archives II, College Park, MD.

¹⁶ Paul M. Dutko, "Factors in North Manchuria Enlarging Field for American Tractors and Farm Machinery, January 1929," Folder Manchuria, 1928- , Mechanization, Box 125, Entry 5, Record Group 166, Narrative Reports (1904-1939), CHINA (Manchuria), National Archives II, College Park, MD.

¹⁷ Shen Zhizhong 沈志忠, "Jindai zhongmei nongjiju shiye jiaoliu yu hezuo tanxi (1898-1948nian) 近代中美农机具事业交流与合作探析(1898-1948年) [An Analysis on the Exchange and Cooperation Between China and the United States in Agricultural Machineries and Implements in Modern Times (1888-1948)]," *Journal of Nanjing Agricultural University (Social Sciences Edition)* 10, No.4 (Dec. 2010): 128-134.

¹⁸ Zhouxin 周昕, *Zhongguo nongju fazhanshi* 中国农具发展史 [History of Development of Farming Tools in China] (Jinan: Shandong Science and Technology Press, 2005), 836.

mechanization because the existing agricultural areas in China were not suitable for mechanization.¹⁹ Moreover, China was never a society that lacked labor. Mechanization would only aggravate unemployment and other related social problems.²⁰ Apparently, most of Chinese intellectuals and agriculturalists like Qu Zhaowen were not ready to accept agricultural mechanization.

Harold Fowler McCormick, Chairman of the Board of Directors of the IHC, however, did not lose his interest in China. As John D. Rockefeller's son-in-law and the third inaugural trustee of the Rockefeller Foundation (RF), McCormick witnessed the RF's successful experience in China, including numerous philanthropic programs, economic assistance, and technological cooperation, including the Plant Improvement Project sponsored by the Rockefeller family's International Education Board and the North China Council for Rural Reconstruction funded directly by the RF. The IHC also directly funded \$25,000 to James Yen's Mass Education Movement, which was the prototype of the NCCRR in the 1920s.²¹ McCormick and the IHC, therefore, had a clear interest in rural China. They also knew, however, that during an era of constant warfare in China, there was not much a foreign company could do about it.

The turning point came when the United Nations Conference on Food and Agriculture was held at Hot Springs, Virginia, from May 18 to June 3 of 1943. Representatives of forty-four nations participated in this conference including China. The Chinese delegation led by Guo Bingwen

¹⁹ Qu Zhaowen 区昭文, "You meiguo di nongye jixiehua taolun dao woguo xianshi nengfou nongye jixiehua (futubiao) 由美国底农业机械化讨论到我国现时能否农业机械化(附图表) [Discussion on Agricultural Mechanization in America to Whether China Can Mechanize Agriculture at Present (Attached Chart)]," *Xiandai shengchan zazhi* 现代生产杂志 1, No. 7 (1935): 54-65.

²⁰ Qu Zhaowen 区昭文, "You meiguo di nongye jixiehua taolun dao woguo xianshi nengfou nongye jixiehua (futubiao) 由美国底农业机械化讨论到我国现时能否农业机械化(附图表) [Discussion on Agricultural Mechanization in America to Whether China Can Mechanize Agriculture at Present (Attached Chart)]," *Xiandai shengchan zazhi* 现代生产杂志 1, No. 7 (1935): 54-65.

²¹ Committee on Agricultural Engineering for China, 1947, Folder Extension, 1946-1949, Box 608, Entry 5, Record Group 166, Foreign Agricultural Service Narrative Reports (1946-1949), National Archives II, College Park, MD.

included two important agriculturalists: T. H. Shen (Shen Zonghan), the chief of the National Agricultural Research Bureau (NARB) and P. W. Tsou (Zou Bingwen), the president of the Agricultural Association of China, both of whom had studied at Cornell University.²² During the conference, the Chinese delegation held a press conference on May 21, 1943. At this press conference, Guo Bingwen first stated that China was ready to cooperate with other countries to increase agricultural production.²³ Then, Zou Bingwen further revealed that “China need, and also welcome, agricultural technological assistance and cooperation with other developed countries.”²⁴ Shen Zonghan finally pointed out that what agriculture in China needed most were compatible modern agricultural implements and machines.²⁵ This was the first time that the Nationalist government emphasized the importance of international cooperation on agricultural engineering. After the conference, Zou Bingwen was appointed as the resident representative of the Chinese Minister of Agriculture and Forestry in the United States. Additionally, on October 6, 1945, Zou Bingwen was elected as a member of the Executive Committee of the United Nations Food and Agriculture Organization (FAO) at the inaugurating conference of the FAO at Quebec, Canada.²⁶

²² Editorial, “Nonglin xiaoxi: Guonei: Zhongyang paiyuan fumei chuxi liangshi huiyi 农林消息: 国内: 中央派员赴美出席粮食会议 [Agriculture and Forestry News: Home: the Central Government Sends Personnel to Attend Food Conference in the United States],” *Nongye Yuanxun* 农业院讯 4, No. 7 (1943): 7.

²³ Editorial, “Wodaibiao juxing zhaodai jizhehui: xiwang dahui neng lingdao zhanhou shijie congshi zengjia shengchan yu gaishan xiaofei gongzuo 我代表举行招待记者会: 希望大会能领导战后世界从事增加生产与改善消费工作 [Our Representatives held a press conference: We Hope that the Conference can Lead the Post-War World in Increasing Production and Improving Consumption],” *Liangzheng Yuekan* 粮政月刊 1, No. 2-3 (1943): 57-58.

²⁴ Editorial, “Wodaibiao juxing zhaodai jizhehui: xiwang dahui neng lingdao zhanhou shijie congshi zengjia shengchan yu gaishan xiaofei gongzuo 我代表举行招待记者会: 希望大会能领导战后世界从事增加生产与改善消费工作 [Our Representatives held a press conference: We Hope that the Conference can Lead the Post-War World in Increasing Production and Improving Consumption],” *Liangzheng Yuekan* 粮政月刊 1, No. 2-3 (1943): 57-58.

²⁵ Editorial, “Wodaibiao juxing zhaodai jizhehui: xiwang dahui neng lingdao zhanhou shijie congshi zengjia shengchan yu gaishan xiaofei gongzuo 我代表举行招待记者会: 希望大会能领导战后世界从事增加生产与改善消费工作 [Our Representatives held a press conference: We Hope that the Conference can Lead the Post-War World in Increasing Production and Improving Consumption],” *Liangzheng Yuekan* 粮政月刊 1, No. 2-3 (1943): 57-58.

²⁶ Editorial, “Lianheguo liangshi nongye jigou huiyi: wo shouxi daibiao zou bingwen shi dangxuan zhiwei 联合国粮食农业机构会议: 我首席代表邹秉文氏当选执委 [Meeting of the Food and Agriculture Organization of the United Nations: China's Chief Representative Zou Bingwen was Elected Executive Committee Member],” *Zhonghua Nongxuehui Tongxun* 中华农学会通讯 No. 54-55 (1945): 16.

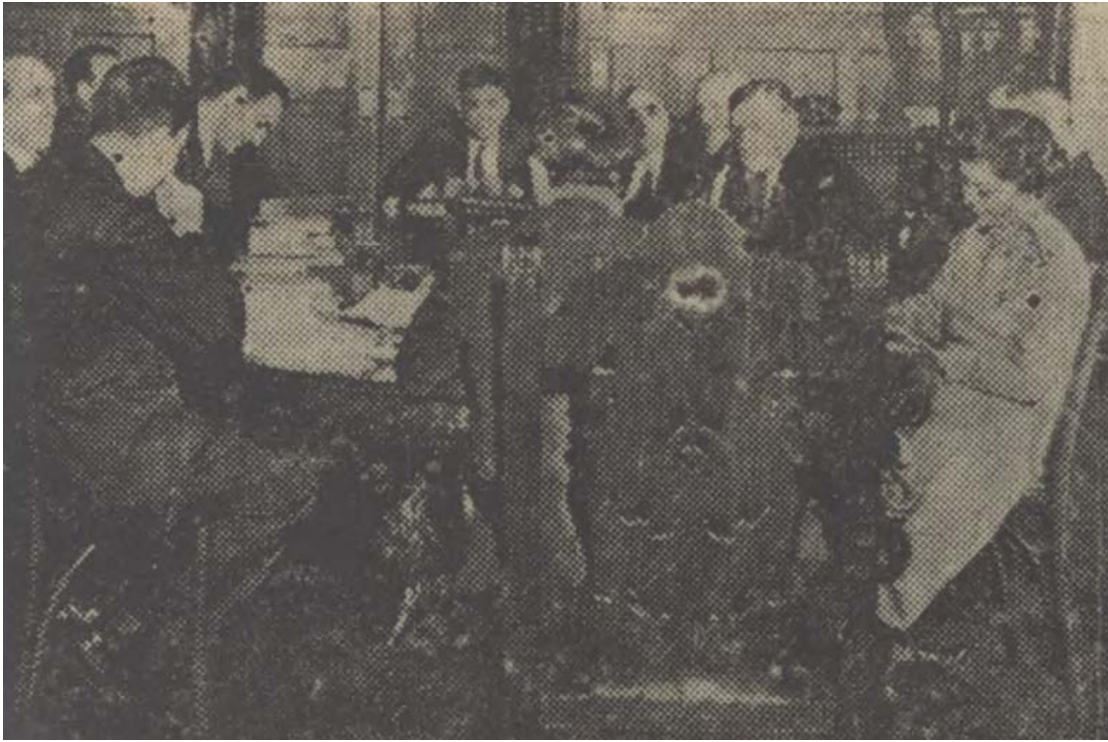


Figure 9. Zou Bingwen (middle seat) was a member of the Executive Committee of the United Nations Food and Agriculture Organization (FAO) in 1944²⁷

During Zou's stay in the U.S., he witnessed the important contribution that mechanization made to the large farm agricultural industry. As Professor J. Brownlee Davidson, the founder of American Society of Agricultural Engineers and later the chair of the Committee on Agricultural Engineering in China, observed "the increase in the use of power on the American farm, and the resulting progress in agriculture, has been the principal influence in placing America in the lead

²⁷ Editorial, "Lianheguo liangshi nongye linshi weiyuanhui zhixing huiyi zaimei juxing, zhongzuo zhe wei benhui fuzhuxi woguo chuxi daibiao zou bingwen 联合国粮食农业临时委员会执行会议在美举行, 中坐者为本会副主席我国出席代表邹秉文 [The Executive Meeting of the UN Interim Committee on Food and Agriculture was held in the United States, Vice President of the FAO and China's Representative to the Meeting, Zou Bingwen, sit in the middle]," *Xinzhonghua* 新中华 2, No. 6 (1944); 7.

among nations in the production of food and fiber.”²⁸ In June 1944, Zou Bingwen attended the annual meeting of American Society of Agricultural Engineers at Milwaukee, Wisconsin. In his famous speech titled “China Must Have Agricultural Engineering,” Zou called for technological assistance from American agricultural engineers and entrepreneurs to help China rebuild its agricultural industry and depressed countryside.²⁹ Zou proposed a concrete plan for agricultural mechanization in China which required three tasks with top priority. First, American experts help build a department of agricultural engineering at the National Agricultural Research Bureau. Second, invite at least one American expert each to join the departments of agricultural engineering at the University of Nanking and National Central University; Third, send at least thirty Chinese students to the U.S. in three years to get professional training on agricultural engineering in the universities, factories, and farms.³⁰ Zou’s plan was warmly welcomed by the society members.

Then, in early 1945, Zou proposed the Agricultural Engineering Program for China to the International Harvester Company. As the chairman of the Board of Directors of the IHC, Fowler McCormick agreed to sponsor this program with some modification.³¹ Since Zou was the representative of the Chinese Minister of Agriculture and Forestry, later that year, the Chinese Nationalist government quickly approved the Plan for Promoting Agricultural Engineering Research and Education by the International Harvester Company in Cooperation with the Chinese

²⁸ Committee on Agricultural Engineering for China, 1947, Folder Extension, 1946-1949, Box 608, Entry 5, Record Group 166, Foreign Agricultural Service Narrative Reports (1946-1949), National Archives II, College Park, MD.

²⁹ Editorial, “Huiwu shiling: zoulshizhang yu liuyuejian dang meiguo nongye gongchengshi xuehui zai weisikangxin zhaokai nianhui zhishi ceng chuxi gaihui yanshuo 会务拾零:邹理事长于六月间当美国农业工程师学会在威斯康新召开年会之时,曾出席该会演说[President Zou spoke at the Annual Meeting of the American Society of Agricultural Engineers in Wisconsin in June],” *Zhonghua Nongxuehui Tongxun* 中华农学会通讯 No. 43 (1944): 6-7.

³⁰ Tao Dinglai, “Brief history of agricultural engineering development in China: In memory of Mr. Zou Bingwen,” *International Journal of Agricultural and Biological Engineering* Vol. 1 No.1 (August 2008): 8-11.

³¹ The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China*. (Chicago: International Harvester Company, 1949), vi.

government.³² This initiative supported by the International Harvester Company was intended to help China quickly realize agricultural mechanization. The plan included a Harvester Fellowships Program to sponsor Chinese students to learn agricultural engineering in the U.S. and an American committee on agricultural engineering to do field investigations, demonstrations, and teaching in China.³³

3.1 International Harvester Fellowship Program

For the fellowship program, the Chinese Ministry of Education offered four open enrollment exams at Chongqing, Kunming, Chengdu, and Xi'an at the same time to determine the awardees. Through strict exams, the Nationalist government selected ten graduates majoring in agriculture and ten graduates majoring in engineering all of whom had two to three years of practical work experience.³⁴ In early 1945, the Ministry of Education announced the admission list. The ten admitted students majoring in agriculture were Xu Mingguang, Wu Qiya, Wu Xianggan, Li Hanru, Cai Chuanhan, Yu Youtai, Cui Yinan, Zhang Jigao, He Xianzhang, and Fang Zhengsan; the ten admitted students majoring in engineering were Tao Dinglai, Wang Wanjun, Shui Xinyuan, Zeng

³² A Plan for Promoting Agricultural Engineering Research and Education by the International Harvester Company in Cooperation with the Chinese Government, December 1945, Wanguo nongju gongsi nipai zhuanjia 万国农具公司拟派专家[IHC Plans to send experts to China], Nonglinbu 农林部 [CMAF], 20-16-006-24, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

³³ A Plan for Promoting Agricultural Engineering Research and Education by the International Harvester Company in Cooperation with the Chinese Government, December 1945, Wanguo nongju gongsi nipai zhuanjia 万国农具公司拟派专家[IHC Plans to send experts to China], Nonglinbu 农林部, 20-16-006-24, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

³⁴ An Initial Plan for Promoting Agricultural Engineering Research and Education by the Chinese Government in cooperation with the International Harvester Company, Unknown, Meiguo nongju gongsi fudao woguo nongju yanjiu ji xunlian 美国农具公司辅导我国农具研究及训练[IHC Provides us Research and Training for Agricultural Implements], Nonglinbu 农林部, 20-16-045-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

Dechao, Wu Kezhou, Gao Liangrun, Zhang Dejun, Li Kezuo, Chen Shengzu, and Xu Peicong.³⁵

In total twenty students were sent to U.S. to study agricultural engineering. Those engineering major graduates were sent to the University of Minnesota while those from agricultural universities were admitted into course work and field training at Iowa State College (later Iowa State University).³⁶ The International Harvester Company provided them with full scholarships including tuition, living expenses, books, equipment, and travel expenses for their internship.

In June of 1945, the first group of ten graduates arrived at Norfolk, Virginia, to go to Washington D. C. and meet with Zou first.³⁷ Zou arranged these students' activities in the very first few days of their stay in the U.S., including visiting the United States Department of Agriculture (USDA), the Beltsville Agricultural Research Center (BARC), and meeting with Arthur W. Turner, the assistant chief for the Bureau of Plant Industry, Soils, and Agricultural Engineering.³⁸ Then, these ten winners of International Fellowship were warmly greeted in Chicago by their sponsors, Fowler McCormick and J. L. McCaffrey, the president of the IHC.³⁹

³⁵ Meiguo wanguo nongju gongsi jiangxuejin jianlibiao 美国万国农具公司奖学金学生简历表[Resume of the IHC Fellows], Unknown, Meiguo wanguo nongju gongsi 34 niandu jiangxuejin fumei ren yuan 美国万国农具公司 34 年度奖学金赴美人员 [The IHC Fellows in 1945], Nonglinbu 农林部, 20-21-074-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

³⁶ An Initial Plan for Promoting Agricultural Engineering Research and Education by the Chinese Government in cooperation with the International Harvester Company, Unknown, Meiguo nongju gongsi fudao woguo nongju yanjiu ji xunlian 美国农具公司辅导我国农具研究及训练 [IHC Provides us Research and Training for Agricultural Implements], Nonglinbu 农林部, 20-16-045-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

³⁷ Yu Youtai 余友泰 and others, "Jinian woguo nongye gongcheng shiye de xiandaozhe- zou bingwen xiansheng 纪念我国农业工程事业的先导者-邹秉文先生[In Memory of Mr. Zou Bingwen, the Forerunner of Agricultural Engineering in China],"in Hua Shu 华恕, *Zou Bingwen Jinianji* 邹秉文纪念集 [Zou Bingwen Memorial Collection] (Beijing: China Agriculture Press, 1993), 219-224.

³⁸ Yu Youtai 余友泰 and others, "Jinian woguo nongye gongcheng shiye de xiandaozhe- zou bingwen xiansheng 纪念我国农业工程事业的先导者-邹秉文先生[In Memory of Mr. Zou Bingwen, the Forerunner of Agricultural Engineering in China],"in Hua Shu 华恕, *Zou Bingwen Jinianji* 邹秉文纪念集 [Zou Bingwen Memorial Collection] (Beijing: China Agriculture Press, 1993), 219-224.

³⁹ Committee on Agricultural Engineering for China, 1947, Folder Extension, 1946-1949, Box 608, Entry 5, Record Group 166, Foreign Agricultural Service Narrative Reports (1946-1949), National Archives II, College Park, MD.



Figure 10. The First Ten Chinese International Fellowship Winners with Fowler McCormick (standing, first from right) and J. L. McCaffrey (standing, fourth from left), and G. C. Hoyt (standing, second from right), the vice president in charge of Foreign Operations⁴⁰

The second group of 10 Chinese students arrived in the U.S. in August of 1945 as planned. For their course work, these Chinese students were directed to take undergraduate courses on agricultural engineering first in these two institutions. Then, they would continue their course work to meet the requirements of getting a master's degree of science in their respective universities. After two years' course work, they acquired a general knowledge base on both applied agricultural science and engineering technology.

After receiving their degrees, they received several weeks of professional internships at local farms and agricultural companies in the U.S. These Chinese students were assigned to practice fieldwork for eight to thirteen weeks at both state and corporate farms, including Iowa State Farm, University of Minnesota Farm, Seabrook Farms of New Jersey, and International Harvester Farm of Illinois, where they could operate tractors and field machines.⁴¹ These students were also

⁴⁰ J.B. Davidson photographs and other materials, trip to China, 1947-1949, Page 17, Box 39, RS 9/7/11, Iowa State University Library Special Collections and University Archives, Ames, Iowa.

⁴¹ The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China*. (Chicago: International Harvester Company, 1949), 144-150.

distributed to various state and federal research institutions and numerous agricultural companies across the country including Tennessee Valley Authority; State Forestry Station of Minnesota, USDA Research Laboratory at Peoria, Illinois; U.S. Cotton Ginning Laboratory at Stoneville, Mississippi; Soil Conservation Department at Washington D.C; U.S. Bureau of Reclamation at Denver; Worthington Pump Company at Harrison, New Jersey; Minneapolis-Moline Company; Ford Motor Company at Detroit; Oliver Farm Equipment Company at South Bend, Indiana; Caterpillar Tractor Company at Peoria, Illinois; Union Fork and Hoe Company at Columbus, Ohio; Moss Well Drilling Company at Los Angeles; Advance Pump Company at Berkeley, California; Adel Manufacturing Company at Hollydale, California; California Cotton Oil Company at Fresno; and many International Harvester dealers nationwide.⁴² Each student was able to visit five to six states in their practical training year to make on-the-spot investigations on agricultural engineering research, education, extension, and business.⁴³

In 1948, at the last stage of their training, the IHC rented an 80-acre farm at Stockton, California, to provide a 10-week group training program for these students. In this final field training, tractors, plows, cultivators, feed mills; manure spreaders, harvesters, and various equipment were provided by the IHC for students' daily practice in operation, adjustment, and service.⁴⁴ These students immersed themselves in learning and practicing the latest agricultural technology and machineries in the U.S. Both their professional scientific knowledge and practical skills on agricultural engineering were comprehensively improved. During their stay in the U.S.,

⁴² The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China*. (Chicago: International Harvester Company, 1949), 144-150.

⁴³ Wang Xixian 王希贤, "Mianhuai nongjie xianxian yizeng houxue zhongren-wei jinian zou bingwen dansheng yibai zhounian erzuo 缅怀农界先贤益增后学重任——为纪念邹秉文诞生一百周年而作[Remembering the Agricultural Forerunner: Commemorate the Centenary of the Birth of Zou Bingwen]," in Hua Shu 华恕, *Zou Bingwen Jinianji* 邹秉文纪念集 [Zou Bingwen Memorial Collection] (Beijing: China Agriculture Press, 1993), 236-240.

⁴⁴ The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China*. (Chicago: International Harvester Company, 1949), 150-151.

the IHC provided each student with a living allowance of U.S. \$150 per month, book expense U.S. \$100, and travel expense for practical training year U.S. \$250.⁴⁵ Considering students rent was around U.S. \$5 per week and food expense was about U.S. \$3 per day, this means the IHC's fellowship covered almost all the reasonable expenses for these Chinese students during their stay in the U.S.⁴⁶ The IHC's generous support freed students from financial difficulties and logistic concerns to devote themselves to learning and training in the U.S.

After the final training, seventeen students headed for China from San Francisco on May 27, 1948, while He Xianzhang, Zhang Jigao, Xu Peicong did not return as planned.⁴⁷ He Xianzhang's wife was sick so he stayed to take care of her. Zhang Jigao was in process of applying for a patent for his two-row tractor in the U.S. Xu Peicong who withdrew from the program chose to stay in the U.S. In June 1948, the seventeen students arrived Shanghai. They were invited to visit the National Agricultural Research Bureau (NARB) at Nanking from June 28th to July 2nd. At this welcoming conference, these International Harvester fellows joined many academic activities, including meeting with Zou Bingwen and Shen Zonghan; meeting with the Committee on Agricultural Engineering for China; and paying visits to the Agricultural Engineering Laboratory at the NARB, the Central Training Corps Experiment Farm, the Nanking Ministry Shop of the National Agricultural Engineering Corporation (NAEC), the College of Agriculture at the

⁴⁵ An Initial Plan for Promoting Agricultural Engineering Research and Education by the Chinese Government in cooperation with the International Harvester Company, Unknown, Wanguo nongju gongsi nipai zhuanjia 万国农具公司拟派专家[IHC Plans to send experts to China], Nonglinbu 农林部, 20-16-006-24, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁴⁶ Wang Xixian 王希贤, "Mianhuai nongjie xianxian yizeng houxue zhongren-wei jinian zou bingwen dansheng yibai zhounian erzuo 缅怀农界先贤益增后学重任——为纪念邹秉文诞生一百周年而作[Remembering the Agricultural Forerunner: Commemorate the Centenary of the Birth of Zou Bingwen]," in Hua Shu 华恕, *Zou Bingwen Jinianji* 邹秉文纪念集 [Zou Bingwen Memorial Collection] (Beijing: China Agriculture Press, 1993), 236-240.

⁴⁷ Meiguo wanguo nongju gongsi 34 nian jiangxuejin liumei renyuan 美国万国农具公司 34 年奖学金留美人员[The IHC Fellows to the US in 1945], August 9148, Nonglinbu 农林部, 20-21-074-06, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

University of Nanking, and the College of Agriculture at the National Central University.⁴⁸ Then, according to their own will and the government's arrangement, these graduates were assigned to various positions related to agricultural engineering in different agricultural institutions. Cai Chuanhan, Shui Xinyuan, Zeng Dechao, and Zhang Dejun entered the NAEC. Xu Mingguang, Li Hanru, Yu Youtai, Tao Dinglai, and Chen Shengzu joined the Agricultural Machinery Operation and Management Office (AMOMO) under the direction of the United Nations Relief and Rehabilitation Administration (UNRRA) in China. Wu Qiya and Cui Yinan were hired as faculty at the Division of Agricultural Engineering at National Central University. Fang Zhengsan was hired as faculty at the College of Agriculture at National Chekiang University; Li Kezuo, Gao Liangrun, and Wu Kezhou entered the NARB. Zhang Jigao went to the AMOMO Nanchang; Wang Wanjun entered the Cotton Improvement Service at Shanghai.⁴⁹ These fellows were the first organized group of Chinese students who studied agricultural engineering in the United States. After returning home, most of them became leading agricultural engineering experts both for ROC and even later for People's Republic of China.

3.2 Committee on Agricultural Engineering in China

In 1945, Zou, representing the Chinese Ministry of Agricultural and Forestry (CMAF), also reached an agreement with the IHC for it to sponsor four American agricultural engineering experts to visit China as soon as possible. In three years, these American experts were expected to

⁴⁸ Program for 17 Harvester Fellows in Nanking, June 1948, Meiguo wanguo nongju gongsi 34 niandu jiangxuejin fumei renyuan 美国万国农具公司 34 年度奖学金赴美人员 [The IHC Fellows to the US in 1945], Nonglinbu 农林部, 20-21-074-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁴⁹ Meiguo wanguo nongju gongsi jiangxuejin xuesheng gongzuo fenpei qingxing biao 美国万国农具公司奖学金学生工作分配情形表 [Table of Work Distribution of the IHC Fellows], July 1948, niandu jiangxuejin fumei renyuan 美国万国农具公司 34 年度奖学金赴美人员 [The IHC Fellows to the US in 1945], Nonglinbu 农林部, 20-21-074-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

form a committee to conduct field investigations as well as to provide training service to help China establish its own agricultural engineering system of education, research, and extension.⁵⁰ The IHC would cover four American experts' salary and travel expense. The IHC also agreed to provide modern implements and machines in total value of U.S. \$80,000 for research, demonstration, and training at the NARB of China.⁵¹ The IHC later provided equipment worth U.S. \$15,000 to both the University of Nanking and National Central University.⁵² Professor Davidson was invited by Zou and the IHC to serve as the chair of the Committee on Agricultural Engineering in China. As the chair of the Department of Agricultural Engineering at Iowa State College, Davidson was undoubtedly the leading agricultural engineer in the U.S. at that time. Therefore, very quickly, Zhou Yichun (Y. T. Tsur), the Minister of Agricultural and Forestry appointed Davidson as the chief engineer of the Department of Agricultural Engineering in the National Agricultural Research Bureau.⁵³ The CMAF also requested Davidson to select three well-qualified American agricultural engineers to form this committee.⁵⁴ Davidson recruited Howard Franklin McColly who was the former chief water facilities engineer at the Farm Security

⁵⁰ Zou Bingwen to Qian Tianhe, August 1945, Meiguo nongju gongsi fudao woguo nongju yanjiu ji xunlian 美国农具公司辅导我国农具研究及训练 [IHC Provides us Research and Training for Agricultural Implements], Nonglinbu 农林部, 20-16-045-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁵¹ Zou Bingwen to Qian Tianhe, August 1945, Meiguo nongju gongsi fudao woguo nongju yanjiu ji xunlian 美国农具公司辅导我国农具研究及训练 [IHC Provides us Research and Training for Agricultural Implements], Nonglinbu 农林部, 20-16-045-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁵² Nonglinbu daidian guoli zhongyang daxue jinlin daxue 农林部代电国立中央大学金陵大学 [the CMAF to the University of Nanking and National Central University], July 1946, Mei nongju zhuanjia laihua 美农具专家来华 [American Agricultural Implement Experts to China] Nonglinbu 农林部, 20-21-039-20, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁵³ Y. T. Tsur to Jay Brownlee Davidson, December 1945, Meiguo nongju gongsi fudao woguo nongju yanjiu ji xunlian 美国农具公司辅导我国农具研究及训练 [IHC Provides us Research and Training for Agricultural Implements], Nonglinbu 农林部, 20-16-045-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁵⁴ Y. T. Tsur to Jay Brownlee Davidson, December 1945, Meiguo nongju gongsi fudao woguo nongju yanjiu ji xunlian 美国农具公司辅导我国农具研究及训练 [IHC Provides us Research and Training for Agricultural Implements], Nonglinbu 农林部, 20-16-045-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

Administration of the USDA as his aide at the NARB.⁵⁵ Davidson also nominated Edwin L. Hansen, former agricultural engineer with the Portland Cement Association, to teach at the University of Nanking and Archie A. Stone, former head of the Department of Rural Engineering at New York State Institute of Agriculture at Farmingdale to teach at the National Central University, both whom would also do research work at the NARB.⁵⁶ The Committee on Agricultural Engineering formed by four experienced American agricultural engineers was scheduled to come to China in July 1946.⁵⁷ Due to political instability in China, housing issues at Nanjing, and maritime strike in the U.S., however, the committee was not able to depart from San Francisco until January of 1947.⁵⁸ They arrived China in February to begin their work at Nanjing. The Committee outlined some generous objectives in their plan to the National government and the IHC. First, the study of agricultural research and educational institutions in China. Second, the study of agricultural conditions in China including food and economic crop production, farming tools and methods, farm power and energy supply, and public facilities related to agricultural production. Third, conduct research and make demonstrations on the application of American agricultural implements and machineries to Chinese agriculture.⁵⁹ The Committee was realistic that this program alone could not modernize Chinese agriculture in a short time but only serve as

⁵⁵ Committee on Agricultural Engineering for China, 1947, Folder Extension, 1946-1949, Box 608, Entry 5, Record Group 166, Foreign Agricultural Service Narrative Reports (1946-1949), National Archives II, College Park, MD.

⁵⁶ Committee on Agricultural Engineering for China, 1947, Folder Extension, 1946-1949, Box 608, Entry 5, Record Group 166, Foreign Agricultural Service Narrative Reports (1946-1949), National Archives II, College Park, MD.

⁵⁷ Nonglinbu daidian guoli zhongyang daxue jinlin daxue 农林部代电国立中央大学金陵大学[the CMAF to the University of Nanking and National Central University], July 1946, Mei nongju zhuanjia laihoa 美农具专家来华 [American Agricultural Implement Experts to China], Nonglinbu 农林部, 20-21-039-20, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁵⁸ Committee on Agricultural Engineering for China, 1947, Folder Extension, 1946-1949, Box 608, Entry 5, Record Group 166, Foreign Agricultural Service Narrative Reports (1946-1949), National Archives II, College Park, MD.

⁵⁹ The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China*. (Chicago: International Harvester Company, 1949), 6-7.

a consultant team to bridge the gap between the Chinese agriculture and American agricultural technology.

3.3 Study on Agricultural Education and Research

First, since the four members of the Committee were associated with the NARB, the National Central University, and the University of Nanking, they started from these three institutions to study agricultural education and research in China. The NARB was located five miles east of the old Nanjing city with hundreds of acres of experiment farm, research buildings, and equipment. Directed under Shen Zonghan, ten departments with 330 junior and senior agriculturalists constituted the NARB. There was a Department of Agricultural Engineering, which was established not long ago before the Committee came to China. The Committee was assigned two newly furnished buildings, the Machinery Hall with a floor area of 3,600 square feet and the Shoo Building with a floor area of 4,400 square feet, to house the machinery from the U.S.⁶⁰ However, the NARB had to construct another building and a quonset for the Committee to house the newly arrived implements just after the arrival of second shipment in the December 1947.⁶¹

Committee member Stone taught at the National Central University (NCU). The NCU was the largest public university merged by the Southeastern University and Nanking Educational College. Stone was in the Division of Agricultural Engineering of the Department of Agronomy in the College of Agriculture. The university assigned a small tract of land for agricultural engineering demonstration and a remodeled building for teaching and research. NCU also

⁶⁰ Report of the Committee on Agricultural Engineering in China for the Year Ending December 31, 1947, March 1948, Folder Extension, 1946-1949, Box 608, Entry 5, Record Group 166, Foreign Agricultural Service Narrative Reports (1946-1949), National Archives II, College Park, MD.

⁶¹ Transmission of Annual Report for 1947 of Committee on Agricultural Engineering sponsored by the International Harvester Company, Chicago, Illinois, March 1948, Folder China-Mechanization- Poultry and Eggs, 1946-1949, Box 616, Entry 5, Record Group 166, Narrative Reports (1946-1949), National Archives II, College Park, MD.

developed a curriculum in agricultural engineering as early as the fall of 1945 after Zou proposed his plan to the IHC. Therefore, when Stone went to the NCU, there were already a few junior students majoring in agricultural engineering. Even if this was not a big program on agricultural engineering, it was better than no program in other universities.

The University of Nanking was one of the largest private mission universities, which had a top-level College of Agriculture and Forestry in China. This College was founded in 1914 by an American missionary educator in China and was led by a Cornell Alumnus, Zhang Zhiwen (C. W. Chang) in the 1940s. This College also established a Division of Agricultural Engineering in the Department of Agronomy composed of seven faculty members and Zhang served as the acting head of this division.⁶² Agricultural engineering was one of the seven majors and one of the three minors offered in the Department of Agronomy.⁶³ Edwin L. Hansen served as a professor and advisor in this division. In 1948, twenty-eight students majored or minored in agricultural engineering according to the University's record.⁶⁴

There were a few organizations and institutions promoting agricultural engineering in China too. After World War II, for example, the National Agricultural Engineering Corporation (NAEC) founded by the CMAF and the Farmers Bank of China in 1943 relocated from Chongqing to Shanghai in August 1946.⁶⁵ The NAEC aimed to complete a manufacturing and trading network

⁶² University of Nanking, *Jinling daxue liushi zhounian jiniance* 金陵大学六十周年纪念册 [60th Anniversary Album of the University of Nanking] (Nanjing: University of Nanking, 1948), 39.

⁶³ University of Nanking, *Jinling daxue liushi zhounian jiniance* 金陵大学六十周年纪念册 [60th Anniversary Album of the University of Nanking] (Nanjing: University of Nanking, 1948), 39.

⁶⁴ University of Nanking, *Jinling daxue liushi zhounian jiniance* 金陵大学六十周年纪念册 [60th Anniversary Album of the University of Nanking] (Nanjing: University of Nanking, 1948), 40.

⁶⁵ Editorial, "Zhongguo Nongye Jixie Gongsi Gaikuang 中国农业机械公司概况 [Overview of China Agricultural Machinery Company]," *Zhonghua Guohuo Chanxiao Xiehui Meizhou Huibao* 中华国货产销协会每周汇报 [China National Product Production and Marketing Association Weekly Report] 4, No. 54 (1947): 1.

of agricultural implements nationwide with Shanghai as its headquarter.⁶⁶ The other major one was the Agricultural Machinery Operation and Management Office (AMOMO) established in September 1945 under the direction of the CMAF and the China National Relief and Rehabilitation Administration to accept equipment supplies by the United Nations Relief and Rehabilitation Administration (UNRRA).⁶⁷ The AMOMO's had responsibility to allocate relief equipment to different parts of China including farm tractors, irrigation and drainage equipment, well-drilling machinery, animal-drawn implements, and farm hand tools.⁶⁸ The total value of this equipment supplied was millions of U.S. dollars mostly from donations or purchases in the U.S.⁶⁹ Both the NAEC and the AMOMO had no direct contact with the committee or the IHC. However, they hired ten of seventeen International Harvester Fellows after their return to China in 1948, which provided a glimpse of the rewards and direct contribution of the fellowship program.

3.4 Study on Agricultural Conditions

For the study on agricultural conditions in China, the Committee planned to conduct a series of observation and study trips across China. However, U.S. Army General George C. Marshall's diplomatic mission to negotiate a unified government between the Chinese Communist Party and the Nationalist government eventually failed with Marshall leaving China in February of 1947.

⁶⁶ Lin Jiyong 林继庸, "Zhongguo nongye jixiehwa qiantu de zhanwang 中国农业机械化前途的展望 [The Future of Agricultural Mechanization in China]," *Xinzhongguo Huabao* 新中国画报 [New China Pictorial] No. 11 (1948): 27-28.

⁶⁷ Agricultural Machinery Operation and Management Office 农林部善后救济总署机械农垦复员物资管理处, *Jixie Nongken fuyuan gongzuo gaikuang (35 nian 9 yue zhi 12 yue)* 机械农垦复员工作概况(三十五年九月至十二月) [Overview of Mechanical Reclamation and Demobilization (September to December, 1946)] (Nanjing: Agricultural Machinery Operation and Management Office, 1947), 3.

⁶⁸ Ma Baozhi 马保之, "Yinianlai nongkenchu gongzuo gaikuang 一年来农垦处工作概况 [An Overview of the Work of the Department of Agriculture and Reclamation in the Past Year]," *Xingzong Nongyu* 行总农渔 No. 9 (1946): 2.

⁶⁹ Editorial, "Lianheguo shanhou jiuji zongshu: jihua gongying woguo jixie nongken fuyuan wuzi yilanbiao 联合国善后救济总署:计划供应我国机械农垦复员物资一览表 [United Nations Relief and Rehabilitation Administration: A List of Materials Planned to be Supplied to China's Mechanical Farm Reclamation and Demobilization]," *Xingzong Nongyu* 行总农渔 No. 2 (1946): 42-43.

The Chinese Civil War broke out again in March which greatly restricted committee's travel plan. As demonstrated in the following figure, China can be roughly divided into five agricultural regions including frontiers for animal husbandry, northeastern China (Manchuria) for wheat, corn, soybean, and timber, the North China Plain for wheat and millet, Central China for rice and wheat, and South China for rice and tea.



Figure 11. General Crop Map of China⁷⁰

⁷⁰ J.B. Davidson photographs and other materials, trip to China, 1947-1949, Page 19, Box 39, RS 9/7/11, Iowa State University Library Special Collections and University Archives, Ames, Iowa.

With some areas either in warzones or under the control of People's Liberation Army, the committee could only follow the Nationalist government's arrangement. In April of 1947, under the arrangement of the CMAF and the NARB, McColly and Stone made a seven-day inspection trip to the Yellow River Flooded Area along with approximately sixty government officials.⁷¹ Because of centuries of sediment deposition and accumulation from the Yellow River, this delta area was one of the richest double-cropping agricultural regions for staple crops, such as winter wheat, and economic crops, such as cotton and tobacco in the North China Plain. However, Chiang Kai-shek ordered opening the dikes retaining the Yellow River to block the Japanese army's further military action in 1938. As a result, millions of farm families lost their homes and land. In 1947, with international aid, the Nationalist government repaired the dikes while the social and economic disruption remained. According to the Committee's investigation, however, during the nine years of flooding, sand and silt in depths up to 15 feet had been deposited over the land, if farmers had modern implements, machineries, and improved seeds, this catastrophic disaster could have been an opportunity for one of the largest reclamation projects in the world.⁷²

Then, in August of 1947, the committee made a 15-day trip to Peiping (Beijing) by plane because the ongoing civil war disrupted railways and road transportation. The committee interviewed many farmers from surrounding areas of Peiping and all expressed their interest in

⁷¹ Transmission of Annual Report for 1947 of Committee on Agricultural Engineering sponsored by the International Harvester Company, Chicago, Illinois, March 1948, Folder China-Mechanization- Poultry and Eggs, 1946-1949, Box 616, Entry 5, Record Group 166, Narrative Reports (1946-1949), National Archives II, College Park, MD.

⁷² Committee on Agricultural Engineering for China, 1947, Folder Extension, 1946-1949, Box 608, Entry 5, Record Group 166, Foreign Agricultural Service Narrative Reports (1946-1949), National Archives II, College Park, MD.

farm machines.⁷³ These farmers intended to utilize modern implements to cut labor costs as well as increase productivity, which means there was a potential market for the IHC in this area.

In December of 1947, Lu Tso Fu (Lu Zuofu), president of the Ming Sung (Ming Sheng) Industrial Company invited the committee to visit their Peipei Community to the northwest of the war capital, Chongqing. Peipei was a progressive experimental community for rural reconstruction led by Lu Zuofu during the 1930s. According to the committee, intensive and productive agriculture and progressive schools functioned in Peipei during 1947.⁷⁴ Except a few work animals, such as buffalo and oxen, however, all agricultural operations were conducted by manual labor. It seemed that this community could be a demonstration area for modern agricultural engineering. Peipei was probably only an individual case, however, compared with the rest of rural China. During the committee's stay at Sichuan, it was also informed that the landlords could take up to 80 percent of the crop yield as the rent which left only around 20 percent for tenant farmers' daily living.⁷⁵ The extreme scarcity of disposable income for many tenant farmers destroyed this potential market for the IHC.

In July of 1948, Yen His-shan (Yan Xishan), the governor of Shanxi Province invited the committee to visit Taiyuan, the capital of Shanxi Province to discuss its need for modern farming equipment. The biggest problem for Taiyuan, however, was its isolation because it was surrounded by communist revolutionary bases. Therefore, they received little help from the CMAF and the NARB.

⁷³ Transmission of Annual Report for 1947 of Committee on Agricultural Engineering sponsored by the International Harvester Company, Chicago, Illinois, March 1948, Folder China-Mechanization- Poultry and Eggs, 1946-1949, Box 616, Entry 5, Record Group 166, Narrative Reports (1946-1949), National Archives II, College Park, MD.

⁷⁴ Transmission of Annual Report for 1947 of Committee on Agricultural Engineering sponsored by the International Harvester Company, Chicago, Illinois, March 1948, Folder China-Mechanization- Poultry and Eggs, 1946-1949, Box 616, Entry 5, Record Group 166, Narrative Reports (1946-1949), National Archives II, College Park, MD.

⁷⁵ The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China*. (Chicago: International Harvester Company, 1949), 59.

During these trips, the Committee also visited a few semi-modern agriculture-related factories, including the Diesel Factory at Wuxi, the Ming Sung factories at Chongqing, the Northwest Industrial Company at Taiyuan, and the Sprayer and Insecticide Factory at Shanghai.⁷⁶ Many of these factories were also in the dilemma about their existing manufacturing capacity and the low consumption demand from farmers. Therefore, the introduction of agricultural engineering into China faced deep complex problems. Not least of these included the fact that few farmers had the necessary buying capacity. Add to this, the difficulty and expense of transportation, the exploitive land rental and ownership system, and fluctuating currency exchange rate, manufacturers faced a myriad of problems with no simple solution.

3.5 Research and Demonstration

The third and the most important mission for the committee was to conduct research and demonstrations on the application of American agricultural implements and technologies to Chinese agriculture.

As early as in December of 1945, the NARB had already submitted its wish list to the IHC. In this list, it requested various machine shop equipment worth of US\$34,868, laboratory instruments worth of U.S. \$14,347, literatures worth of U.S. \$581.05, and supplementary machines and tools worth of U.S. \$26,603.95, which totalled U.S. \$80,000 in value.⁷⁷ Due to some models' supply shortage and low production in the U.S., the first shipment from the IHC arrived at Shanghai along with the Committee's arrival in February 1947.

⁷⁶ The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China*. (Chicago: International Harvester Company, 1949), 50-51.

⁷⁷ List of Machine Shop Equipments, Laboratory Instruments and Literatures Submitted to the International Harvester Co., December 1945, Meiguo nongju gongsi fudao woguo nongju yanjiu ji xunlian 美国农具公司辅导我国农具研究及训练, Nonglinbu 农林部, 20-16-045-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

Then the bureaucratic problems came. According to the wartime import regulations of the Nationalist government, all the goods from foreign countries needed a special permit for tax exemption at the Jianghai Custom of Shanghai. The CMAF had to go through lengthy paper work up to the Executive Yuan arguing that these implements and the committee's personal belongings were only for research and teaching on agricultural engineering in China.⁷⁸ T. V. Soong, the President of the Executive Yuan, approved the CMAF's request for tax exemption.⁷⁹ Then, the problem happened again. The IHC was about to ship two Plymouth Automobiles, each valued U.S. \$1450 from New York to Shanghai.⁸⁰ The custom regulation, however, required that for automobiles valued more than U.S. \$1200, the importer needed to acquire an import license from the Chinese Ministry of Finance in advance.⁸¹ After going through considerable bureaucratic delays, these automobiles finally arrived Shanghai in May of 1947, three months after the committee's arrival.⁸² These delays necessitated the postponement of the committee's plan, which sometimes meant delay for another crop season. This was just one example by which the institutional inefficiency of the Nationalist bureaucratic system greatly reduced the effectiveness of the committee's work on agricultural modernization in China.

Nevertheless, throughout the committee's stay, the IHC made four large shipments to China. The first shipment arrived along with the committee in February of 1947. It contained 190

⁷⁸ Nonglinbu 农林部 to Xingzhengyuan 行政院, February 1947, Mei nongju zhuanjia laihua 美农具专家来华 Nonglinbu 农林部, 20-21-039-20, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁷⁹ Xingzhengyuan zhiling 行政院指令, T. V. Song 宋子文, February 1947, Mei nongju zhuanjia laihua 美农具专家来华, Nonglinbu 农林部, 20-21-039-20, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁸⁰ Nonglinbu 农林部 to Xingzhengyuan 行政院, November 1946, Mei nongju zhuanjia laihua 美农具专家来华, Nonglinbu 农林部, 20-21-039-20, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁸¹ Nonglinbu 农林部 to Xingzhengyuan 行政院, November 1946, Mei nongju zhuanjia laihua 美农具专家来华, Nonglinbu 农林部, 20-21-039-20, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁸² International Harvester Company to National Agricultural Research Bureau of China, May 1947, 36 nian wanguo nongju gongsi yunsuo qiche 2liang 36 年万国农具公司运所汽车 2 辆, Nonglinbu 农林部, 20-41-054-28, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

implements.⁸³ Some of the most important and expensive implements included harvester threshers, seed drills, field and garden dusters, sprayers, steel trailers, garden tractors, electric pumps, traction engines, horse cultivators, motor freight vehicles, and other mechanized implements.⁸⁴

In June of 1947, the second shipment departed from New York and arrived in Shanghai on August 16th.⁸⁵ This shipment consisted of ninety-three packs, including harrows, grain binders, farm trucks, tracklaying tractors, planters, cultivators, kerosene engines, grain drills, grass seeders, bull graders, a soil pulverizer, a rice huller and polisher, internal combustion engines, laboratory supplies, and various instruction pamphlets.⁸⁶ In total, this delivery from the IHC had a market value of U.S. \$15,124.11.⁸⁷ Some of the most advanced and expensive machineries among this shipment were the International TD-6 TracTracTors worth of U.S. \$2,420.45, the International Farmall “H” Tractor-Kerosene Distillate worth of U.S. \$1,054.85, the International Farmall “A” Tractor-Kerosene worth of U.S. \$677.70, TD-6 W. G. Bullgrader worth of U.S. \$992.00, and R-4-A Gasoline Electric Plant worth of U.S. \$1,570.00.⁸⁸

⁸³ Xingzhengyuan bennian sanyue ershierri congsanzi diererer hao daidian 行政院本年三月二十二日从三字第六二二二号代电, March 1947, Mei nongju zhuanjia laihua 美农具专家来华, Nonglinbu 农林部, 20-21-039-20, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁸⁴ The International Harvester Company to the National Agricultural Research Bureau, March 1947, Mei nongju zhuanjia laihua 美农具专家来华, Nonglinbu 农林部, 20-21-039-20, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁸⁵ The National Agricultural Research Bureau to the Chinese Ministry of Agricultural and Forestry, August 1947, Meiguo wanguo nongju gongsi zengyu di2pi nongju 美国万国农具公司赠与第2批农具, Nonglinbu 农林部, 20-21-074-09, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁸⁶ Copy of Bill of Lading, October 1947, Meiguo wanguo nongju gongsi zengyu di2pi nongju 美国万国农具公司赠与第2批农具, Nonglinbu 农林部, 20-21-074-09, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁸⁷ International Harvester Company to the Chinese Ministry of Agricultural and Forestry, June 1947, Meiguo wanguo nongju gongsi zengyu di2pi nongju 美国万国农具公司赠与第2批农具, Nonglinbu 农林部, 20-21-074-09, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁸⁸ International Harvester Company to the Chinese Ministry of Agricultural and Forestry, June 1947, Meiguo wanguo nongju gongsi zengyu di2pi nongju 美国万国农具公司赠与第2批农具, Nonglinbu 农林部, 20-21-074-09, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

On December 11th, 1947, the third shipment departed from San Francisco, and arrived at Shanghai.⁸⁹ There were seventy-eight containers of machinery and agricultural tools valuing U.S. \$12,866.78 in total from the IHC.⁹⁰ This shipment included expensive equipment, including Bucyrus-Erie Model 21W, well drilling machine worth of U.S. \$3,835.56, McCormick-Deering one-row pull-type corn picker worth of U.S. \$696.46, McCormick-Deering one-row regular vertical power drive corn binder worth of U.S. \$443.75, McCormick-Deering No. 200-F fluid manure spreader worth of U.S. \$341.83, McCormick-Deering 4-row beet & bean planter worth of U.S. \$230.20, McCormick-Deering No. 6 windrow harvester worth of U.S. \$228.75, and McCormick-Deering Type “R” 12-7 plain grain drill worth of U.S. \$223.08.⁹¹

The fourth shipment of equipment from San Francisco arrived in Shanghai in May 1948, which consisted of 109 pieces of agricultural implements, parts, and miscellaneous equipment.⁹² Although this shipment primarily included components, parts, and small tools because this was the last shipment, the IHC also sent some important implements to the NARB including McCormick-Deering No. 15 belt-powered hay baler worth of U.S. \$ 324.05, Farmall Cub Tractor worth of U.S. \$420.23, and McCormick-Deering No. 2-2 roll huskers and shredders worth of U.S. \$630.00.⁹³

⁸⁹ The National Agricultural Research Bureau to the Chinese Ministry of Agricultural and Forestry, December 1947, Meiguo wanguo nongju gongsi yunsong di3pi nongju 美国万国农具公司运送第3批农具, Nonglinbu 农林部, 20-21-074-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁹⁰ Uniform Through Export Bill of Lading, November 1947, Meiguo wanguo nongju gongsi yunsong di3pi nongju 美国万国农具公司运送第3批农具, Nonglinbu 农林部, 20-21-074-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁹¹ Uniform Through Export Bill of Lading, November 1947, Meiguo wanguo nongju gongsi yunsong di3pi nongju 美国万国农具公司运送第3批农具, Nonglinbu 农林部, 20-21-074-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁹² Export Bill of Lading, April 1948, Meiguo wanguo nongju gongsi yunsong di4pi nongju 美国万国农具公司运送第4批农具, Nonglinbu 农林部, 20-21-074-03, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁹³ Export Bill of Lading, April 1948, Meiguo wanguo nongju gongsi yunsong di4pi nongju 美国万国农具公司运送第4批农具, Nonglinbu 农林部, 20-21-074-03, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

With these modern implements, the committee proposed several research and demonstration projects. These projects included implement operation training sessions, field tests of machines, cost comparison between human labor and machine in the production of wheat, cotton, tobacco, rice, corn, soybean, sorghum, as well as demonstrations on well drilling, grain storage, and crop processing.⁹⁴ Due to constant delays of shipments and turmoil caused by the Civil War, however, most of these projects were left only on paper.

Those projects involving field tests and demonstrations of implements became the most important. In this project, the field test of machines, operator training, and demonstration were combined due to limited resources. The committee tested several machineries at the NARB during its stay including McCormick-Deering and International Harvester combines, Farmall A and Farmall Club tractors, Farquahar one-row transplanter, 52-R harvester and thresher, corn picker, and various modern farming tools.⁹⁵ Some tests and demonstrations are showed in the following figures. Because both the committee and the NARB had little time to prepare these demonstrations, however, and because most of their operators had no previous experience, their results were either not very accurate or in need of further study.

⁹⁴ The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China*. (Chicago: International Harvester Company, 1949), 73-75.

⁹⁵ The Committee on Agricultural Engineering in China, *Introducing Agricultural Engineering in China*. (Chicago: International Harvester Company, 1949), 79-104.



Figure 12. Contrast demonstration of threshing with buffalo and McCormick-Deering combine at the NARB⁹⁶



Figure 13. Contrast demonstration of harvesting with the International Harvester combine and sickle at the NARB⁹⁷

⁹⁶ J.B. Davidson photographs and other materials, trip to China, 1947-1949, Page 78, Box 39, RS 9/7/11, Iowa State University Library Special Collections and University Archives, Ames, Iowa.

⁹⁷ J.B. Davidson photographs and other materials, trip to China, 1947-1949, Page 79-80, Box 39, RS 9/7/11, Iowa State University Library Special Collections and University Archives, Ames, Iowa.



Figure 14. Contrast demonstration of plowing with the Farmall A and conventional tieh pa (a plow in China) at the NARB⁹⁸

Last, to emphasize the importance of agricultural engineering to common farmers, academia, and government officials, the committee also utilized training sessions, conferences, visits to farms, inspection of laboratories, discussions with students, and publications in journals. Davidson, for example, wrote in a Chinese journal, *Dongfang Zazhi*, that the introduction of agricultural engineering was the most important progress in the history of American agricultural development which could serve as a reference for China's development.⁹⁹

⁹⁸ J.B. Davidson photographs and other materials, trip to China, 1947-1949, Page 79-87, Box 39, RS 9/7/11, Iowa State University Library Special Collections and University Archives, Ames, Iowa.

⁹⁹ J.B. Davidson and Ma Fengzhou 马逢周, Meiguo de nongye jixiehua (fubiao) 美国的农业机械化(附表), *Dongfang Zazhi* 东方杂志 43, No. 1 (1947): 43-45.

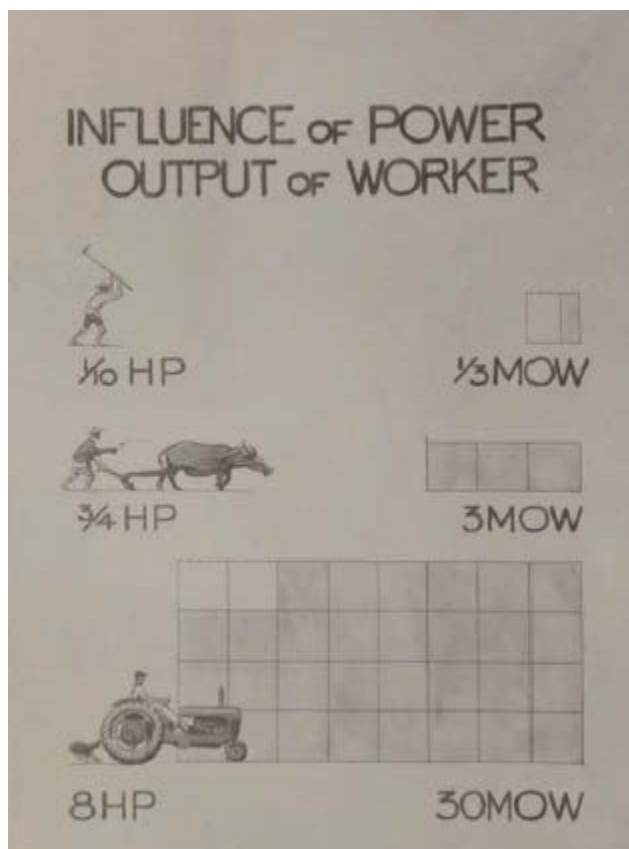


Figure 15. A Chart that the Committee used to demonstrate the importance of tractors¹⁰⁰

By December 1948, however, the People's Liberation Army had gradually sealed the victories in three decisive campaigns, including the Liaoshen, the Huaihai, and the Pingjin campaigns. The political and military conditions were not suitable for the committee to remain in China. Assisted by the U.S. Embassy, the committee sailed back to the U.S. on December 15th of 1948.¹⁰¹

¹⁰⁰ J.B. Davidson photographs and other materials, trip to China, 1947-1949, Page 195, Box 39, RS 9/7/11, Iowa State University Library Special Collections and University Archives, Ames, Iowa.

¹⁰¹ The National Agricultural Research Bureau to the Chinese Ministry of Agricultural and Forestry, December 1948, 37 nian meiji nongju zhuanjia daiweisheng deng 3 ren fanmei 37 年美籍农具专家戴维生等 3 人返美, Nonglinbu 农林部, 20-21-039-19, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

3.6 Impact and Significance

As the first official cooperation between an American private company and the Nationalist government at the crucial transitional period from the Republic of China (ROC) to the People's Republic of China (PRC), this program contributed both direct outcome for the ROC and long-term significance for the following PRC after 1949.

Although the direct impacts were not very outstanding due to various factors, such as economic depression, political turbulence, chaotic management, and technological backwardness in China, some outcomes merit reflection. First, a department or a division of agricultural engineering was established at each of these three major research and educational institutions, including the National Agricultural Research Bureau, the University of Nanking, and National Central University. Second, the Committee conducted some preliminary but necessary studies on the agricultural conditions in China and tests and demonstrations of modern machinery for agricultural production. In addition, the International Harvester Fellowship Program directly cultivated the best agricultural engineers of that time. After returning from the U.S., these fellows directly contributed into the education, research, and extension of agricultural engineering during the ROC.

Some long-term significance is also worthy of scholarly attention. As Tao Dinglai, one of the International Harvester fellows and later the vice-president of the Chinese Academy of Agricultural Sciences (CAAS) in 1978, described, “at that time, there was no such term as agricultural engineering in China, and nobody knew exactly what it referred to.”¹⁰² The most important contribution that the committee and the IHC made was the introduction of the modern discipline of agricultural engineering to China. Its work and efforts successfully attracted attention

¹⁰² Tao Dinglai, “Brief history of agricultural engineering development in China: In memory of Mr. Zou Bingwen,” *International Journal of Agricultural and Biological Engineering* 1, No.1 (August 2008): 8-11.

from both the Nationalist government and later the Communist government after 1949. Both of their leaders and agricultural officials realized the importance of application of mechanization which directly led to both the ROC and the PRC's large emphasis on the research, education, and extension in agricultural engineering during the second half of twentieth century. The other long-term significance was personnel training. In 1949, even though there was considerable political uncertainty, most of the International Harvester Fellows chose to stay in mainland China. Since then, most of them have devoted themselves to China's agricultural construction in the teaching and scientific research of agricultural technology, agricultural engineering, manufacturing, state-owned farms, and other aspects. The positions that some International Harvester Fellows held are listed in the following table. Some of them continued to work until the 1990s. To some extent, this cooperation can serve as an example to prove that agricultural science and technology itself is beyond politics and ideology.

Table 7. The Positions that some International Harvester Fellows held during the PRC¹⁰³

Li Kezuo	Vice Director of the North China Agricultural Machinery General Factory; General Manager of the Beijing Automotive Industry Corporation
Yu Youtai	President of Northeast China Agricultural College; Honorary President of the Heilongjiang Provincial Association of Science and Technology
Wu Kezhou	Professor at the Northeast China Agricultural College
Zhang Dejun	Dean of the College of Agricultural Engineering at Jilin University of Technology
Zeng Dechao	Professor at Beijing University of Agricultural Engineering
Li Hanru	Professor at Beijing University of Agricultural Engineering
Cui Yinan	Professor at Jilin University of Technology; Professor at Beijing University of Agricultural Engineering
Wang Wanjun	Vice President and Chief Engineer of the Chinese Academy of Agricultural Mechanization Sciences
Zhang Jigao	Head of the Department of Agricultural Engineering at Shenyang Agricultural College; Vice President of the Chinese Academy of Agricultural Engineering Research and Planning
Fang Zhengsan	Senior Engineer at the Chinese Academy of Agricultural Engineering Research and Planning

¹⁰³ Yu Youtai 余友泰 and others, “Jinian woguo nongye gongcheng shiye de xiandaozhe- zou bingwen xiansheng 纪念我国农业工程事业的先导者-邹秉文先生,” in Hua Shu 华恕, *Zou Bingwen Jinianji* 邹秉文纪念集 (Beijing: China Agriculture Press, 1993), 219-224.

Table 7 continued

Wu Xianggan	Head of the Department of Agricultural Engineering at Nanjing Agricultural College
Gao Liangrun	President of Jiangsu Institute of Technology
Wu Qiya	Professor at Jiangsu Institute of Technology
Shui Xinyuan	Deputy Director of the Nanjing Institute of Agricultural Mechanization of the Ministry of Agriculture
He Xianzhang	Chief Engineer of Guangdong Provincial Agricultural Mechanization Research Institute
Tao Dinglai	President of the Chinese Academy of Agricultural Engineering Research and Planning; Vice-President of the Chinese Academy of Agricultural Sciences

CHAPTER 4. THE CHINA-UNITED STATES AGRICULTURAL MISSION, 1946 – 1948

Zou Bingwen served as the resident representative of the Chinese Ministry of Agriculture and Forestry (CMAF) in the United States and a member of the Executive Committee of the United Nations Food and Agriculture Organization (FAO) in 1944 and 1945. He proposed not only cooperation with the International Harvester Company but also a joint mission on agriculture between the Chinese Nationalist government and the U.S. government. Zou and Xie Jiasheng, chief of the National Agricultural Research Bureau (NARB), had some preliminary discussions with officials of the U.S. Department of Agriculture (USDA) at Washington D.C., and they received a positive response.¹

In September 1945, the CMAF officially submitted a proposal for technical collaboration in agriculture and forestry to Owen L. Dawson, the agricultural attache at the U.S. Embassy in China.² In this proposal, the CMAF proposed ten aspects of work for consideration by the USDA. Some highlights included: the visit of eight American agricultural experts to Nanjing between November of 1945 to February of 1946. Among these eight experts, two should specialize in agricultural research and agricultural economics, and they should stay in China for four to six months; the other six experts should be specialists in the fields of commercial crops, including Tung oil, carpet wool, tea, silk, fisheries, and soybean processing, and they should be prepared to

¹ Zhongmei nongye jishu hezuo fangan caoan 中美农业技术合作方案草案 [Draft Plan of Sino-US Agricultural Technical Cooperation], September 1945, Folder 34nian 9yue zhi 35nian 5 yue zhongmei nongye jishu hezuo fangan 34 年 9 月至 35 年 5 月中美农业技术合作方案 [Plan for China-United States Agricultural Mission from September 1945 to May 1946], Nonglinbu 农林部, 20-21-040-08, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

² Zhongmei nongye jishu hezuo fangan caoan 中美农业技术合作方案草案 [Draft Plan of Sino-US Agricultural Technical Cooperation], September 1945, Folder 34nian 9yue zhi 35nian 5 yue zhongmei nongye jishu hezuo fangan 34 年 9 月至 35 年 5 月中美农业技术合作方案 [Plan for China-United States Agricultural Mission from September 1945 to May 1946], Nonglinbu 农林部, 20-21-040-08, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

stay from three to five years in China. The U.S. government would be in charge of selecting the right personnel and also meeting the salaries and international travelling expenses of the eight American experts, and the Nationalist government would select their Chinese collaborators, and would provide housing and transportation for the American experts in China.³ In February of 1946, The U.S. Department of State officially accepted the CMAF's plan with some minor modifications proposed by the USDA.⁴

After careful consideration, both governments selected their delegates for this mission. The committee members from the U.S. included Claude B. Hutchison as the head of the U.S. delegation, Raymond T. Moyer as deputy head, Harold Claude Case, John Lossing Buck, Charles J. Huber, Robert H. Burns, Charles Edward Seitz, Harley L. Crane, Robert A. Nesbit, Benjamin L. Hummel, and Lucille Arras as the administrative assistant to the committee.⁵ Committee members from China included Zou Bingwen as the head of the Chinese delegation, Shen Zonghan as the deputy head, Ma Baozhi, Ge Jingzhong, Ye Qiaji, Zhang Naifeng, Xu Kangzu, Wang Yikang, Jia Zhangliang, Yang Maochun, Luo Wansen, Shou Jingzhang, and Wu Liuqing.⁶

Top on this mission member list, Claude B. Hutchison was the vice president of the University of California, the dean of the College of Agriculture at the University of California, Davis, and

³ A Proposal on Technical Collaboration in Agriculture and Forestry between China and the United States October 1945, Folder 34nian 9yue zhi 35nian 5 yue zhongmei nongye jishu hezuotuan fangan 34年9月至35年5月中美农业技术合作方案 [Plan for China-United States Agricultural Mission from September 1945 to May 1946], Nonglinbu 农林部, 20-21-040-08, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁴ Robert L. Smyth to Wang Shih-chieh, February 1946, Folder 34nian 9yue zhi 35nian 5 yue zhongmei nongye jishu hezuotuan fangan 34年9月至35年5月中美农业技术合作方案 [Plan for China-United States Agricultural Mission from September 1945 to May 1946], Nonglinbu 农林部, 20-21-040-08, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁵ China-United States Agricultural Mission, *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A., 1947), vii.

⁶ China-United States Agricultural Mission. *Zhongmei nongye jishu hezuotuan baogaoshu* 中美农业技术合作团报告书 [Report of the China-United States Agricultural Mission] (Nanjing: China-United States Agricultural Mission, 1946), 2.

mostly important a well-known agriculturalist.⁷ Raymond Tyson Moyer was an important figure, because as the American representative and the head of Department of Agriculture at the Shanxi Taigu Mingxian School founded by Oberlin College, he stayed in China for decades.⁸ In 1945, Moyer was appointed the head of Far East Division at the Office of Agricultural Relations of the USDA. John Lossing Buck served as the other China specialist in the U.S. delegation. Back in 1921, Buck was the founding head of the Department of Agricultural Economics at the University of Nanking.⁹ As a well-known agricultural economist, he conducted one of the most important agricultural surveys in China during the 1920s and 1930s, which led to two important books on the Chinese agricultural economy, *Chinese Farm Economy* and *Land Utilization in China*.¹⁰ Charles J. Huber who had both experience as an engineer in Johnson & Johnson and the U.S. Testing Company and as a silk improvement researcher in China served as the silk specialist in the mission.¹¹ Huber also had taught at the University of Nanking and Lingnan University.¹² There were two members from Virginia Polytechnic Institute, the tea specialist, Charles Edward Seitz, who was an agricultural engineer focusing on drying leaf crops, and Benjamin L. Hummel, an agricultural extension expert who also worked for the United Nations Relief and Rehabilitation

⁷ Yidaosheng xiansheng zhuanlai tongzhi 译道生先生转来通知[Mr. Dawson Has Transferred the Notice], May 1946, Folder Zhongmei nongye jishu hezuo 中美农业技术合作[Sino-US Agricultural Technical Cooperation], Nonglinbu 农林部, 20-21-041-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁸ Miriam B. Judd, "Hope for Rural China," *Oberlin Alumni Magazine* No. 44 (November 1948): 2,15.

⁹ College of Agriculture of the University of Nanking, *Jinling daxue nongxueyuan sanshinian lai shiye yaolan* 金陵大学农学院卅年来事业要览 [Overview over the past 30 years of the College of Agriculture at the University of Nanking] (Nanjing: College of Agriculture of the University of Nanking, 1943), 5.

¹⁰ College of Agriculture of the University of Nanking, *Jinling daxue nongxueyuan sanshinian lai shiye yaolan* 金陵大学农学院卅年来事业要览 [Overview over the past 30 years of the College of Agriculture at the University of Nanking] (Nanjing: College of Agriculture of the University of Nanking, 1943), 9.

¹¹ U.S. Department of State to U.S. Consulate at Shanghai, May 1946, Folder China-Agricultural Mission, Box 17, Reports from Agricultural Attaches Relating to International Agricultural Conferences and Congresses, 1931-58, National Archives II, College Park, MD.

¹² Editorial, "Ying zhongmei nongye jishu hezuotuan 迎中美农业技术合作团[Welcome the China-United States Agricultural Mission]," *Xin Shijie* 新世界[New World] No.7 (1946): 24-26, 9.

Administration (UNRRA) in China.¹³ Robert H. Burns, a wool specialist from the University of Wyoming carried the investigation on carpet wool while a USDA specialist, Harley L. Crane took care of tung oil.¹⁴ Robert A. Nesbit served as a specialist on fisheries while Harold Claude Case from the University of Illinois served as the Mission's agricultural economist.¹⁵ Nesbit also worked as a consultant in the China Fisheries Corporation and the UNRRA at Shanghai.



Figure 16. American members of the mission with Claude B. Hutchison sitting in the middle¹⁶

¹³ U.S. Department of State to U.S. Consulate at Shanghai, May 1946, Folder China-Agricultural Mission, Box 17, Reports from Agricultural Attaches Relating to International Agricultural Conferences and Congresses, 1931-58, National Archives II, College Park, MD.

¹⁴ U.S. Department of State to U.S. Consulate at Shanghai, May 1946, Folder China-Agricultural Mission, Box 17, Reports from Agricultural Attaches Relating to International Agricultural Conferences and Congresses, 1931-58, National Archives II, College Park, MD.

¹⁵ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), vii.

¹⁶ Meiguo tepai laihua kaocha nongcun zhuangkuang yu nongye jishu zhi “zhongmei nongye jishu hezuotuan” zhuanjia, zhongzuozhe gaituan tuanzhanghaoqisheng boshi 美国特派来华考察农村状况与农业技术之“中美农业技术合作团”专家，中坐者该团团长赫契生博士 [Experts from the United States to China to Investigate Rural Conditions And Agricultural Technologies, and the Head of the Mission, Dr. Hutchison, was seated in the Middle of the Delegation], *Xin Zhonghua* 新中华 [New China] 1, 4 No. 16 (1946): 6.

On the Chinese side, Zou Bingwen had served as the founding head of the Department of Agriculture of the Southeast University in 1917.¹⁷ By 1946, Zou was both a leading Chinese agricultural official in the CMAF and a member of the Executive Committee of the FAO. Zou was the moving spirit behind the cooperation between the CMAF and the IHC and the China-United States Agricultural Mission. On the other hand, Shen Zonghan who earned his Ph.D. degree at Cornell University had been a leading agronomist at the University of Nanking for a long time. By 1946, Shen served as the chief of the NARB. Ma Baozhi who also gained his Ph.D. degree at Cornell University served as the secretary in the Chinese delegation. Ma also was the head of the Agricultural Division of the CMAF. The other Chinese agricultural specialists included Ge Jingzhong for silk, Wang Yikang for fisheries, Wu Liuqing for tea, and Xu Kangzu for carpet wool.¹⁸ Luo Wansen came from Farmers' Bank of China. The four remaining members were all agricultural officials from the CMAF.

The Mission had three objectives. The first was to survey general agricultural conditions in China and provide suggestions for the agricultural planning to the Nationalist government.¹⁹ The second was to provide feasible plans for agricultural cooperation between the two countries especially in the fields of silk, tea, tung oil, carpet wool, and fisheries.²⁰ The third was offering

¹⁷ Department of Agriculture of Southeast University, *Guoli dongnan daxue nongye gaikuang* 国立东南大学农科概况 [General Situation of Agricultural Department at the National Southeast University] (Nanjing: Department of Agriculture of Southeast University, 1926), 10.

¹⁸ Editorial, "Ying zhongmei nongye jishu hezuotuan 迎中美农业技术合作团 [Welcome the China-United States Agricultural Mission]," *Xin Shijie* 新世界 [New World] No.7 (1946): 24-26, 9.

¹⁹ Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

²⁰ Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

suggestions to the government in terms of temporary measures for urgent problems.²¹ These goals served as a common ground to enable both governments to position the mission for later large-scale technological cooperation between the two countries.

4.1 Mission in China

On June 23, 1946, the U.S. delegation departed from Oakland, California for Shanghai.²² They arrived on June 27. During their first a few days in Shanghai, the delegates met with their Chinese counterparts, the press, and agricultural officials from both countries, including Zhou Yichun, the Minister of the CMAF, and Owen L. Dawson, the agricultural attache at the U.S. Embassy in China.²³ On July 1, the mission attended a welcome meeting held by the Agricultural Association of China and the Research Association of China Rural Economy at Shanghai.²⁴ Hutchinson affirmed the mission's goal to determine the problems and offer U.S. assistance. Moyer emphasized the reciprocity of industrialization and agriculturalization to both China and the U.S.²⁵

²¹ Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

²² Michelson Johnson to Office of Foreign Agricultural Relations of USDA, June 1946, Folder China-Agricultural Mission, Box 17, Reports from Agricultural Attaches Relating to International Agricultural Conferences and Congresses, 1931-58, National Archives II, College Park, MD.

²³ Zhongmei nongye jishu hezuotuan liuhu gongzuo ribao 中美农业技术合作团留沪工作日报 [Daily Work of the China-United States Agricultural Mission at Shanghai], June 1946, Folder Zhongmei nongye jishu hezuotuan gongzuo ribao 中美农业技术合作团工作日报 [Daily Work of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

²⁴ Wang Wei 王卫, "Ying zhongmei nongye jishu hezuotuan: ji jinglianhui disici dahui 迎中美农业技术合作团: 记经联会第四次大会 [Welcoming the China-United States Agricultural Mission: Fourth General Meeting of Economic Association]," *Jingji Zhoubao* 经济周报 [Economic weekly] 3, No.1 (1946): 19-20.

²⁵ Wang Wei 王卫, "Ying zhongmei nongye jishu hezuotuan: ji jinglianhui disici dahui 迎中美农业技术合作团: 记经联会第四次大会 [Welcoming the China-United States Agricultural Mission: Fourth General Meeting of Economic Association]," *Jingji Zhoubao* 经济周报 [Economic weekly] 3, No.1 (1946): 19-20.

Then, on July 8, the mission arrived in Nanjing. The members were invited to a meeting with the President of the Republic of China, Chiang Kai-shek, on July 9.²⁶ This was the first time Chiang officially met with American agriculturalists. In the following days, the members attended more diplomatic and formalized receptions and press conferences with top level Nationalist officials. This high level of exposure and visibility demonstrated to the public the prioritized attention from the Nationalist government and the sincerity from both sides to develop China's agricultural industry via comprehensive cooperation. During the mission's stay at Shanghai and Nanjing, it held a series of discussions about the arrangements for the investigation trip. The members decided to divide the mission into six groups to travel. Each group would focus on different problems and commodities, including a general group, which concentrated on agricultural education, research, extension, economy, and rural life. The five focus groups respectively focused on tea, tung oil, carpet wool, fishery, and silk.²⁷ Several Chinese consultants also would accompany each group during their trips. After a few days in Nanjing, on July 21, the mission officially began the investigations and flew to different parts of China.

The general group was the largest one, which included Claude B. Hutchison, Raymond T. Moyer, Benjamin L. Hummel, Harold Claude Case, John Lossing Buck, Shen Zonghan, Yang Maochun, Ye Qiaji, and Luo Wansen.²⁸ From July 22 to October 4, the general group visited Beijing, Shenyang, Xi'an, Chengdu, Chongqing, Liuzhou, Guilin, Guangzhou, Taiwan, Shanghai,

²⁶ Zhongmei nongye jishu hezuo tuan liujing gongzuo ribao 中美农业技术合作团留京工作日报 [Daily Work of the China-United States Agricultural Mission at Nanjing], July 1946, Folder Zhongmei nongye jishu hezuo tuan gongzuo ribao 中美农业技术合作团工作日报 [Daily Work of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

²⁷ Tentative Schedule, July 1946, Folder Zhongmei nongye jishu hezuo tuan gongzuo ribao 中美农业技术合作团工作日报 [Daily Work of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

²⁸ Editorial, "Zhongmei nongye jishu hezuotuan fenzu kaocha 中美农业技术合作团分组考察 [Group Inspection of the China-United States Agricultural Mission]," *Zhejiang Jingji Yuekan* 浙江经济月刊 [Zhejiang Economic Monthly] 1, No. 2 (1946): 31.

and Hangzhou.²⁹ Hutchison served as the head of this group. For the agricultural experimental work, this group visited the North China Agricultural Experiment Station at Beijing, the NARB Agricultural Experiment Station at Tianjin, the Animal Husbandry Laboratory, the Department of Cotton Improvement, and the Northeast China (Manchuria) Agricultural Experiment Station at Gongzhuling.³⁰ They also visited a few colleges of agriculture at different universities, local farmers' associations, and credit unions around those major northern cities. Additionally, this group visited the National Forest Experiment Bureau to investigate afforestation work in North China.³¹ Then, the group flew to Xi'an on August 19. During their stay at Xi'an, the general group visited Northwest Experimental Station, local agricultural extension stations, local irrigation facilities, and Northwest Agricultural College.³² At Northwest Agricultural College, they met with Zhang Wencai, the president of Northwest Agricultural College, who had conducted research at the University of California in 1944. Zhang presented four major agricultural problems in northwest China to the delegates, including the lack of cooperation with different agricultural institutions, the lack of agricultural loans to farm families, the administrative work not meeting the needs of common farmers, and the lack of a permanent cooperative institution between U.S. and

²⁹ Itinerary for overall group, July 1946, Folder Zhongmei nongye jishu hezuo tuan gongzuo ribao 中美农业技术合作团工作日报 [Daily Work of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

³⁰ Editorial, "Zhongmei nongye jishu hezuotuan zaihua xingcheng jilue 中美农业技术合作团在华行程纪略 [Itinerary of the China-United States Agricultural Mission in China]," *Nongye Jianshe* 农业建设 [Agricultural Construction] Vol. 3, No. 1 (1947): 91; Da Ting 大琨, Zhongmei nongye jishu hezuotuan lai pingjin 中美农业技术合作团来平津 [the China-United States Agricultural Mission arrived Beijing and Tianjin], *Jingji Daobao (Beijing)* 经济导报(北京) [The Economic Herald(Beijing)] No.1 (1946): 22.

³¹ Zhonglinsuo 中林所[National Bureau of Forestry] to Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], August 1946, Huabei 35nian cheng huabei linyezhuangkuang zhuan zhongmei nongye jishu hezuotuan 华北 35 年呈华北林业概况转中美农业技术合作团 [North China Forestry Conditions in 1946], Nonglinbu 农林部, 20-56-060-11, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

³² Editorial, "Zhongmei nongye jishu hezuotuan lishan teji 中美农业技术合作团蒞陕特辑 [China-United States Agricultural Mission-Shaanxi Special Edition]," *Guoli Xibei Nongxueyuan Yuankan* 国立西北农学院院刊 [Journal of the National Northwest Agricultural College] No. 5 (1946): 1-9.

China.³³ Then, the group headed to Sichuan on August 26. At Chengdu, they discussed the agricultural situation in the southwest of China with agriculturalists at the provincial agricultural bureau, representatives from the Farmers Bank of China, and faculty at Sichuan University.³⁴ On September 19, the general group arrived in Taiwan. During their 10-day stay at Taiwan, they visited Tamsui (Danshui), Keelung (Jilong), and Shilin to investigate tea companies, fishery companies, fertilizer factories, tanneries, and the horticulture experimental station.³⁵ At Taipei, they visited the Provincial Agricultural and Forestry Research Bureau, the College of Agriculture at National Taiwan University, and the Camphor Manufacturing Plant.³⁶ Then they headed south to Tainan and Gaoxiong to inspect fishing harbors, sugar refineries, and the Chianan Irrigation Project.³⁷ During the remainder of their stay, the group also visited forest farms on the Ali Mountain, pineapple canneries at Changhua (Zhanghai) and Yunlin, and agricultural experiment stations at Taichung (Taizhong).³⁸ In this short visit, the group made an extensive investigation across the island.

³³ Editorial, “Zhongmei nongye jishu hezuotuan lishan teji 中美农业技术合作团蒞陕特辑 [China-United States Agricultural Mission-Shaanxi Special Edition],” *Guoli Xibei Nongxueyuan Yuankan* 国立西北农学院院刊 [Journal of the National Northwest Agricultural College] No. 5 (1946): 1-9.

³⁴ Chen Qihua 陈启华, “Zhongmei nongye jishu hezuo kaochatuan lirong kaocha zhiyao 中美农业技术合作考察团莅蓉考察志要 [Brief Report of the China-United States Agricultural Mission at Chengdu],” *Chuannongsuo Jianbao* 川农所简报 [Briefing of Sichuan Provincial Agricultural Department] No. 7 (1946): 13-16.

³⁵ Ren Shan 任山, “Jiuyue hua taiwan: haoqinsheng, zoubingwen shengzan taiwan nongye 九月话台湾: 郝钦生, 邹秉文盛赞台湾农业 [Talking about Taiwan in September: Hutchison and Zou Bingwen praise agriculture in Taiwan],” *Taiwan Yuekan* 台湾月刊 [Taiwan Monthly] No.1 (1946): 85.

³⁶ Ren Shan 任山, “Jiuyue hua taiwan: haoqinsheng, zoubingwen shengzan taiwan nongye 九月话台湾: 郝钦生, 邹秉文盛赞台湾农业 [Talking about Taiwan in September: Hutchison and Zou Bingwen praise agriculture in Taiwan],” *Taiwan Yuekan* 台湾月刊 [Taiwan Monthly] No.1 (1946): 85.

³⁷ Ren Shan 任山, “Jiuyue hua taiwan: haoqinsheng, zoubingwen shengzan taiwan nongye 九月话台湾: 郝钦生, 邹秉文盛赞台湾农业 [Talking about Taiwan in September: Hutchison and Zou Bingwen praise agriculture in Taiwan],” *Taiwan Yuekan* 台湾月刊 [Taiwan Monthly] No.1 (1946): 85.

³⁸ Ren Shan 任山, “Jiuyue hua taiwan: haoqinsheng, zoubingwen shengzan taiwan nongye 九月话台湾: 郝钦生, 邹秉文盛赞台湾农业 [Talking about Taiwan in September: Hutchison and Zou Bingwen praise agriculture in Taiwan],” *Taiwan Yuekan* 台湾月刊 [Taiwan Monthly] No.1 (1946): 85.

For the other five focus groups, due to the small size of their groups, their investigative trips were flexible. Members did not have settled schedules, and sometimes they joined with other groups for some destinations of interest. Nevertheless, some general itineraries were as follows: The carpet wool group members were Robert H. Burns and Xu Kangzu.³⁹ From July 17 to October 1, this group travelled extensively across China to Lanzhou, Xining, Sanjiaocheng, Qinghai Lake, Pingliang, Zhongning, Ningxia, Dingyuanzhen, Baotou, Dunhuang, Xi'an, Beijing, Tianjin, Zhangjiakou, Shenyang, Gongzhuling, Changchun, Shanghai, and Hangzhou.⁴⁰ One of this group's observations was that although northwestern wool texture was rough; some of it could be appropriate for raw materials for carpets.⁴¹ Improved sheep breeding also would help make northwest wool suitable for clothing material. Charles Edward Seitz and Wu Liuqing formed the tea group.⁴² From July 22 to October 3, they visited Beijing, Tianjin, Shenyang, Shanghai, Taiwan, Hankou, Tunxi, Huangshan, Qimen, Hangzhou, Peikuan (Beiguan), and Sankia.⁴³ The tea group also visited the Cotton Improvement Institute at Beijing, Yenching University, Tsinghua University, NARB Field Station at Shijiazhuang, and other northern agricultural related institutions along with the general group in August.⁴⁴ Harley L. Crane and Jia Zhangliang

³⁹ Editorial, "Zhongmei nongye jishu hezuotuan fenzu kaocha 中美农业技术合作团分组考察 [Group Inspection of the China-United States Agricultural Mission]," *Zhejiang Jingji Yuekan* 浙江经济月刊 [Zhejiang Economic Monthly] 1, No. 2 (1946): 31.

⁴⁰ Tentative Schedule for Carpet Wool Group, July 1946, Folder Zhongmei nongye jishu hezuotuan gongzuo ribao 中美农业技术合作团工作日报 [Daily Work of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁴¹ Editorial, "Zhongmei nongye jishu hezuotuan lishan teji 中美农业技术合作团蒞陕特辑," *Guoli Xibei Nongxueyuan Yuankan* 国立西北农学院院刊 No. 5 (1946): 1-9.

⁴² Editorial, "Zhongmei nongye jishu hezuotuan fenzu kaocha 中美农业技术合作团分组考察 [Group Inspection of the China-United States Agricultural Mission]," *Zhejiang Jingji Yuekan* 浙江经济月刊 [Zhejiang Economic Monthly] 1, No. 2 (1946): 31.

⁴³ Itinerary For Tea Group, July 1946, Folder Zhongmei nongye jishu hezuotuan gongzuo ribao 中美农业技术合作团工作日报 [Daily Work of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁴⁴ Report during Inspection Trip, August 1946, Folder 35 nian 7 zhi 12 yue zhongmei nongye jishu hezuotuan shicha baogao 35 年 7 至 12 月中美农业技术合作团视察报告, Nonglinbu 农林部, 20-21-040-06, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

constituted the tung oil group.⁴⁵ They travelled to Chongqing, Beijing, Liuzhou, Xi'an, Hengyang, Guilin, Jiujiang, Nanchang, Hankou, Sha nghai, and Hangzhou from July 22 to October 1.⁴⁶ The fishery group included Robert A. Nesbit and Wang Yikang.⁴⁷ From July 15 to September 14, the fishery group visited Taiwan, Xiamen, Shantou, Hongkong, Sanya, Guangzhou, Zhoushan Islands, Ningbo, Wenzhou, Beijing, Tianjin, Qinhua dao, Dalian, Qingdao, and Shanghai.⁴⁸ To support the Mission's fishery investigations, the U.S. Navy placed a vessel at the disposal of the Mission for a period no longer than two months.⁴⁹ This fully manned modern ship enabled the fishery group to travel more effectively along the Yangtze River and to northern coastal cities and southern islands. The group also investigated the Hebei Provincial Aquacultural College at Tianjin along with some northern coastal fishing villages in October.⁵⁰ Lastly, Charles J. Huber and Ge Jingzhong formed in the silk group.⁵¹ From July 16 to October 1, they traveled to Shanghai, Guangzhou, Kunming, Wuxi, Suzhou, Chongqing, Hangzhou, Jiaxing, Huzhou, and even to

⁴⁵ Editorial, "Zhongmei nongye jishu hezuotuan fenzu kaocha 中美农业技术合作团分组考察[Group Inspection of the China-United States Agricultural Mission]," *Zhejiang Jingji Yuekan* 浙江经济月刊 [Zhejiang Economic Monthly] 1, No. 2 (1946): 31.

⁴⁶ Itinerary For Tung Oil Group, July 1946, Folder Zhongmei nongye jishu hezuotuan gongzuo ribao 中美农业技术合作团工作日报 [Daily Work of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁴⁷ Editorial, "Zhongmei nongye jishu hezuotuan fenzu kaocha 中美农业技术合作团分组考察[Group Inspection of the China-United States Agricultural Mission]," *Zhejiang Jingji Yuekan* 浙江经济月刊 [Zhejiang Economic Monthly] 1, No. 2 (1946): 31.

⁴⁸ Itinerary of Fishery Group, July 1946, Folder Zhongmei nongye jishu hezuotuan gongzuo ribao 中美农业技术合作团工作日报 [Daily Work of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁴⁹ Robert A. Nesbit to Paul C. Ma, August 1946, Folder Zhongmei nongye jishu hezuotuan kaocha 中美农业技术合作团考察 [Inspection of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-04, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁵⁰ SuoYu 鮫鱼, "Zhongmei nongye jishu hezuotuan yuye diaochazu dijin 中美农业技术合作团渔业调查组抵津 [Fishery Group of the China-United States Agricultural Mission arrived Tianjin]," *Shuichan Yuekan* 水产月刊 [Fishery Monthly] 1, No.5 (1946): 86.

⁵¹ Editorial, "Zhongmei nongye jishu hezuotuan fenzu kaocha 中美农业技术合作团分组考察[Group Inspection of the China-United States Agricultural Mission]," *Zhejiang Jingji Yuekan* 浙江经济月刊 [Zhejiang Economic Monthly] 1, No. 2 (1946): 31.

Japan.⁵² The Mission members pursued their investigation via train, plane, hired car, shuttle, and even a naval vessel.

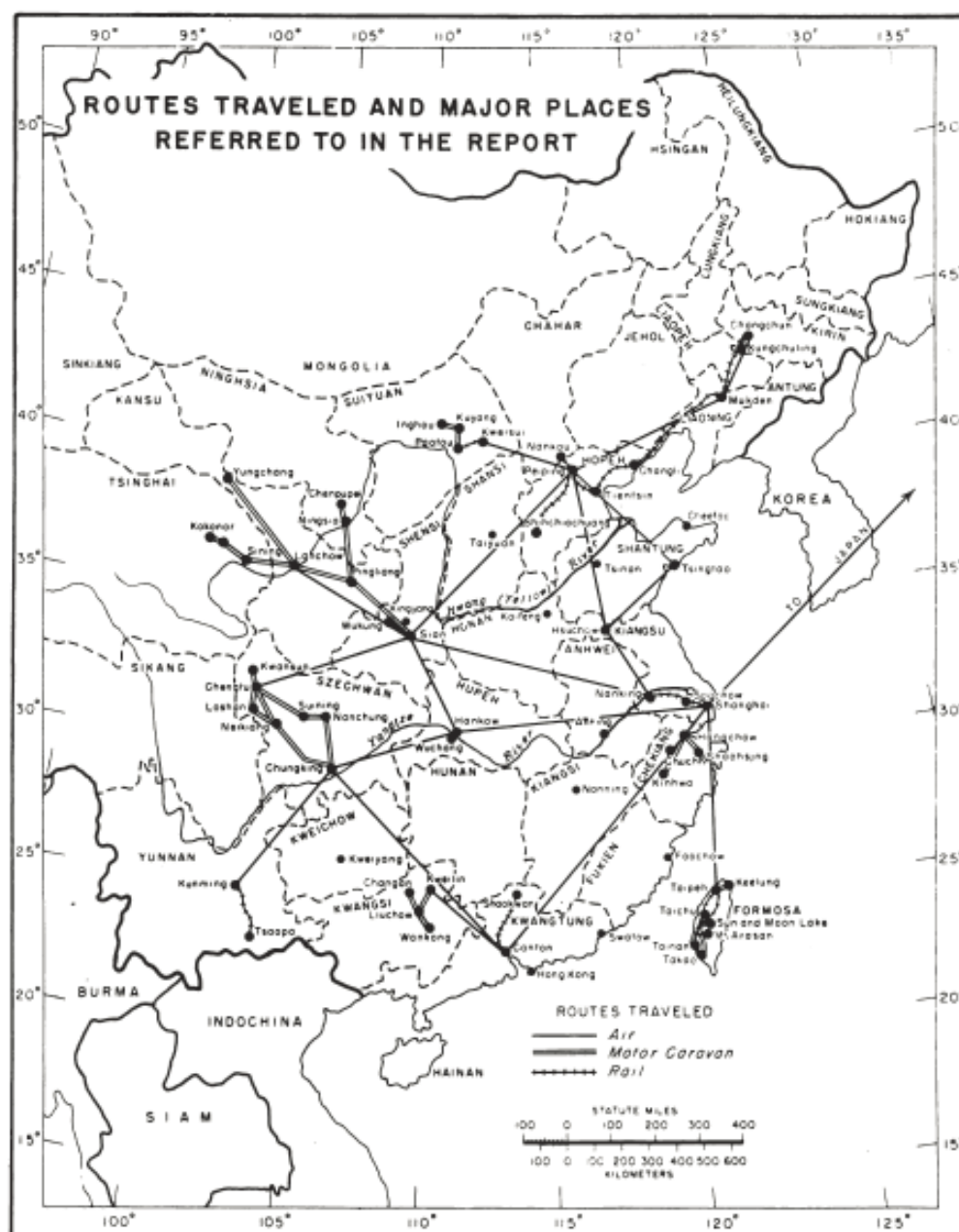


Figure 17. Mission's major travel routes in China⁵³

⁵² Silk Travel Schedule, July 1946, Folder Zhongmei nongye jishu hezuotuan gongzuo ribao 中美农业技术合作团工作日报 [Daily Work of the China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-040-02, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁵³ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A., 1947), viii.

After travelling across fifteen provinces in eleven weeks, all the six groups returned to Nanjing in succession. The Mission began to prepare its reports. After six weeks' preparation, the Mission drafted a 40-page preliminary report to the Nationalist governments. On November 13, Chang Kai-shek met with the Mission members to request their observations.⁵⁴ The Mission informed him that to solve the biggest agricultural problem in China, the extremely low level of arable lands per capita, China needed the industrialization of agriculture, better transportation, land reform, a universal rural credit system, and a people's government.⁵⁵ Apparently, on the eve of a full-scale civil war, Chang could provide little help in realizing these goals. Before the U.S. delegates returned home, on November 16, the Mission held a press conference to share its travel experience, observations, and suggestions. Hutchison emphasized that the increase of agricultural production was not only necessary for the Chinese people's daily existence and for the provision of raw materials for industrialization, but also more importantly as vital sources of foreign currency.⁵⁶ This confirmed that this Mission had not only focused on domestic agricultural needs but also on the need to improve agricultural exports. It is also true, however, that this investigation probably was the most extensive agricultural investigation nationwide at that time. As Hutchison himself said "up northeast to Changchun of Manchuria, northwest to Xi'an, down south to Canton, and east to Taiwan, we travelled more than 8,000 miles in China."⁵⁷ In early 1947, after a few months'

⁵⁴ Editorial, "Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission]," *Guangxi Nongye Tongxun* 广西农业通讯 [Journal of Guangxi Agriculture] 5, No. 11 (1946): 42.

⁵⁵ Editorial, "Zhongmei nongye zhuanjia caoni zhongguo nongye shengchan jihua 中美农业专家草拟中国农业生产计划 [Chinese and American Agricultural Experts Draw up China's Agricultural Production Plan]," *Guangxi Nongye Tongxun* 广西农业通讯 [Journal of Guangxi Agriculture] 5, No. 11 (1946): 42.

⁵⁶ Editorial, "Zhongmei nongye jishu hezuotuan zhi guangan yu jianyi: Zhailu baogaoshu zhi yaodian 中美农业技术合作团之观感与建议: 摘录报告书之要点 [Observations and Recommendations of the Mission: A Summary of the Main Points of the Report]," *Nongye Shengchan* 农业生产 [Agricultural Production] 1, No. 7 (1946): 11.

⁵⁷ Zhao Xilin 赵锡麟 and Xu Jielun 徐杰伦, "Yanjiangci: Zhongmei nongye jishu hezuotuan haoqisheng tuanzhang lixing dui benhang diwujie hangwu huiyi gehang jingli ji zongchu quantiren yanjiang 演讲词: 中美农业技术合作团赫契生团长莅行对本行第五届行务会议各行经理暨总处全体同人演讲 [Hutchison's Speech to all the managers of our bank in the fifth general meeting]," *Benhang Tongxun* 本行通讯 No. 141/142 (1946): 18-19.

drafting, the Mission submitted its final report to both the U.S. and Chinese governments. On February 11, Zhou Yichun, the Minister of the CMAF, convened a meeting involving representatives from the Chinese Ministry of Education, the National Land Commission, the Chinese Ministry of Economy, the Chinese Ministry of Finance, the Chinese Ministry of Society, Farmers' Bank of China, and the National Water Conservancy Committee to discuss the release of the Mission's report.⁵⁸ All the representatives attended this meeting agreed with the recommendations of this report and the need for further cooperation between two countries. On February 24th of 1947, both the Chinese Nationalist government and the U.S. government released this report to the public.

4.2 Report for Agricultural Improvement and Export

This report was composed of fifteen chapters including: a general summary of a national agricultural program; a national system of agricultural credit; national land policy; marketing agricultural products; farm tenancy; education and research; agricultural extension work; a national agricultural regulatory service; production and marketing statistics; organization of China's agricultural services; international trade; China's tung oil industry; China's silk industry; China's tea industry; and China's wool industry.⁵⁹ The English version of the report submitted to the U.S. government and the Chinese version submitted to the Nationalist government differed only in editorial wording.

⁵⁸ Nongyebu yaoqing geyouguan jigou huishang zhongmei nongye jishu hezuotuan baogaoshu tanhuahui jilu 农业部邀请各有关机构会商中美农业技术合作团报告书谈话会记录 [Notes of the Meeting the between the CMAF and Invited Institutions on the Report], February 1947, Folder 36 nian 2 zhi 3 yue zhongmei nongye jishu hezuotuan 36 年 2 至 3 月中美农业技术合作团 [China-United States Agricultural Mission, February to March of 1947], Nonglinbu 农林部, 20-21-040-03, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁵⁹ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), ix-xiv; China-United States Agricultural Mission. *Zhongmei nongye jishu hezuotuan baogaoshu* 中美农业技术合作团报告书 [Report of the China-United States Agricultural Mission] (Nanjing: China-United States Agricultural Mission, 1946), mulu.

For national agricultural planning, the Mission divided its recommendations into three parts, including physical, economic and social, and supply. Regarding the physical aspects, they discussed crops, forests, animal husbandry, fishery, agricultural engineering, and soil survey. Some general measures for the increase of crop production included more irrigation facilities, greater application of chemical fertilizer and continued use of farm manures, the planting of improved seeds, crop breeding improvement, pest control and the use of chemical pesticides, and scientific cultural methods.⁶⁰ For forestry, the Mission emphasized the harvesting of forest stands on a sustained-yield basis as well as the reforestation of large denuded areas. For animal husbandry, it recommended the development of modern veterinary science, improvement on livestock's feeding and shelters, and improvement in livestock and poultry breeding.⁶¹ For fisheries, the ports, lighthouses, motorized fishing vessels, cold storage plants, and channels of distribution also needed large inputs from the government. Agricultural engineering was essential to industrialize China's agriculture. The Mission recommended the promotion of modern agricultural implements, farm structures, rural industries, and rural electrification, which would dramatically improve agricultural productivity as well as reduce human and animal labor. The Mission also advised a soil survey, especially in undeveloped areas of the Northwest, the Northeast, and the Southwest of China to determine more suitable lands for agricultural purposes.

For social and economic improvement, the Mission discussed eleven factors concerning agricultural development, including land use, farm management, rural industry, prices for agricultural products, use of agricultural products, agricultural finance, transportation and

⁶⁰ Editorial, "Zhongmei nongye jishu hezuotuan baogaoshu zhaiyao 中美农业技术合作团报告书提要 [Abstract of the Report of the China-United States Agricultural Mission]," *Zhejiang Jingji Yuekan* 浙江经济月刊 [Zhejiang Economic Monthly] 2, No. 3 (1947): 36

⁶¹ Editorial, "Zhongmei nongye jishu hezuotuan zhi guangan yu jianyi: zhailu baogaoshu yaodian 中美农业技术合作团之观感与建议: 摘录报告书之要点 [Observations and Recommendations of the Mission: A Summary of the Main Points of the Report]," *Nongye Shengchan* 农业生产 [Agricultural Production] 1, No. 7 (1946): 1.

marketing, tenancy, agricultural reports and market information, rural organizations, and population and its relationship to agriculture.⁶² Most of the Mission's observations were fully elaborated in chapters on institutional improvement. For the supply aspect of agricultural improvement, the Mission members emphasized four kinds of supplies, including chemical fertilizers, agricultural implements and equipment, pesticides, serums and vaccines, plant and seed multiplication, and extension. The Mission recommended that the government subsidize the new technology inputs to make them affordable to farmers.⁶³ The Mission also discussed other aspects related to agriculture, including public health, general education, river conservancy and flood control, and transportation.⁶⁴

The Mission considered a nation-wide agricultural financial system one of those most important institutional improvements in the second chapter of the report. At that time, more than two-thirds of agricultural loans were locally provided by landlords, relatives, and they proved usurious moneylenders. This lending system was unstable, unhealthy, and in most cases unfair to farmers. The Mission advised that the government should organized a national agricultural banking system composed of three departments, including land credits, production and marketing credits, and intermediate credits.⁶⁵ All the funds for agricultural development should be included under the supervision and disposal of the agricultural bank. The agricultural bank also should cooperate

⁶² China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), 14-19.

⁶³ Zhongmei nongye jishu hezuo caoan zhaiyao 中美农业技术合作草案摘要 [Abstract of the Draft of Technological Cooperative Plan between the US and China], February 1948, Folder Zhongmei nongye jishu hezuo 中美农业技术合作 [Agricultural Technological Cooperation between the US and China], Nonglinbu 农林部, 20-21-041-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁶⁴ Editorial, "Jianshe zhongguo nongye fangan: zhongmei nongye jishu hezuotuan fabiao baogaoshu 建设中国农业方案: 中美农业技术合作团发表报告书 [China's Agricultural Program: the Mission released the Report]," *Anhui Nongye* 安徽农业 [Anhui Agriculture] No.6 (1947): 15-16

⁶⁵ Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

with farmers' associations, local farmers' cooperatives, and local credit cooperatives, to provide financial advice and support to farmers.

The Mission also considered land policy in the report. It provided general guidance for land survey, land registration, land appraisal, land classification, land resource conservation and reclamation, size of farm, land consolidation, tenancy, credit, taxation, and administration. The report also pointed out some principal visions including equal rights to land for people; an unprejudiced land taxation system, and protection of tenant farmers' rights.⁶⁶ Since these recommendations were not consistent with the Nationalist government and their landlord supporters' interest, however, the adoption of these general goodwill principles into detailed land policy remained problematic.

The third aspect of the report addressed the marketing of agricultural products. China lacked an adequate and scientific product grading system, processing technology, transport network, and storage methods.⁶⁷ The Mission members recommended two major measures: the establishment of a national agricultural regulatory bureau and a division for market statistics under the direction of the CMAF, and, the hiring of marketing specialists, cooperative marketing specialists, and agricultural engineers.⁶⁸

⁶⁶ Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁶⁷ Zhongmei nongye jishu hezuotuan caoan zhaiyao 中美农业技术合作草案摘要 [Abstract of the Draft of Technological Cooperative Plan between the US and China], February 1948, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作 [Agricultural Technological Cooperation between the US and China], Nonglinbu 农林部, 20-21-041-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁶⁸ Zhongmei nongye jishu hezuotuan caoan zhaiyao 中美农业技术合作草案摘要 [Abstract of the Draft of Technological Cooperative Plan between the US and China], February 1948, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作 [Agricultural Technological Cooperation between the US and China], Nonglinbu 农林部, 20-21-041-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

Farm tenancy was always a major economic and social issue in rural China. According to previous statistics, farm operators owned half of the arable lands nationwide while the other half were owned by landlords under the operation of tenant farmers.⁶⁹ The Mission proposed to execute the Land Law of 1946, which limited the annual land rent to no more than 8 percent of the total land value.⁷⁰ At the same time, the proposed agricultural bank should provide necessary loans and financial support to tenants. The government also should address the problem of the unbalanced distribution of land ownership.

In the report's sixth and seventh chapters, the Mission emphasized a nationwide system for agricultural education, research, and extension. The most important and influential advice was to establish nine agricultural colleges in nine cities or prefectures to provide agricultural education and research for nine regions in China. The Mission recommended an agricultural college at Nanjing to serve for Jiangsu, Zhejiang, and Anhui, as well as three eastern provinces. An agricultural college should also be established at Changchun to serve for the nine northeastern provinces in the Manchuria. At Beijing, an agricultural college would provide agricultural education for Hebei, Chahar, Suiyuan, Jehol, Shanxi, and Shandong, the six northern provinces. An agricultural college at the Wugong Prefecture could serve for Shaanxi and Henan provinces. At Lanzhou, the Mission also recommended an agricultural college for Gansu, Ningxia, Xinjiang, and Qinghai, the four northwestern provinces. At Wuchang, there should be an agricultural college for Hubei, Hunan, and Jiangxi, the three central provinces. Then, an agricultural college at Guangzhou (Canton) could serve for Guangdong, Guangxi, and Fujian, three southern provinces.

⁶⁹ Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁷⁰ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), 59.

Additionally, Chengdu's agricultural college could provide agricultural education for Sichuan, Xikang, Guizhou, and Yunan, the four southwestern provinces. Lastly, an agricultural college at Taipei could serve for Taiwan island.⁷¹ The central, provincial, and prefectural levels of government also should establish agricultural extension services to coordinate systematically extension work nationwide down to the grassroots' level.

To integrate national agricultural resources, the mission also proposed a national agricultural regulatory service focusing on three aspects of prioritized work including grading standards and inspection for agricultural products, animal and plant quarantine, and strict warehousing regulations.⁷² An efficient agricultural service system also required adequate and accurate production statistics on agricultural products and the marketing information. Mission members pointed out some major agricultural market monitoring indexes such as crop prices at various points of transportation, crop acreage, land resources per capita, stock, and shipment.⁷³ Another important aspect the mission's report emphasized international trade for reciprocity and mutual benefit. The dramatic fluctuation of the exchange rate between the Chinese Dollar and U.S. Dollar, however, greatly affected two-way international trade. A healthy market demanded a stabilized currency rate.

In the remainder of the report, the Mission paid special attention to four major agricultural exports, tung oil, silk, tea, and wool. Tung oil was a major export earning foreign exchange for China during the Republic of China. As an essential commodity for the manufacturing industry,

⁷¹ Editorial, "Zhongmei nongye jishu hezuotuan baogaoshu zhaiyao 中美农业技术合作团报告书提要 [Abstract of the Report of the China-United States Agricultural Mission]," *Zhejiang Jingji Yuekan* 浙江经济月刊 [Zhejiang Economic Monthly] 2, No. 3 (1947): 36.

⁷² Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁷³ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), 113-114.

Chinese tung oil dominated two major markets, the U.S and the Europe. Due to war damages, backward production technology, high cost of transportation, and low prices of substitute oils, however, the production of tung oil declined sharply during the WWII. The Mission recommended the adoption of modern methods and technology for production, processing, shipping, and marketing.

Silk industry was one of the remaining agricultural sideline industries for rural China after the war. At the same time, raw silk was also one of the major exports to the U.S. During the war, however, the silk industry suffered heavy losses with approximately 70 percent of the mulberry orchards destroyed.⁷⁴ The Mission recommended funding for technological renovation and cultivation of mulberry trees, cocoon production, silk reeling, and silk weaving. Funding could be raised from the government, society, and foreign companies.

For the tea industry, the total number of tea production was estimated at 2 billion pounds with China producing almost one-half that amount.⁷⁵ Due to backward production technology, however, China lost its leading position during the 1940s. The Mission analyzed the problems in the production, processing, and marketing of tea. It recommended the adoption of modern equipment, fertilizers, and pesticides to increase production. Other measures included increasing the price of tea, providing more technical training for production, and the developing tea industry in tropical areas such as Taiwan.⁷⁶

⁷⁴ Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁷⁵ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), 187.

⁷⁶ Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

The last agricultural export the report discussed was wool. China was a major carpet wool exporter due to their wools' length and fiber strength and its dyeing properties.⁷⁷ China's wool industry faced various challenges, however, including transportation difficulties from inland to seaports, lack of wool storage facilities, financial problems, and low production. Regarding transportation and storage, some recommended solutions were utilization of various means of transportation, including waterways and highways, as well as the establishment of wool warehouses and testing houses near producing areas and the seaports.⁷⁸ Regarding quality and production, the Mission recommended the selection and breeding of the native sheep and cross breeding native sheep with purebred sheep from New Zealand and the U.S.⁷⁹

Zuo Shunsheng, the Minister of the CMAF, complimented that "this report is the best in the Chinese history."⁸⁰ Many public media outlets, however, did not agree. The major criticism was that "why there were 141 pages focusing on agricultural exports to the U.S. including tung oil, tea, silk, and wool in a 278-page report on agricultural modernization for China?"⁸¹ People questioned the real mission for the U.S. delegates. Was it to help with agricultural development in China or provide more agricultural raw materials export to the U.S.? Jia Weiliang, one of the Chinese members in the Mission, responded that "the U.S. does not have to buy our agricultural products, they can buy these agricultural products from other countries or choose substitutes, but, we need

⁷⁷ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), 199.

⁷⁸ Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], July 1947, Folder Zhongmei nongye jishu hezuotuan 中美农业技术合作团 [China-United States Agricultural Mission], Nonglinbu 农林部, 20-21-008-05, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁷⁹ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), 223.

⁸⁰ Weng Zhiyong 翁之镛, "Ping zhongmei nongye jishu hezuotuan baogaoshu: 'Peichen'lishishang zuihao de wenjian' me? 评中美农业技术合作团报告书: 配称'历史上最好的文件'吗? [Comments on the Report: Is it 'the best report in the history'],” *Shehui Gonglun* 社会公论 [Public Opinions] 1, No. 1 (1947): 9-10.

⁸¹ Weng Zhiyong 翁之镛, "Ping zhongmei nongye jishu hezuotuan baogaoshu: 'Peichen'lishishang zuihao de wenjian' me? 评中美农业技术合作团报告书: 配称'历史上最好的文件'吗? [Comments on the Report: Is it 'the best report in the history'],” *Shehui Gonglun* 社会公论 [Public Opinions] 1, No. 1 (1947): 9-10.

foreign currency to rebuild our country.”⁸² However, would the Nationalist government use the earned foreign currency to rebuild rural China or for the preparation of civil war? This to some extent reflected the ultimate conflict of interest between an oligarchic government and a small-scale peasant society at the verge of collapse. Nevertheless, for the report itself, Jia Weiliang accurately stated that “we ourselves were not fully satisfied with this report due to insufficient preparation time, however, we made our best efforts.”⁸³

4.3 Echo of the Public

Both at the top level, the two countries’ leaders were promoting agriculture as the prioritized field in bilateral cooperation between China and the U.S. In June of 1946, before the American delegation departed from the U.S., President Harry S. Truman wrote to Chiang Kai-shek that “it is my firm belief that any plan for cooperation in economic development between our two countries should include agriculture.”⁸⁴ After the U.S. delegates returned in December of 1946, T. V. Soong, President of the Executive Yuan of the Republic of China, wrote to James F. Byrnes, the U.S. Secretary of State, that “I hope parts of the report may form the basis of future cooperation between our governments and so further strengthen the traditional friendship between our countries.”⁸⁵ On December 19, 1946, President Truman confirmed American support of agricultural aid to China writing that “as ways and means are presented for constructive aid to China, we will give them

⁸² Jia Weiliang 贾伟良, “Du ‘ping zhongmei nongye jishu hezuotuan baogaoshu’ zhihou 读‘评中美农业技术合作团报告书’后 [Review of the Report],” *Shehui Gonglun* 社会公论 [Public Opinions] 1, No. 5 (1947): 12-13.

⁸³ Jia Weiliang 贾伟良, “Du ‘ping zhongmei nongye jishu hezuotuan baogaoshu’ zhihou 读‘评中美农业技术合作团报告书’后 [Review of the Report],” *Shehui Gonglun* 社会公论 [Public Opinions] 1, No. 5 (1947): 12-13.

⁸⁴ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), i.

⁸⁵ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947), iii.

careful and sympathetic consideration.”⁸⁶ On July 22, 1947, Dawson, the agricultural attache at the U.S. Embassy in China, confirmed again that “our government can do something soon to give material support to the recommendations of the China-United States Mission on Agriculture.”⁸⁷ Apparently, the two governments strongly supported to the Mission’s work. Both prepared to follow with full-scale cooperation on agriculture. According to the Mission’s recommendation, the Nationalist government proposed to the U.S. government the organization of a joint program to provide economic and technical assistance to China’s agricultural industry. It became the Sino-American Joint Commission on Rural Reconstruction (JCRR) established on October 1, 1948 in Nanjing.

Along with the Nationalist government’s dissemination, most Chinese media outlets expressed their appreciation to the Mission’s work. In the post-WWII Era, China urgently needed the allies’ technological assistance. “To develop China’s industry, we need to develop our agriculture...the Mission will bring modern agricultural knowledge to our producers to help us build a prosperous and independent country,” as one anticipated.⁸⁸ China’s most influential pro-government newspaper, *Shen Pao*, pointed out that the Mission was composed of technical experts with rich experience which demonstrated that the U.S. government was “quite sincere in its desire to help China in her national reconstruction and rehabilitation.”⁸⁹ Many government-backed media outlets placed much hope and respect on the Mission’s work. They anticipated that while General C. Marshall, the U.S. presidential envoy to China, was making efforts to mediate the political

⁸⁶ Owen L, Dawson to J. Leighton Stuart, July 1947, Folder Agriculture Policy 1946-1949, Box 601, Entry 5, Record Group 166, Narrative Reports (1920-1941), National Archives II, College Park, MD.

⁸⁷ Owen L, Dawson to J. Leighton Stuart, July 1947, Folder Agriculture Policy 1946-1949, Box 601, Entry 5, Record Group 166, Narrative Reports (1920-1941), National Archives II, College Park, MD.

⁸⁸ Hui 辉, “Huanying zhongmei nongye jishu hezuotuan 欢迎中美农业技术合作团 [Welcome the China-United States Agricultural Mission],” *Huaji* 华机 1, No. 2 (1946): 4-5.

⁸⁹ Sino-American Cooperation in Agriculture, *Shun Pao*, June 28, 1946, Folder Agriculture Policy 1946-1949, Box 601, Entry 5, Record Group 166, Narrative Reports (1920-1941), National Archives II, College Park, MD.

dispute and military conflict between the Nationalist government and the Communist Party of China in 1946, the China-United States Agricultural Mission also was making efforts to modernize China's agriculture and bring prosperity to Chinese people.⁹⁰ It is safe to say that the Mission gained necessary support and understanding for its work, outcome, and plans for future international cooperation from parts of the general public in China.

A divided country suffering from the endless civil war, however, did not agree. Despite the Nationalist government's support of U.S.-China agricultural cooperation, there were growing voices of opposition questioning the nature and rationality of this Mission in China. The most common criticism was the Mission's focus on the production increase and quality improvement of agricultural export products tung oil, carpet wool, silk, and tea. Was it because that soybean, wheat, and cotton were among the agricultural products that China could compete with the U.S. on, therefore the U.S. did not want to help us improve them?⁹¹ One Chinese agriculturalist, Huang Shaoxu, pointed out that "improved wheat varieties in Shandong, Hebei, Jiangsu, and Sichuan were as equally high quality as wheat varieties from Kansas, Nebraska, Oklahoma, and Illinois."⁹² In the same way, he argued that "the breeding technology of American cottons could also be adopted in Hebei, Henan, Shaanxi, Hubei, and Jiangsu, we will be able to produce all the raw materials for China's textile industry independently."⁹³ For impoverished Chinese people, wheat and cotton were apparently more important than tung oil. In addition, many critics argued that it was China's national sovereignty to plan its agricultural industry according to its own citizens'

⁹⁰ Improvement of China's Agriculture, Shanghai Evening Post, June 29, 1946, Folder Agriculture Policy 1946-1949, Box 601, Entry 5, Record Group 166, Narrative Reports (1920-1941), National Archives II, College Park, MD.

⁹¹ Editorial, "Ying zhongmei nongye jishu hezuotuan 迎中美农业技术合作团 [Welcome the China-United States Agricultural Mission]," *Xin Shijie* 新世界 [New World] No.7 (1946): 24-26, 9.

⁹² Huang Shaoxu 黄绍绪, "Lun zhongmei nongye jishu hezuo 论中美农业技术合作 [On Sino-US Agricultural Technical Cooperation]," *Tuan Kan (Hebei)* 团刊(河北) No. 3 (1946): 12-13.

⁹³ Huang Shaoxu 黄绍绪, "Lun zhongmei nongye jishu hezuo 论中美农业技术合作 [On Sino-US Agricultural Technical Cooperation]," *Tuan Kan (Hebei)* 团刊(河北) No. 3 (1946): 12-13.

basic needs and other objective conditions. Then, if there was any difficulty in the implementation of this plan, the government could request external assistance for technology or funding. “Why do we need to rely on other countries to make our own plans for us now? . . . [W]e have to ask that whose interest our own government puts as a priority now?”⁹⁴ People were afraid that through this governmental level of cooperation, China would become a colony or a quasi-colony that only provided raw material, cheap labor, and a consumer market for developed countries such as the U.S. After all, “since last time our neighbor offered us various kinds of cooperation like the Goodwill Delegation, the Investigation Delegation, the Cooperative Delegation under the slogan of ‘industry for Japan and agriculture for China,’ we sincerely hope the aim of this U.S.-China Mission was not somewhat of ‘agriculture for China and industry for the U.S.’ kind.”⁹⁵ Some journalist even used cattle raising as a vivid example to demonstrate the importance of overall planning in agriculture for China. “Today, someone needs milk, we raise improved dairy cattle; tomorrow, he is gone, and someone else needs farm cattle, do we just drive these dairy cattle into the field to pull plows?”⁹⁶ The Mission members’ earnest hope was to modernize China’s agriculture via international cooperation, however, after one century of humiliation and invasion, many working-class Chinese had lost their faith in foreign powers.

Second, most Chinese farmers no longer trusted the Nationalist government. On October 8, 1947, the Chinese Communist Party (CCP) broadcasted to the public that “Chiang Kai-shek and his Ministry of Agriculture and Forestry were collaborating with the U.S. to sell up our raw

⁹⁴ Li Renliu 李仁柳, “Zhongmei nongye jishu hezuotuan de pingjia 中美农业技术合作团的评价[Evaluation on the China-United States Agricultural Mission],” *Zhongguo Jianshe (Shanghai)* 中国建设(上海 1945) 2, No. 5 (1946): 40-41.

⁹⁵ Ke Tong 柯同, “Wen zhongmei nongye jishu hezuotuan zucheng yougan 闻中美农业技术合作团组成有感 [Thoughts on the organization of the China-United States Agricultural Mission],” *Weimin Zhoukan* 唯民周刊 2, No. 5 (1946): 3.

⁹⁶ Liu Changyan 刘昌言, “Duiyu zhongmei nongye jishu hezuotuan de qidai 对于中美农业技术合作团的期待 [Hopes on the China-United States Agricultural Mission],” *Nongcun Fuye* 农村副业 1, No. 1 (1947): 9-12.

material at an extremely low price. . . their plan will help American capital and technology directly loot China's agriculture."⁹⁷ While the CCP's accusation reflected its need for political propaganda, Chinese farmers no longer believed that the Nationalist government would protect their interests. Peace was the precondition for any reform including agriculture. After eight years of the Sino-Japanese War, rural China was filled with impoverished farmer families. When they longed for a better future, the civil war occurred in 1945. The farmers did not know who was on the right side, the Communists or the Nationalists? No one truly knew the answer. The reality that the Chinese farmers experienced was that the Nationalist government again had to conscript from vast rural population. With conscription became impressment, however, and requisition became robbery and extortion. The government lost its credibility in rural China.⁹⁸ One even bravely predicted that "Going to countryside to find the problems on your own! We know that you will attempt and accomplish nothing before the foundation of an independent, peaceful, and united China."⁹⁹ It was ironic but also genuine considering past events.

Third, could the Mission members determine solutions for China's agricultural problems in such a short visit? A journalist from *Jingji Daobao* wrote ironically "the Mission members were devoted in investigation, sightseeing, and social engagement . . . Stabilizing countryside, however, was much more important than technical improvement."¹⁰⁰ At the grassroot level of rural China,

⁹⁷ Gongfei zhize zhongmei nongye jishu hezuo jihua fangan dihui zhengfu 共匪指责中美技术合作计划方案诋毁政府 [The Communist Party criticizes the Sino-US cooperative plan slandering the government], October 1947, Folder Zhongmei nongye jishu hezuo 中美农业技术合作, Nonglinbu 农林部, 20-21-041-07, the Archives of the Institute of Modern History, Academia Sinica, Taipei.

⁹⁸ Li Renliu 李仁柳, "Zhongmei nongye jishu hezuotuan de pingjia 中美农业技术合作团的评价[Evaluation on the China-United States Agricultural Mission]," *Zhongguo Jianshe (Shanghai)* 中国建设(上海 1945) 2, No. 5 (1946): 40-41.

⁹⁹ Ke Tong 柯同, "Wen zhongmei nongye jishu hezuotuan zucheng yougan 闻中美农业技术合作团组成有感 [Thoughts on the organization of the China-United States Agricultural Mission]," *Weimin Zhoukan* 唯民周刊 2, No. 5 (1946): 3.

¹⁰⁰ Da Ting 大珽, "Zhongmei nongye jishu hezuotuan lai pingjin 中美农业技术合作团来平津 [the China-United States Agricultural Mission arrived Beijing and Tianjin]," *Jingji Daobao (Beijing)* 经济导报(北京) [The Economic Herald(Beijing)] No.1 (1946): 22.

farmers had tired of superficial bureaucratic investigations. Li Mingzhe, a local agriculturalist who witnessed the tea group's investigative work at Qimen of Anhui Province, testified that although the Mission distributed various survey forms to local agricultural organizations, the members just perfunctorily filled in made-up numbers because they knew nothing would change.¹⁰¹ Because the Mission hurried to investigate different parts of China within a few months, they had to rely on these numbers to draft their reports. Those big plans, however, prepared on the basis of forged numbers would become another vanity project for the government officials and another rubber check for farmers.

Last, there also were problems among the Mission members. Some Chinese members were officials in the CMAF. Due to various reasons, they were not able to be with the investigation continuously which most often led the joint investigation to become an American members' own investigation.¹⁰² Also, while American members were free to talk with different people, they were often accompanied by officials which did not leave much time to discuss the real problems with real farmers.¹⁰³ If agricultural officials already had this unprofessional attitude, the whole bureaucracy's reluctance to agriculture and rural problems was evidently very indifferent. The Nationalist government also did not offer any opportunity for the Mission members to observe agricultural conditions in the Communist areas. Although American members already informed by the U.S. Embassy that the Communists had made some progress in land reform, the Chinese

¹⁰¹ Editorial, "Zhongmei nongye jishu hezuotuan renwu wanbi 中美农业技术合作团任务完毕 [the China-United States Agricultural Mission completed their mission]," *Xiandai Nongmin* 现代农民 [Modern Farmer] 9, No. 12 (1946): 14-16.

¹⁰² W. Walton Butterworth to the U.S. Secretary of State, March 1947, Folder China-Agricultural Mission, Box 17, Attache Reports Relating to International Agricultural Conferences and Congresses, 1953-58, Record Group 88: Records of the Food and Drug Administration, 1877-2002, National Archives II, College Park, MD.

¹⁰³ W. Walton Butterworth to the U.S. Secretary of State, March 1947, Folder China-Agricultural Mission, Box 17, Attache Reports Relating to International Agricultural Conferences and Congresses, 1953-58, Record Group 88: Records of the Food and Drug Administration, 1877-2002, National Archives II, College Park, MD.

officials in the Mission still attempted to keep the tenancy issues to themselves.¹⁰⁴ As American members indicated that the longer they worked with the Chinese officials in the mission, the more they felt that “the mission leaned toward the conservative side.”¹⁰⁵ This was a bureaucratic system desiring international assistance but not institutional reform.

Some media outlets criticized that the mission’s plan was just another cliché mixed with some high key of technology.¹⁰⁶ While technology was important in agricultural development, only talking about it disguised the real matter of controversy. One critic argued “Chinese people do not welcome the agricultural cooperation if it is limited only to the technological level, because it is contradictory to the great principles to build a peaceful, democratic, and independent country.”¹⁰⁷ In 1949, the Nationalist government lost the civil war before it paid serious attention to these legitimate and humanistic requests in mainland China. The Taiwan Island was left as their ultimate experimental field for technological cooperation and agricultural modernization.

The China-United States Agricultural Mission in 1946-1948 was the first cooperative project on agricultural science and technology organized by the governments of the ROC and the United States. After the investigation of fifteen provinces in China, the mission members provided their findings and suggestions on the reconstruction of Chinese agriculture in their reports. In 1947, the

¹⁰⁴ W. Walton Butterworth to the U.S. Secretary of State, March 1947, Folder China-Agricultural Mission, Box 17, Attache Reports Relating to International Agricultural Conferences and Congresses, 1953-58, Record Group 88: Records of the Food and Drug Administration, 1877-2002, National Archives II, College Park, MD.

¹⁰⁵ W. Walton Butterworth to the U.S. Secretary of State, March 1947, Folder China-Agricultural Mission, Box 17, Attache Reports Relating to International Agricultural Conferences and Congresses, 1953-58, Record Group 88: Records of the Food and Drug Administration, 1877-2002, National Archives II, College Park, MD.

¹⁰⁶ Ji 吉, “Duanyan: Zhongmei nongye jishu hezuotuan de jianyi 短言: 中美农业技术合作团的建议[Shorts Words: Advice to the China-United States Agricultural Mission],” *Jingji Zhoubao* 经济周报 [Economic Weekly] 3, No. 22 (1946): 3.

¹⁰⁷ Li Renliu 李仁柳, “Zhongmei nongye jishu hezuotuan de pingjia 中美农业技术合作团的评价 [Evaluation on the China-United States Agricultural Mission],” *Zhongguo Jianshe (Shanghai)* 中国建设(上海 1945) [Building China (Shanghai 1945)] 2, No. 5 (1946): 40-41.

two governments released the *Report of China-United States Agricultural Mission*.¹⁰⁸ It provided a comprehensive plan for agricultural development, regarding agricultural management, crop improvement, and rural education. Although this plan was not adopted in mainland China, it incubated an organizational structure for the Sino-American Joint Commission on Rural Reconstruction, and provided a blueprint for agricultural reform in Taiwan. This mission had a profound effect on later cooperation in the field of agricultural science and technology between the U.S. and Taiwan.

¹⁰⁸ China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission* (Washington, D.C.: Office of Foreign Agricultural Relations, U.S.D.A, 1947).

CHAPTER 5. TAIWAN'S RURAL RECONSTRUCTION, 1948-1979

In 1949 after the failure of Chinese Civil War, the Nationalist government relocated to Taiwan. It was able to control the political situation on the island with the help of large numbers of troops that retreated along with it while the economy teetered on the brink of collapse. From the 1950s to 1970s, however, Taiwan has successfully and rapidly completed the structural transformation from an agricultural society to an industrial society. The living standards of the people have greatly improved. Import and export trade has continued to increase. Taiwan's economy accelerated, and international media outlets praised the so-called "Taiwan Miracle."¹ During this period, JCRR's leading role in rural rebuilding and international cooperation was of most importance to the Nationalist government.

After the World War II, the United States as the sole superpower in the capitalist camp began to dominate a series of purposeful, organized, and well-planned international assistance activities to restore the economic order of the "free world," expand the influence and leadership of the United States, and confront the socialist camp of the Soviet Union. Among these efforts, for instance, for European countries, U.S. Secretary of State, George Marshall, proposed the European Recovery Program in 1947. For the government of the Republic of China (ROC), the United States Congress also passed the corresponding China Aid Act in April 1948. In this Act, the United States accepted the proposal of James Yen, a passionate Chinese education reformer and the founder of the Chinese Mass Education Movement. It specifically included in the Section 407 the agreement to establish the Joint Commission on Rural Reconstruction in China². In the same year, the Nationalist and U.S. governments signed the Sino-US Economic Cooperation Act. Then, the Sino-American Joint

¹ Thomas B. Gold, *State and Society in the Taiwan Miracle* (Armonk: M.E. Shape, 1986).

² U.S. Congress. *Foreign Assistance Act of 1948*, 80th Congress, 20th Session, 1948, S. Rep 2202, 158-159.

Commission on Rural Reconstruction (JCRR) was officially established on October 1 in Nanjing.³ As a joint institution set up by both the Chinese and American governments, the JCRR was headed by a special committee with five members, including three from China and two from the United States, who were independently appointed by the presidents of the two countries.⁴ The first Chinese members were Jiang Menglin, James Yen, and Shen Zonghan, and the first American members were Raymond T. Moyer and John Earl Baker. Jiang Menglin was the director. This Act clearly provided that 10 percent of the total U.S. aid to China would be earmarked for the JCRR.⁵ Under the extreme circumstance of inflation during cross-straits confrontation, JCRR, was praised or even fawned by agricultural officials at all levels of the government of the Republic of China. Subsequently, the JCRR coordinated and planned major policies of Taiwan's agricultural economy and rural development while had a lasting influence.

³ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diyiqi* 中國農村復興聯合委員會工作報告第一期 [JCRR General Report I] (Taipei: Joint Commission on Rural Reconstruction, 1950), 2.

⁴ Joint Commission on Rural Reconstruction in China, August 3, 1948, Box 614, Foreign Agricultural Service Narrative Reports, 1946-1949, National Archives II, College Park, MD.

⁵ ZhangXianqiu 張憲秋, "Zhengfu Boqian Taiwan Qian Zhongguo Nongye Gaige Zhi Zhongyao Jieduan 政府播遷臺灣前中國農業改革之重要階段 [An important stage of China's agricultural reform before the government moved to Taiwan]," in *Zhonghua Nongxuehui Chengli Qishi Zhounian Jinian Zhuance* 中華農學會成立七十周年紀念專集 [The 70th anniversary album of the founding of the Agricultural Association of China] (Taipei: Zhonghua Nongxuehui 中華農學會[Agricultural Association of China], 1986), 90.



Figure 18. The first members of the JCRR (From left, Dr. John Earl Baker, Jiang Menglin, Shen Zonghan, Raymond T. Moyer, and James Yen)⁶

5.1 Mainland Background of JCRR

In fact, previous efforts on rural reconstruction in the mainland had laid a solid foundation for the establishment of the JCRR. In the 1920s, Chinese education circles paid close attention to the importance of rural reconstruction and popular education, among which both the “First Rural Social Community” established by James Yen at Ding Prefecture, Hebei Province in 1929 and “Zouping Rural Reconstruction Experimental District” established by Liang Shuming at Zouping Prefecture, Shandong Province in 1931 are representative examples.⁷ Then, in April 1936, the Rockefeller Foundation established North China Council for Rural Reconstruction (NCCRR) via collaborating with Yenching University, Nankai University, Tsinghua University, Peking Union

⁶ Szechuan-JCRR Commissioners and Staff, October 1949, Box 43, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

⁷ Zheng Dahua, *Mingguo Xiangcun Yundong* 民国乡村建设运动 [Rural Reconstruction Movement during the Republic of China] (Beijing: Social Science Academic Press, 2000), 77-108.

Medical College, and the National Association of Mass Education Movements led by James Yen. Sponsored with large financial support from the Rockefeller Foundation, NCCRR lunched pilot projects at Ding Prefecture, Hebei Province, and Jining, Shandong Province to further promote rural rebuilding experiments. The NCCRR also provided the prototypes of organizational structure and cooperation models for the JCRR.⁸ Although due to years of war, political instability, and funding shortage, these individual and scattered efforts did not extend to comprehensive rural reform nationwide, they provided a preliminary theoretical foundation and practical trial for the rural reconstruction movement.

Thus, it can be seen that “the Mass Education Movement (MEM) not only worked very closely with the JCRR on the mainland of China, but furthermore the MEM was mainly responsible for bringing the JCRR into existence.”⁹ “In the spring of 1947, at U. S. Secretary of State George Marshal’s suggestion, James Yen came to the United States with a 15-page rural reconstruction plan to seek political and economic support, hoping to win back public support by launching a concrete and feasible rural socio-economic reform project.”¹⁰ President Harry Truman and representatives of the House and Senate met with James Yen respectively. In the Foreign Assistance Act passed in 1948, Congress determined that up to 10 percent of the \$275,000,000 in economic aid should be dedicated to the rural reconstruction projects proposed by James Yen, which was one of the direct reasons for the establishment of the JCRR.¹¹

⁸ Mary Brown Bullock, *The Oil Prince's Legacy: Rockefeller Philanthropy in China* (Washington, D.C.: Woodrow Wilson Center Press, 2011).

⁹ Swope, Gerard, and Richard J. Walsh, “Mass Education Movement and JCRR,” *Far Eastern Survey* 20, No. 14 (1951): 145.

¹⁰ China (JCRR)-Publications, September, 1952, Box 48, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

¹¹ Swope, Gerard, and Richard J. Walsh, “Mass Education Movement and JCRR,” *Far Eastern Survey* 20, No. 14 (1951): 148.

In 1946, the China-United States Agricultural Mission conducted extensive field investigation on agricultural production and socioeconomic conditions in fourteen provinces of China. Among the delegations, were Shen Zonghan (Tsung-han Shen), later first Chairman of the JCRR, and Raymond T. Moyer, the first U.S. Commissioner of the JCRR. In May 1947, the governments of China and the United States issued the Report of the China-United States Agricultural Mission. This report is divided into two parts. The first part mainly discusses the current situation of China's agriculture at that time, such as agricultural finance, land policy, tenancy system, agricultural education, research, and agricultural extension; the second part focuses on four main economic agricultural products including tung oil, silk, tea, and wool and their foreign trade.¹²

This report provided scientific research and exploration on the situation and problems of China's agriculture at that time, along with many valuable suggestions. In fact, it also made further field research and theoretical preparations for the establishment of the JCRR. However, this report has been criticized for not proposing a specific rural rehabilitation plan. After all, "China's great need is not so much for paper plans and general recommendations as for specific measures of implementation."¹³ This was one of the major reasons why in 1948 the two governments jointly established up the JCRR with clear objectives, fixed organizations, and specific work plans.

Founded in Nanjing in 1948, the JCRR immediately started to help the Nationalist government establish several comprehensive demonstration centers in the rural areas under the Nationalist's control, such as the Popular Education Movement Center in the third district of Sichuan Province; the Center for Agricultural Extension and Family Guidance at Hangzhou, Zhejiang Province; and

¹² Bureau of Foreign Agricultural Relations, *Report of the China-United States Agricultural Mission* Report No. 2 (Washington D.C.: Bureau of Foreign Agricultural Relations, United States Department of Agriculture, 1947), ix-xiv.

¹³ Charles Y. Hu, "Review: Report of the China-United States Agricultural Mission," *Pacific Affairs* 21, No. 2 (June 1948): 204.

the National Center for Land Reform Demonstration in Longyan County, Fujian Province.¹⁴ These pilot centers have assisted local small-scale agricultural communities in experimenting methods for land reform along with developing specific work programs for farmer's common problems.¹⁵ By the time the JCRR relocated to Taiwan in August 1949, it had completed 216 work plans covering agricultural improvements, irrigation and flood control, farmers' organizations, rural work, rural health, and land reform, with a total allocation of \$3,438,262.¹⁶ Although their temporary work in mainland China did not change the living conditions of ordinary farmers in the areas under the Nationalist control, which, either way, did not help the fate of the Nationalist government, at least these positive attempts, have accumulated valuable practical experience for their subsequent work in Taiwan.

¹⁴ Wu Xiangxiang 吴相湘, *Yanyangchu zhuan- Wei qianqiu xiangcun gaizao fengdou liushi nian* 晏阳初传-为全球乡村改造奋斗六十年 [James Yen - 60 Years of Hard Work for the Global Rural Reconstruction] (Changsha: Yuelu Press 岳麓书社, 2011), 539.

¹⁵ Zhu Xuhua 朱旭華, "Zhongguo nongcun fuxing lianhe weiyuanhui yu Taiwan tudi gaige 中國農村復興聯合委員會與臺灣土地改革 [The JCRR and Taiwan's Land Reform]," (master's thesis, National Chengchi University, Taiwan, 1992), 1-26.

¹⁶ Shen Zonghan 沈宗瀚, *Nongfuhui yu woguo nongye jianshe* 農復會與我國農業建設 [The JCRR and the Agricultural Industry in China] (Taipei: Commercial Press, 1972), 33.

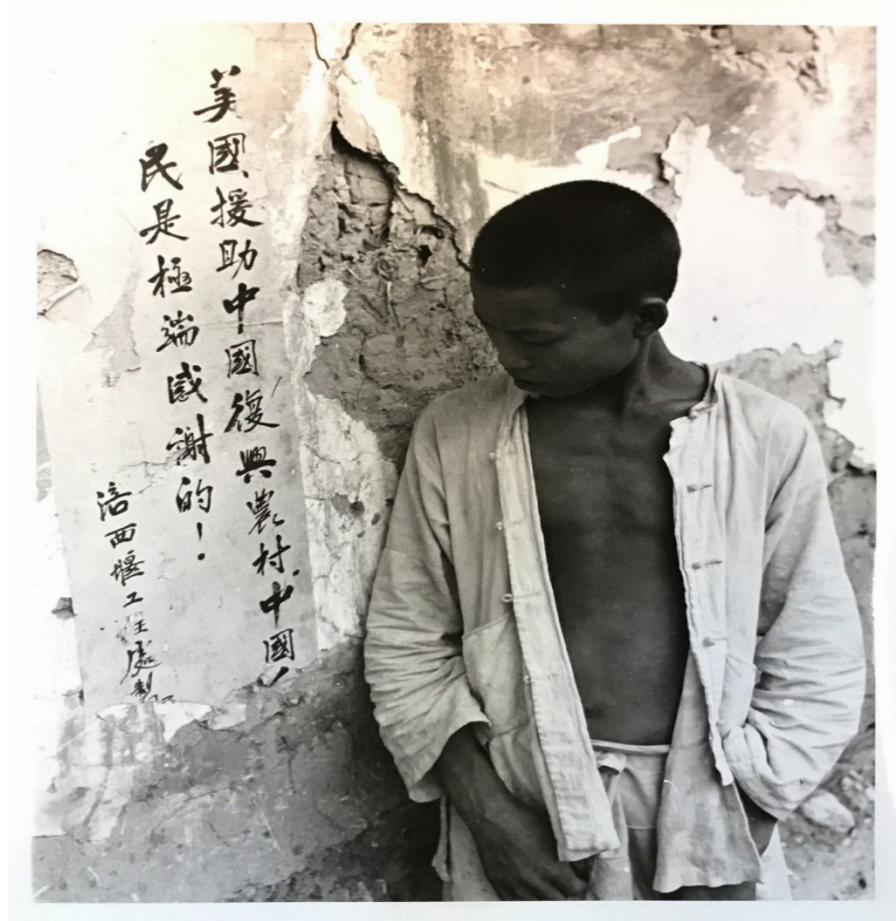


Figure 19. A sign on the wall reads “Chinese farmers are extremely grateful to U.S. help in rural reconstruction” and an impoverished youth leaning against the wall (1948, Fuixiyan, Jiangyou, Sichuan Province)¹⁷

5.2 JCRR at Taiwan

In August 1949, the JCRR relocated to Taiwan with the National government. Since the Ministry of Agriculture and Forestry was reduced to the Bureau of Agriculture and Forestry in the Ministry of Economy, the personnel were correspondingly downsized. On the other hand, there were no agricultural officials in Taiwan at the U.S. Embassy at this time. Therefore, for quite a

¹⁷ Szechuan-JCRR Commissioners and Staff, October 1949, Box 43, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

long time, JCRR handled agricultural problems in Taiwan.¹⁸ Since that time, JCRR's structure and its personnel have been gradually adjusted and expanded. First of all, they have added four support departments, including the Commission Secretariat, the Office of Administration, the Office of Controller, and the Office of Planning and Programming. At the same time, the original four working division of the JCRR in 1950 have been gradually divided into seven divisions: land, agricultural improvement, farmer organization, livestock, fertilizer distribution, irrigation, and rural health.¹⁹ By 1978, however, the JCRR had expanded to nine subdivisions, as shown in Figure 3. In terms of personnel, there were only about 40 employees at the very beginning of the JCRR, while after the relocation to Taiwan, the number of employees increased to 249 in 1955, including 14 from the United States and 235 from China.²⁰ Since then, the number of working staff has been kept stable or slightly adjusted, with about 250 employees until 1979 before the dissolvment of the JCRR.²¹ The appointment of the chairman of the JCRR has been relatively stable which maintained renowned Chinese scholars as the leaders, including Jiang Menglin, Shen Zonghan and Li Chongdao, while the members of the committee still had regular natural turnover and redeployment. In 1957, the U.S. government claimed that "there are two American commissioners in mainland China before, and now, Taiwan is only one province," as an excuse to cut financial aid which resulted in the reduction of JCCR committee members to three, including two Chinese and one American.²² Later, most of the former U.S. commissioners in the JCRR held posts as

¹⁸ Shen Zonghan 沈宗瀚, *Nongfuhui yu woguo nongye jianshe* 農復會與我國農業建設 [The JCRR and the Agricultural Industry in China] (Taipei: Commercial Press, 1972), 23.

¹⁹ Zhou Xiuhuan 周琇環, *Nongfuhui shiliao dierce* 農復會史料第二冊 [The Historical Materials of the JCRR, Vol. 2] (Taipei: Academia Historica, 1995), 5.

²⁰ JCRR Personnel Roster, January 1955, Box 20, Office of Far Eastern Operations, China (JCRR) Subject Files, Personnel, National Archives II, College Park, MD.

²¹ Wu Guanghua 吳光華 and Jiao Weicheng 焦維城, *Nongfuhui sanshinian jishi* 農復會卅年紀實 [Thirty Years' Records of the JCRR] (Taipei: JCRR, 1978), 24.

²² Shen Zonghan 沈宗瀚, *Nongfuhui yu woguo nongye jianshe* 農復會與我國農業建設 [The JCRR and the Agricultural Industry in China] (Taipei: Commercial Press, 1972), 14.

economic counselors at the U.S. embassy. This tenure was relatively short and not fixed, while the Chinese members were more settled, and most of them had been promoted from working divisions leaders inside of the JCRR. The structure of the JCRR remained stable until the reorganization in 1979.

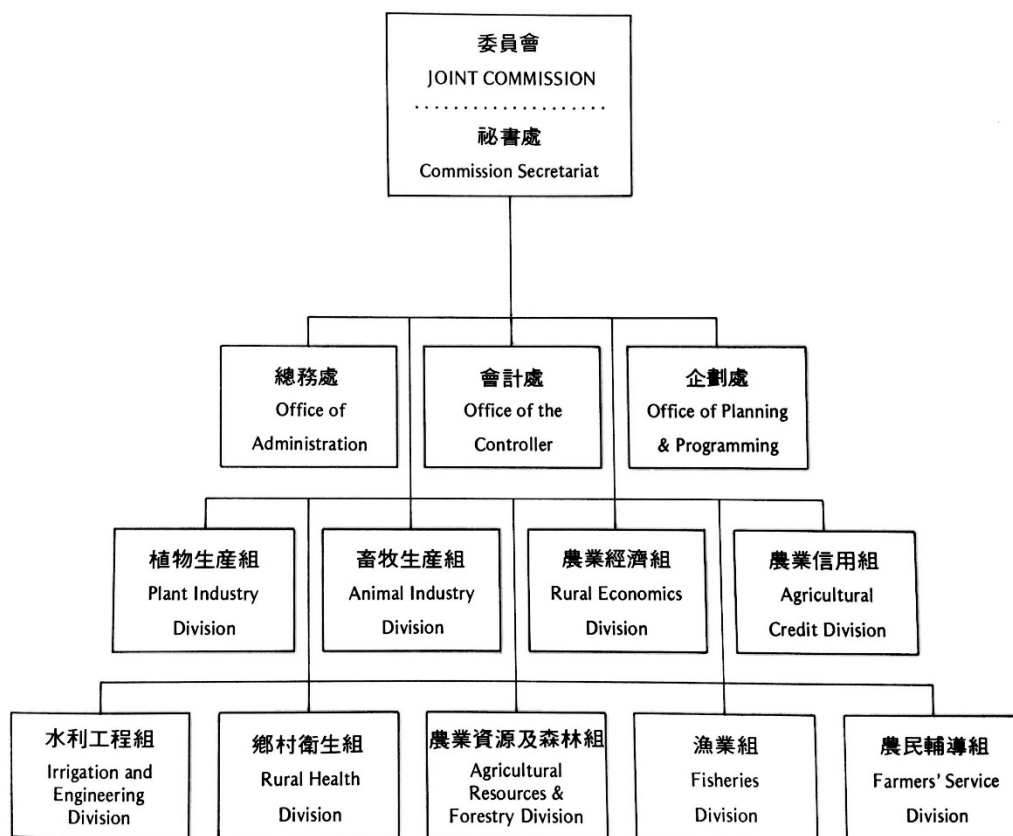


Figure 20. The Organizational Structure of the JCRR in 1978²³

The general objectives of the JCRR were very concise to “increase agricultural production, promote rural welfare and encourage good government.”²⁴ The work content of the JCRR,

²³ Wu Guanghua 吳光華 and Jiao Weicheng 焦維城, *Nongfuhui sanshinian jishi* 農復會卅年紀實 [Thirty Years' Records of the JCRR] (Taipei: JCRR, 1978), 19.

²⁴ The Joint Commission on Rural Reconstruction in China: Its Policies, Procedures and Program, March 1953, Box 21, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, Program-Projects, National Archives II, College Park, MD.

however, was quite comprehensive. As an agricultural aid agency, the JCRR supported agricultural development through financial support, public education, and institutional guidance to assist various agricultural units or individuals. The JCRR functioned like a small “policy bank” as an arm of the government to subsidize various pioneer projects. Because of their professional expertise and both Taiwan and U.S. governmental background, financial support and loans from other channels would follow up closely.²⁵ Its working procedure was that each division put forward their projects and then the committee reviewed and verified proposed projects. All five members of the committee needed to agree to make the final decision instead of commonly applied majority rule.²⁶ At the same time, the focus of JCRR’s work adjusted according to the government’s “four-year economic plan,” which generally included the following aspects: the basic systematic construction, such as land reform; the establishment of farmer’s and fisherman’s associations; the popularization of Green Revolution technologies; and, the investment in infrastructure which includes improved seed breeding, disease prevention and pest control, livestock breeding, water conservancy projects, and the construction of refrigeration storages and cargo docks; agricultural science popularization education and rural reconstruction dissemination, such as magazine *Harvest*, agricultural broadcast, and agricultural film.

“Land reform is the most urgent work for social justice,”²⁷ as Jiang Menglin, then the chairman of the JCRR, recalled in 1967. Thus, the priority for the JCRR in Taiwan was land reform to acquire land for farmers and win their support. Taiwan’s land reform has experienced three

²⁵ Li Chongdao 李崇道, “1988 nian 11 yue 3 ri lichongdao xiansheng dierci fangwen fangwen jilu 1988 年 11 月 3 日 李崇道先生第二次訪問訪問記錄[Oral History of Mr. Li Chongdao on November 3RD of 1988]”, in *Zhongguo nongcun fuxing lianhe weiyuanhui shiliao jibian* 中國農村復興聯合委員會史料集編 [Compilation of Historical Materials of the JCRR] (Taipei: San Min Books, 1991), 129.

²⁶ The Joint Commission on Rural Reconstruction in China: Its Policies, Procedures and Program, March 1953, Box 21, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, Program-Projects, National Archives II, College Park, MD.

²⁷ Jiang Menglin 蔣夢麟, *Xinchao* 新潮 [New Tide] (Taipei: Biography Press 傳記文學出版社, 1967), 37.

stages: “rent reduction to 37.5 percent,” “public land for reclamation,” and “land ownership by the tiller.”²⁸ First, the rent reduction plan stipulated that the rent of farmland should not exceed 37.5 percent of the value of major crops harvested from a farm, which increased the annual income of sharecroppers by 30 percent alone.²⁹ This is just rent reduction, while there is no transfer of land ownership. For the second step, the newly reclaimed land and the confiscated land from the previous Japanese colonial government were used as a demonstration for land release. Farmers were encouraged to acquire the ownership of the land, which benefited nearly 50,000 people.³⁰ The third step was the transfer of private land ownership, especially between landlords and tenants. The price of land was fixed to two and a half times of the standard annual output, with 30 percent of the cost paid with public owned companies’ shares and 70 percent with grain vouchers issued by the government.³¹ There was no cash involved and both parties were protected from inflation. The JCRR sorted out the basic land relations, and also helped the establishment of farmer’s associations at all levels. Before the JCRR, various farmer’s associations were occupied by administrative officers at all levels, which led to a hierarchical mode during the Japanese rule. Under the leadership of the JCRR, “all the council members of the farmer’s associations at all levels were directly or indirectly elected by real farmers”³² These farmer’s associations were more

²⁸ Wu Guanghua 吳光華 and Jiao Weicheng 焦維城, *Nongfuhui sanshinian jishi* 農復會卅年紀實 [Thirty Years’ Records of the JCRR] (Taipei: JCRR, 1978), 40.

²⁹ Taiwan-Rural Economics, May, 1953, Box 39, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

³⁰ Taiwan-Rural Economics, May, 1953, Box 39, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

³¹ Xie Senzhong 謝森中, “1989 nian 8 yue 28 ri xie senzhong xiansheng diyici fangwen jilu 1989 年 8 月 28 日謝森中先生第一次访问记录 [Oral History of Mr. Xie Sengzhong on August 28th of 1989],” in *Taiwan “tugai” de qianqian houhou—nongfuhui koushu lishi* 台灣“土改”的前前后后—農復會口述历史 [The Whole Story of the “Land Reform” in Taiwan—The Oral History of the JCRR] (Beijing: Jiuzhou Press, 2011), 141.

³² Taiwan-Rural Economics, May, 1953, Box 39, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

willing to work for the welfare of common farmers. By 1960, 80 percent of Taiwan's farming families had joined various farmer's associations with the help from the JCRR.³³

The second aspect of the JCRR's work promoted the comprehensive application of new technologies in various agricultural fields, such as planting industry, animal husbandry, and fishery. The first step is the widespread application of chemical fertilizers and chemical pesticides in the production of staple crops and economic crops.

The first was the widespread application of chemical fertilizers and chemical fertilizers in staple crops and economic crops. For staple crops such as rice, JCRR strongly encouraged the use of chemical fertilizers made of 25 percent superphosphate and 75 percent nitrogenous fertilizer, which the JCRR advertised would increase rice production by approximately 10 percent annually.³⁴ In 1958, for example, the JCRR helped oversee the allocation of 68,000 metric tons of fertilizer in Taiwan.³⁵ Seventy-five percent of this fertilizer was used in rice, 15 percent in sugar cane, and the remaining 10 percent was used in other crops, including wheat, sweet potatoes, peanuts, soybeans, bananas, and pineapples.³⁶ At the same time, the adoption of organic chemical pesticides had been further promoted on the island. JCRR's main work included field demonstration of new pesticides and related research on pest prevention and disease control. In 1957, DDT (Dichloro-diphenyl-trichloroethane) production in Taiwan had reached 300 metric tons. BHC (Benzene hexachloride) production had also reached 450 metric tons, meanwhile the

³³ Rural Progress in Taiwan, December 1960, Box 779, Records of the Foreign Agricultural Service, Mechanization, Publications-Taiwan Agriculture, National Archives II, College Park, MD.

³⁴ ABC Promotion Poster, Box 46, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

³⁵ Rural Progress in Taiwan, December 1960, Box 779, Records of the Foreign Agricultural Service, Mechanization, Publications-Taiwan Agriculture, National Archives II, College Park, MD.

³⁶ Congressional Inquiry on JCRR, November 1968, Box 780, Records of the Foreign Agricultural Service, Narrative Reports, 1955-1961, Agriculture to Cooperatives, Drugs, National Archives II, College Park, MD.

total amount of imported chemical pesticides had increased to \$229,100.³⁷ In animal husbandry, from 1955 to 1960, livestock production increased faster than any other agricultural product. On the one hand, the JCRR's funding and technical assistance successfully prevented swine fever, while on the other hand, high-yielding hybrid breeds were developed by crossing Berkshire boar and local sow in Taiwan.³⁸ In response to the outbreak of cattle plague in the island, the JCRR initiated the emergency prevention and treatment campaign. It set up temporary vaccination stations at the grassroots level, which effectively controlled the spread of cattle plague.³⁹

For the fishery industry, the JCRR promoted the development of the coastal fishing industry and freshwater fish farming via funding and guiding seven-eight fishermen's associations. The innovation of coastal fishing industry was mainly through mechanization and electrification, including the mechanization of fishing boats, the improvement of fishing harbor facilities, the development of boat battery recharging machines, and the building of refrigeration houses. In terms of fish culture, the JCRR mainly provided improved or introduced foreign high-yielding fish species, which also rapidly reconstructed Taiwan's freshwater fish culture industry.⁴⁰

The JCRR also financed the large-scale cultivation and promotion of tilapia imported from Malaysia.⁴¹ This variety of tilapia was tasty, fresh, and easy to breed that is now known as the national treasure of Taiwan. In addition to investing the aquaculture industry with its own funds, the JCRR actively expanded external funding sources, especially in cooperation with private

³⁷ Congressional Inquiry on JCRR, November 1968, Box 780, Records of the Foreign Agricultural Service, Narrative Reports, 1955-1961, Agriculture to Cooperatives, Drugs, National Archives II, College Park, MD.

³⁸ Rural Progress in Taiwan, December 1960, Box 779, Records of the Foreign Agricultural Service, Mechanization, Publications-Taiwan Agriculture, National Archives II, College Park, MD.

³⁹ Photo and Newspapers, Box 47, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

⁴⁰ Photo and Newspapers, Box 47, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

⁴¹ This breed was introduced from Malaysia by Taiwanese fishermen Wu Zhenhui and Guo Qichang. It was also named as Wu Guo Tilapia.

foundations in the United States, such as the Rockefeller Foundation and the Ford Foundation. In 1965, for example, Gerard R. Pomerat, Associate Director for the Natural Sciences of the Rockefeller Foundation, was interested in Taiwan's aquaculture industry. Chen Tongbai, then the head of the Fishery Division of the JCRR, accompanied him to make an on-the-spot investigation on the Donggang Shrimp Breeding Center in Pingtung County. Then he pointed out their shortage of funding to request the Rockefeller Foundation to provide financial support.⁴² The Rockefeller Foundation soon granted \$150,000 to the JCRR for the research and extension of aquaculture in Taiwan.⁴³ This grant continuously increased until discontinued in 1973, reaching a total amount of \$475,000.⁴⁴ Thus, it can be seen that the financing sources for the JCRR's research and promotion of new technology was diversified.

At the same time, the JCRR established a complete agricultural science popularization education and rural culture dissemination system in Taiwan. First, on July 15, 1951, the first semimonthly issue of *Harvest* was published with the financial support from the JCRR. This journal was originally an agriculture educational magazine jointly published by the JCRR and the United States Information Service (USIS) in Taiwan.⁴⁵ Because its targeted readers were Taiwanese farmers, most of its articles were in Chinese while there were some in Japanese. Its main purpose was to spread news of the government, the Economic Cooperation Administration,

⁴² Xue Yueshun 薛月順, "Taiwan caoxia wangguo de xingcheng 1968-1988- zhengfu yu mingjian banyan de juese 臺灣「草蝦王國」的形成(1968-1988)——政府與民間扮演的角色 [The Formation of the Shrimp Kingdom in Taiwan (1968-1988)-- the Role played by the Government and the People]," *Academia Historica Journal* 國史館館刊 24 (2010): 152-153.

⁴³ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dishijiujiqi* 中國農村復興聯合委員會工作報告第十九期 [JCRR General Report XIX] (Taipei: Joint Commission on Rural Reconstruction, 1968), 60.

⁴⁴ Chen Tongbai 陳同白, *Congshi yuye gongzuo wushinian* 從事漁業工作五十年 [Working in the Fishery Industry for Fifty Years] (Taipei: China Fisheries Association 中國水產協會, 1977), 81.

⁴⁵ Public Relations: Radio-Publications, September, 1952, Box 48, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

and the JCRR to the farmers, as well as to promote various policies on agricultural improvement and rural health plan. The USIS positioned the *Harvest* to resist the spread and influence of the communist ideology by providing “practical agricultural information of immediate value and interests to farmers.”⁴⁶ Even if the original intention was to serve as political propaganda, the *Harvest* still played an important role in the promotion of agricultural science and technology, which offered technical guidance for farmers and the popularization of science. At that time, the literacy rate of farmers in Taiwan was very high. As shown in the field survey, less than 20 percent of the rural population was illiterate.⁴⁷ The JCRR strengthened rural literacy education on the foundation laid by the Japanese during colonial rule, which was also a key to the *Harvest*’s success. It has been nearly seventy years since the first issue of *Harvest* was published, during which it was never suspended or interrupted. It had a symbolic influence and appeal in Taiwan, which was also one of the contributions of the JCRR.

Rural Radio Broadcasting Program was also an effort of the JCRR’s rural popularization of science in the 1950s. In 1954, the JCRR purchased 6,000 American “Tele King” radios to be distributed mainly to farmer’s associations, rural health stations, small fishing grounds, and agricultural experiment stations on Taiwan’s main island and the Kinmen Islands.⁴⁸ After the extension of equipment, the JCRR also funded the launch of a number of broadcasting programs focusing on agriculture and farmers, including “Farmer’s Time” of the Taiwan Provincial Farmers’ Association, “Good Farm 好农村” jointly run by the China Broadcasting Corporation, the

⁴⁶ China (JCRR)-Publications, September,1952, Box 48, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

⁴⁷ China (JCRR)-Publications, September,1952, Box 48, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

⁴⁸ Minutes of the Meeting of the Joint Commission on Rural Reconstruction No.770, June 1955, Box 18, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, Meetings 601-790, National Archives II, College Park, MD.

Provincial Department of Agriculture and Forestry (PDAF), the Taiwan Sugar Corporation, and the Harvest Periodical Press, and “Happy Farm” of the Farmer’s Broadcasting Station.⁴⁹ Before the popularization of TV in Taiwan’s rural areas in the 1970s, the agricultural radio programs funded by the JCRR had an extensive influence. Meanwhile, the JCRR information office and the Information Unit of the PDAF invested in producing a number of rural education or popular science films and documentaries between 1954 and 1959, such as “Land to the Tiller,” “Happy Farm Life,” “Green Island,” “Reunion Bridge,” and “Rural Development in Kinmen.”⁵⁰ The JCRR bought two educational mobile units to show films for free, and distributed various educational materials to disseminate science to the front door of farmer families across the island.⁵¹

Furthermore, the JCRR expanded communication channels between government and rural youth in Taiwan. 4-H Club was an important organization of the United States Department of Agriculture (USDA) to promote agricultural science education and science popularization among rural youth in the United States.⁵² In the spring of 1952, the JCRR established its independent 4-H Club in Taiwan, the National 4-H Club Association of the ROC.⁵³ The JCRR selected four counties to launch the pilot work of their rural youth projects. The National 4-H Club Association

⁴⁹ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dibaqi* 中國農村復興聯合委員會工作報告第八期 [JCRR General Report XIII] (Taipei: Joint Commission on Rural Reconstruction, 1957), 15.

⁵⁰ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diliuqi* 中國農村復興聯合委員會工作報告第六期 [JCRR General Report XI] (Taipei: Joint Commission on Rural Reconstruction, 1955), 36; Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dijiuqi* 中國農村復興聯合委員會工作報告第九期 [JCRR General Report XIII] (Taipei: Joint Commission on Rural Reconstruction, 1958), 14.

⁵¹ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diqiqi* 中國農村復興聯合委員會工作報告第七期 [JCRR General Report XII] (Taipei: Joint Commission on Rural Reconstruction, 1956), 35.

⁵² The 4-H Club is a nonprofit youth organization for agricultural promotion and education founded by the USDA in 1902. The 4Hs stand for Head, Heart, Hands and Health. Up to now, 4-h Club has a wide distribution and great social influence in more than 80 countries and regions, including the United States and Taiwan.

⁵³ The Joint Commission on Rural Reconstruction in China: Its Policies, Procedures and Program, March 1953, Box 21, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, Program-Projects, National Archives II, College Park, MD.

was mainly funded by the JCRR, thus they closely cooperated with the Provincial Department of Education, the PDAF, as well as the Provincial Farmers' Association. By 1960, more than 40,000 rural people from over 100 townships had joined 4-H Club associations with the support from the JCRR.⁵⁴ Commissioner Jiang praised that the 4-H Club had "trained a number of determined officials who could produce, lead, and understand science and democracy in rural Taiwan."⁵⁵

Witnessing the JCRR's achievement on the Taiwan island, in 1955, the U.S. government and the Nationalist government requested that the JCRR cooperate to extend the successful experience of Taiwan's agricultural development to other countries and regions, which was also called "agricultural diplomacy." There were two major channels. One was that Asian and African countries which sent agricultural technicians to Taiwan for training under the USAID's "Third Country Training Program" or the "International Technical Cooperation Program" of Taiwan.⁵⁶ The other was that Taiwan agriculturalists went either to the friendly countries to assist agricultural development with the support of the Nationalist government or to United States for training under the Technical Assistance Program of USAID.⁵⁷ These countries and regions included the Republic of Vietnam (South Vietnam), the Philippines, Indonesia, Saudi Arabia, and Liberia, among which cooperation with South Vietnam was most significant. From 1959 to 1960, three JCRR technical teams went to South Vietnam, respectively focusing on the work of farmers' associations, the improvement of crop and animal husbandry, and water conservancy projects. In 1964, all the three

⁵⁴ Rural Progress in Taiwan, December 1960, Box 779, Records of the Foreign Agricultural Service, Mechanization, Publications-Taiwan Agriculture, National Archives II, College Park, MD.

⁵⁵ Jiang Menglin 蔣夢麟, *Zhenfu zaitai shinian de nongcun jianshe jiqi yingxiang* 政府在台十年的農村建設及其影響 (Taipei: JCRR, 1963), 11.

⁵⁶ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dishiqi* 中國農村復興聯合委員會工作報告第十四期 [JCRR General Report XIV] (Taipei: Joint Commission on Rural Reconstruction, 1963), 94.

⁵⁷ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dishiqi* 中國農村復興聯合委員會工作報告第十四期 [JCRR General Report XIV] (Taipei: Joint Commission on Rural Reconstruction, 1963), 94.

teams were consolidated into one organization--“Chinese Agricultural Mission to Vietnam(CAMV).”⁵⁸ Later, the CAMV expanded its scope of work and personnel, reaching 142 regular staff in 1967 and continuing its work until the downfall of the South Vietnam government in 1975.

Prior to 1965, the JCRR was truly an “official” Sino-US cooperative agricultural aid agency since the American government funded it. After the termination of US aid in 1965, the JCRR’s label of U.S. official support was also removed. Thereafter, the working funds for the JCRR was allotted from the Sino-American Fund for Economic and Social Development.⁵⁹ Although the joint organizational structure of both Chinese and American commissioners was maintained, the US members only served as the economic counselors from the U.S. Embassy. Meanwhile, the Nationalist government also independently reviewed the annual working plans of the JCRR. Subsequently, the JCRR gradually transformed into the policy design institution for agricultural development inside the government until 1979 when the JCRR was officially reorganized into the Council of Agriculture of the Executive Yuan.⁶⁰ After its historical mission of 30 years, the JCRR developed into the competent authority in charge of agriculture in Taiwan.

⁵⁸ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dishiliuqi* 中國農村復興聯合委員會工作報告第十六期 [JCRR General Report XVI] (Taipei: Joint Commission on Rural Reconstruction, 1965), 109.

⁵⁹ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dishiqiqi* 中國農村復興聯合委員會工作報告第十七期 [JCRR General Report XVII] (Taipei: Joint Commission on Rural Reconstruction, 1966), 1.

⁶⁰ Papers of the Council of Agriculture of the Executive Yuan, unknown, Files of the Council of Agriculture of the Executive Yuan, unknown, Academia Historica, Taipei, Taiwan.

5.3 Successful Experience

First, without land reform, comprehensive agricultural development, and concerted rural reconstruction under the leadership of the JCRR, there would have been no gradual stabilization of the political situation in the early years of the Nationalist governance in Taiwan. Agriculture supported the industrial development and economic boom in Taiwan during the 1960s and 1970s. It was because the Nationalists put the interests of most farmers first in priority after losing the mainland. Through the Nationalist governance in the mainland of thirty-eight years, among all the agricultural education, research, and administrative institutions in China, including the University of Nanking, the Central Agricultural Experiment Bureau, the National Association of Mass Education Movements, and the Ministry of Agriculture and Forestry, all failed to attach importance to land reform for farmers and rural society. Even though some of them might realized the significance of land reform, they were afraid of crossing the ideological line of “confiscating land just like the communist party did.”⁶¹ However, the farmers who struggled under the unequal land tenancy system had no fundamental interest in agricultural scientific and technological innovation, international agricultural cooperation, or rural reconstruction. After the JCRR moved to Taiwan, they cooperated with the Chen Chen’s Taiwan provincial government to complete land reform on the island, which liberated the productivity and working enthusiasm of farmers. The Nationalist officials summarized that “for the effectiveness and the long-lasting success of rural reconstruction work, we must conduct land reform.”⁶²

⁶¹ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diyi* 中國農村復興聯合委員會工作報告第一期 [JCRR General Report I] (Taipei: Joint Commission on Rural Reconstruction, 1950), 81.

⁶² Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diyi* 中國農村復興聯合委員會工作報告第一期 [JCRR General Report I] (Taipei: Joint Commission on Rural Reconstruction, 1950), 53.

Secondly, the JCRR's institutional supervision of funding distribution was also one of its successful experiences. Because the JCRR's funds were essentially American taxpayers' contributions, and "there were a lot of rumors about corruption inside the Nationalist government in the past,"⁶³ U.S. government's demand on the JCRR's funds management and anti-corruption mechanism were of high standards. In his memoirs, John Earl Baker, the first U.S. commissioner of the JCRR, explained that after a project passed and the first payment paid out, the two-tier monitoring mechanism was launched.⁶⁴ There was a first round review within the working division to ensure that work began on schedule and in accordance with the outline of the plan, while addressing possible difficulties in the most appropriate manner. The second step was to follow up the audit projects in the Office of the Controller, focusing on whether the projects strictly conformed to the budget regulations and whether the daily expenses and business travel expenses were normal and reasonable.⁶⁵ Through a series of strict supervising mechanisms, such as signing contracts, clarifying responsibilities, and approving and auditing inspections, the members from both sides of the JCRR ensured that the corruption of the Nationalist authorities did not extend to the JCRR.

The overall political quality and professional ethics of the JCRR are also important personnel contributions. From commissioners, to technical experts, to staff in each division, many of them not only majored in the broader agriculture related fields, but also earned master or doctoral

⁶³ John Earl Baker, "JCRR MEMOIRS, Part I," *The Mainland Chinese American Economic Cooperation* 1, no.1 (June 1952), 6.

⁶⁴ John Earl Baker, "JCRR MEMOIRS, Part I," *The Mainland Chinese American Economic Cooperation* 1, no.1 (June 1952), 7.

⁶⁵ John Earl Baker, "JCRR MEMOIRS, Part I," *The Mainland Chinese American Economic Cooperation* 1, no.1 (June 1952), 7.

degrees from major U.S. universities.⁶⁶ They had relatively good working principles and professional ethics. Especially in the early stage of the JCRR, as the leading organization of the “Sino-US Cooperation which was independent of the Nationalist government, the JCRR commissioners did not fall into the entanglements of politicization and bureaucratization, which was very common inside of the Nationalist government. In its daily work, on one hand, the JCRR promoted the U.S. style democracy, on the other hand, it emphasized working in a down-to-earth manner. Therefore, the JCRR won favorable reputation both internally and externally.

Li Chongdao, the former chairman of the JCRR, recalled that “It was very much like an academic institution. The JCRR’s strength is the experts themselves.”⁶⁷ Different from the prevailing top-down bureaucracy at that time, the JCRR’s real power was laid on professional experts, which inspired technical elites’ spontaneous enthusiasm on rural reconstruction. Shen Zonghan’s son, Shen Junshan, the former President of National Tsing Hua University in Taiwan, reflected that although there were some favorable factors, such as the foundation in the period of Japanese rule and land reform, how to flexibly utilize them while avoiding the co-existing negative factors, so as to make Taiwan’s agricultural reconstruction was the key to economic success.⁶⁸ This was why the JCRR predecessors’ efforts were worthy of admiration.

⁶⁶ For instance, Jiang Menglin earned his PhD degree from Columbia University; James Yen earned his master’s degree from Princeton University; Shen Zonghan, Li Chongdao, and Ma Baozhi earned their PhD degree from Cornell University; Zhang Xianqiu earned his PhD degree from Iowa State University; Jiang Yanshi and Xie Senzhong earned their PhD degree from the University of Minnesota.

⁶⁷ Li Chongdao 李崇道, “1988 nian 11 yue 3 ri lichongdao xiansheng dierci fangwen fangwen jilu 1988 年 11 月 3 日 李崇道先生第二次訪問訪問記錄 [Oral History of Mr. Li Chongdao on November 3RD of 1988],” in *Zhongguo nongcun fuxing lianhe weiyuanhui shiliao jibian* 中國農村復興聯合委員會史料集編 [Compilation of Historical Materials of the JCRR] (Taipei: San Min Books, 1991), 126.

⁶⁸ Shen Junshan 沈君山, “Guanyu Nongfuhui lishi de jidian kanfa 关于农复会历史的几点看法 [My Points of Views on the JCRR],” in *Taiwan “tugai” de qianqian houhou—nongfuhui koushu lishi* 台湾“土改”的前前后后—农复会口述历史 [The Whole Story of the “Land Reform” in Taiwan—The Oral History of the JCRR] (Beijing: Jiuzhou Press, 2011), 238.

Furthermore, the Green Revolution was a worldwide movement led by U.S. agriculturalists and private foundations in the mid-twentieth century via using new agricultural technologies to dramatically increase agricultural production and eradicate hunger. Major new technologies of the Green Revolution included high-yielding hybrid varieties of rice, wheat, and other staple crops, chemical fertilizers and pesticides, water supply systems (irrigation), and new farming methods, especially mechanization.⁶⁹ The JCRR with the background of “Sino-US cooperation” was involved in this wave at the beginning. In 1960, E. Stuart Kirby, professor at the University of Hong Kong, analyzed first hand survey data from the National Taiwan University, the JCRR, and other agricultural institutions. He drew the conclusion that almost every major crop yield per unit had significant growth during the past decade in Taiwan. The key to Taiwan’s agricultural success lay in the Green revolution technologies, including the expansion of the improved crop varieties, scientific maintenance of soil, plant disease prevention, insect pests control, universal use of fertilizers, planting technology improvement, and more effective water control.⁷⁰ The JCRR promoted the use of new agricultural technologies, which greatly increased the production of agricultural and sideline products. Lowering the price of agricultural products directly solved the survival problem of nearly 1 million migrants since 1949. The total output of large agricultural industry including farming, forestry, fishery, animal husbandry was only 1,772,000,000 New Taiwan dollars in 1949 with the number climbing to 109,678,000,000 New Taiwan dollars in 1974.⁷¹ The increase was more than 60 times in 20 years. This agricultural success stabilized the

⁶⁹ B. H. Farmer, “Perspectives on the ‘Green Revolution’ in South Asia,” *Modern Asian Studies* 20, No. 1 (1986), 175-176.

⁷⁰ Rural Progress in Taiwan, December 1960, Box 779, Records of the Foreign Agricultural Service, Mechanization, Publications-Taiwan Agriculture, National Archives II, College Park, MD.

⁷¹ YanWanfa 楊萬發, *Zhongguo nongcun fuxing lianhe weiyuanhui tekan xin ershisi hao-gongye wuran yingxiang nongyehuanjing diaocha baogao* 中國農村復興聯合委員會特刊新二十四號-工業污染影響農業環境調查報告 [Special Issue No. 24 of the JCRR Report-- Investigation Report on The Impact of Industrial Pollution on Agricultural Environment] (Taipei: JCRR, 1976), 21.

political and economic situation of the Taiwan island. Meanwhile, the modernization of agricultural science and technology also created a favorable window for industrial development. Without the Green Revolution and the JCRR, Taiwan's economic miracle might have become a castle in the air.

Finally, the international influence of “agricultural diplomacy” and “grassroots ambassadors” cannot be underestimated. First, “agricultural diplomacy” as a breakthrough in the field of non-traditional diplomacy that helped to establish a direct sense of belonging for ordinary people in terms of their livelihood between donor countries and recipient countries. “Vietnam had very little foreign exchange reserve. However, they need to spend \$250,000 a year on importing cabbages and onions. We just conducted one time experiment successfully that saved them \$250,000,” Ma Baozhi, the former head of the Chinese Technical Mission on Crop Improvement to South Vietnam, recalled.⁷² Although the investment in “agricultural diplomacy” was relatively small in terms of manpower and financial resources, it was closely related to the common people's livelihood. Therefore, it had a great effect in strengthening traditional diplomatic relations while winning the hearts of the middle and lower economic classes.

At the same time, 6,162 agriculturalists from Asian and African countries and regions received training in Taiwan with aid from the United States or the sponsorship of various foundations.⁷³ After returning to their home countries, most of these trained personnel became important agricultural officials, technicians, and university professors, which formed natural connections with the JCRR that helped increase the degree of intimacy in diplomatic and political

⁷² Ma Baozhi 馬保之, “1989 nian 5 yue 10 ri mabaozhi xiansheng fangwen jilu 1989 年 5 月 10 日馬保之先生訪問記錄[Oral History of Mr. Ma Baozhi on May 10th of 1989],” in *Zhongguo nongcun fuxing lianhe weiyuanhui shiliao jibian* 中國農村復興聯合委員會史料集編 [Compilation of Historical Materials of the JCRR] (Taipei: San Min Books, 1991), 471.

⁷³ Wu Guanghua 吳光華 and Jiao Weicheng 焦維城, *Nongfuhui sanshinian jishi* 農復會卅年紀實 [Thirty Years' Records of the JCRR] (Taipei: JCRR, 1978), 196.

positions with each other. Then, in 1970, with the USAID's financial support and the JCRR's concrete planning, the United States, Japan, South Korea, the Philippines, Thailand, South Vietnam, Taiwan, and Asian Development Bank officially signed the contract in Taiwan setting up the first international research institutions in Taiwan, the Asian Vegetable Research and Development Center (AVRDC). Shen Zonghan, the chairman of the JCRR, was duly elected as the first the President of the Council.⁷⁴ The seemingly small-sized organizations such as the JCRR, had profound influence in the transnational communication at that time.

In addition, in 1957, under the guidance of the JCRR, the National 4-H Club Association directly initiated the rural youth exchange program with the U.S. 4-H Club Association called the International Farm Youth Exchange (IFYE). Each year, two "grassroots ambassadors" went to each other's countryside for three to six months of practical life. They home stayed with local farmer families to directly learn about various agricultural activities, which helped them experience the daily life of ordinary people. This initiative enhanced the communication and mutual trust between the young people from both sides. According to incomplete statistics, from 1957 to 1965, Taiwan sent about twenty grassroots ambassadors to the United States, while the United States also exchanged seventeen grassroots ambassadors to Taiwa.⁷⁵ Subsequently, Taiwan's international rural youth exchange program was further expanded to Japan, South Korea, and the Philippines. These young people went to the countryside of foreign countries to get in touch with common people and authentic rural culture, which broke the sense of distance and

⁷⁴ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diershisaniqi* 中國農村復興聯合委員會工作報告第二十三期 [JCRR General Report XXIII] (Taipei: Joint Commission on Rural Reconstruction, 1971), 41.

⁷⁵ Lin Jiemin 林傑民, "Cong meiguo dao Taiwan: sijianhui de yizhi yu guoji nongye jiaoliu gongzuo 從美國到臺灣: 四健會的移植與國際農業交流工作(1951-1965) [From the United States to Taiwan: Transplant of the 4-H Club and International Agricultural Exchange Work (1951-1965)]," (master's thesis, Fu Jen Catholic University, Taiwan, 2012), 100-126.

illusion for ordinary people compared to traditional diplomacy. The sincerity of young people and the simplicity of rural life made such direct communication more amiable and persuasive. Lu Xueyi, a Taiwanese grassroots ambassador to the U.S., for example, testified that “the real life of the American people is not as crazy as it is in the movies. Their farmers’ life is just like ours. Make progress to improve their life day by day.”⁷⁶ Betty Schreiber, an American grassroots ambassador to Taiwan, told the media that “I have become half Chinese now, and I hope to marry to a Chinese man.”⁷⁷ The emerging role of this person-to-person folk diplomacy is hard to quantify, but the intangible value that young people building genuine friendship in transnational communication is beyond measure in the long run. These important diplomatic experiences from the JCRR are also worth sharing and considering.

5.4 Lessons

First, U.S. aid was not philanthropy. It was part of the United States’ global strategy during the Cold War, which fundamentally served American international politics. Although the U.S. government signed the agreement on economic aid to China, the implementation of the agreement was not guaranteed. The agreement stipulated that the American government “reserves the right at any time to terminate or suspend its assistance, or any part thereof, provided under this exchange of notes.”⁷⁸ After the defeat of the Nationalist government in mainland China, the Democratic politicians inside the U.S. government, such as the Secretary of the State, Dean Gooderham

⁷⁶ LuXueyi 呂學儀, “Wo wancheng caogen dashi de renwu (si) 我完成草根大使的任務(四) [I Completed the Task of the Grassroots Ambassador (iv)],” *Zhongguo yizhou* 中國一周 [China Weekly] No. 619 (1962), 28.

⁷⁷ Central News Agency 中央社, “Caogen dashi fanmei, yuanjia zhongguo langjun 草根大使返美, 願嫁中國郎君 [Grassroots Ambassador back to the United States, willing to marry a Chinese gentleman],” *United Daily News* 聯合報, March 3, 1960.

⁷⁸ Land Policies, August 1948, Box 615, Foreign Agricultural Service Narrative Reports 1946-1949, National Archives II, College Park, MD.

Acheson, were unsympathetic in Taiwan's situation. Zhang Xianqiu, a JCRR Commissioner, testified that "No American aid seems to arrive in Taiwan except for a shipment of fertilizers."⁷⁹ U.S. diplomatic officials in Taiwan had mostly evacuated with only a small temporary presence. Yang Cuihua, a historian at Academia Sinica, argued that "It was not until the outbreak of the Korean War in June 1950 that the United States government provided substantial and sustained assistance to Taiwan."⁸⁰ Apparently, Taiwan's role as a military bridgehead against the Communist China was the fundamental guarantee for the continued U.S. economic assistance.

The result of the Nationalist overall political dependence on the U.S. was the post-colonization of Taiwan's economy and culture. We can find some clues in the JCRR's case. There were various forms of aids from the U.S., including funds, materials, and equipment. However, when it came to deciding specifically what kind, how much, and in which way, the U.S. State Department made the decisions while Taiwan had little say in the decision-making process. Professor Liu Zhiwei, a historian on the JCRR, wrote in his book, "When the Yanks filled up a lot of things we don't want, we had to take all of them anyway."⁸¹ In fact, how to use the "gifted" goods and materials from the United States could be a matter of tacit but unspeakable annoyance for the JCRR and Taiwan's agricultural officials. Because the materials transported to Taiwan were often the surplus agricultural products in the U.S., they did not always conform to the agricultural needs and dietary habits of local people in Taiwan. However, if these goods and materials were

⁷⁹ Zhang Xianqiu 張憲秋, "1989 nian 6 yue Zhang xianqiu xiansheng fangwen jilu 1989 年 6 月張憲秋先生訪問記錄 [Oral History of Mr. Zhang Xianqiu in June of 1989]," in *Zhongguo nongcun fuxing lianhe weiyuanhui shiliao jibian* 中國農村復興聯合委員會史料集編 [Compilation of Historical Materials of the JCRR] (Taipei: San Min Books, 1991), 7-8.

⁸⁰ Yang Cuihua 楊翠華, "Technology Assistance in American Aid: An Aspect in the Beginning of Taiwan's Postwar Industrialization 美援技術協助：戰後台灣工業化開端的一個側面," *Cold War International History Studies* 冷戰國際史研究 No. 1 (2008): 178.

⁸¹ Liu Zhiwei 劉志偉, *Meiyuan Shidai De Niaoshi Bingbu Ruyan* 美援時代的鳥事並不如煙 [Times during the Age of U.S. Aid was not that Romantic] (Taipei: On Books 啟動文化, 2013), 33.

not used properly and actively, American officials sharply curtailed the next year's aid budget. Lian Heng, a Taiwanese Historian, argued that "Taiwan produces rice, and all the Taiwanese feed rice. From cities to villages, within the three meals a day, there are one meal of rice porridge and two meals with rice."⁸² Conventionally speaking, like southern mainland residents, Taiwanese have been eating rice as staple food since ancient times. In 1954, the most U.S. aid in agricultural products were wheat, flour, and barley. In 1962, the JCRR had to join hands with the Council for United States Aid of the Executive Yuan (CUSA) to establish a standing committee to launch a campaign to promote the consumption of noodle and flour products. In 1967, the JCRR cooperated with the U.S. Wheat Associates to set up a baking training course to further promote the production of western-style pastry. Therefore, Taiwan built flour and food processing industries with American equipment. To enhance their propaganda, however, the CUSA would even claim that people who preferred to eat white rice would not have flexible brain and nerve function. They would become stupid, suffer from atrophic gastritis, and even lead to the soaring probability of gastric cancer.⁸³ Under the banner of improving the national diet, the promotion of flour products opened the door for the dumping of American surplus agricultural products in the early stage of U.S. aid. To some extent, it also provided the preparatory condition for assimilating local resident's dietary habits and occupying the Taiwan's food market in the later stage. As for the barley aid in 1954, most of the barley was sent to the countryside for farmers to be used as hog feed.⁸⁴

Second, although the Nationalist's official positions on the guidance and assistance provided by American experts and U.S. aid were mainly gratitude and praise, there had been

⁸² Lian Heng 連橫, *Taiwan Tongshi Xiace* 臺灣通史下冊 [The General History of Taiwan, Vol. 2] No. 23 (Taipei: Datong Shuju 大通書局, 1984), 383.

⁸³ Liu Zhiwei 劉志偉, *Meiyuan Shidai De Niaoshi Bingbu Ruyan* 美援時代的鳥事並不如煙 [Times during the Age of U.S. Aid was not that Romantic] (Taipei: On Books 啟動文化, 2013), 63.

⁸⁴ Liu Zhiwei 劉志偉, *Meiyuan Shidai De Niaoshi Bingbu Ruyan* 美援時代的鳥事並不如煙 [Times during the Age of U.S. Aid was not that Romantic] (Taipei: On Books 啟動文化, 2013), 188.

complaints about the monopoly of American experts. At that time, Taiwan's agriculture-related organizations and departments at all levels were in urgent need of American grants, goods, and materials. The approval power for this aid application was chronically in the hands of the JCRR. Legally, the JCRR responded to Taiwan's Executive Yuan, and when it came to general affairs, they report to the U.S. Economic Aid Mission.⁸⁵ In practice, its independence was very high, which, on the contrary, easily led to some JCRR members' arbitrary decisions. Particularly, in 1953, when the JCRR participated in the official four-year plan for economic construction, it won the governmental allocations, meanwhile, also involved in the bureaucratic power struggle. Li Chongdao later admitted that the relationship between the JCRR experts and the Bureau of Agriculture and Forestry "was not conflict, but there was an undercurrent of discontent between each other."⁸⁶ The internal report of the Nationalist Party was even more direct that "every institution takes the will of the foreign consultants as their priority to ingratiate itself with them. Sometimes they even use the power of foreign experts as a means of gaining their own interest."⁸⁷ Although these were only isolated incidents, both the internal power struggle in Taiwan and the arbitrary decision making from the U.S. side actually limited the comprehensive role and influence of the JCRR, which was also the systematic defect of this Sino-U.S. cooperation.

⁸⁵ Joint Commission on Rural Reconstruction 中國農村復興聯合委員會, *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diyiqi* 中國農村復興聯合委員會工作報告第一期 [JCRR General Report I] (Taipei: Joint Commission on Rural Reconstruction, 1950), 80.

⁸⁶ Li Chongdao 李崇道, "Nongfuhui de muoshi yu Taiwan tudi gaige de deshi- Li Chongdao xiansheng fangwen jilu 农复会的模式与台湾土地改革的得失—李崇道先生访问记录 [The Model of the JCRR and the Gain and Loss of Land Reform in Taiwan—the Oral History of Mr. Li Chongdao]," in *Taiwan "tugai" de qianqian houhou—nongfuhui koushu lishi* 台湾“土改”的前前后后—农复会口述历史 [The Whole Story of the "Land Reform" in Taiwan—The Oral History of the JCRR] (Beijing: Jiuzhou Press, 2011), 85.

⁸⁷ *Zhongguo guomindang zhongyang weiyuanhui zhuan song* [dangyuan shehui baogao] han 中国国民党中央委员会转送『党员社会报告』函 [The letter transmitted from the Central Committee of the KMT-- Social Report of Party Members], January 19th, 1954, File of the Council for Economic Planning and Development of Executive Yuan 行政院经济设计委员会档案 079-011, Academia Historica, Taipei, Taiwan.

At that time, the Nationalist Party members and government officials were all mainlanders, which meant the authorities and the land owners were not the same group of people. Since they were not bound by the complex circles of kinship and clan, revolutionizing other people's lives was much easier than changing their own lives. Therefore, their thoroughgoing reform of the land system temporarily relieved the tension and contradiction between the Nationalist officials and ordinary farmers in Taiwan. In essence, however, the Nationalist Party was still an "upper class" party. Although the JCRR technocrat elites cared deeply about farmers and agriculture, the whole government suffered from factionalism and bureaucracy. In April 1954, on a meeting with Yen Chia-kan, then the Minister of Economy, Raymond H. Davis, an American commissioner of the JCRR, commented that "there appears to be a lack of spirit on the part of government agencies of really wanting to render service to the farmers."⁸⁸ Shen Zonghan also admitted that "An example was the Provincial Department of Agriculture and Forestry The head of the Department has not got the spirit of service to farmers."⁸⁹ At the same time, the Nationalist officials also played double-faced games. In Washington, they only reported that U.S. aid helped improve the living standards of the people, while in practice, the U.S. aid was used more to prepare for war than to improve living standards.⁹⁰ Running under the premise of this military-first politics, the Nationalist government did not really want to invest in rural area and farming families.

Finally, the land reform appeared to benefit common people; however, the Taiwan Provincial Food Bureau implemented the "fertilizer exchange grains" policy. Farmers had to sell

⁸⁸ Minutes of the Meeting of the Joint Commission on Rural Reconstruction No. 656, April 1954, Box 18, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, Meetings 601-790, National Archives II, College Park, MD.

⁸⁹ Minutes of the Meeting of the Joint Commission on Rural Reconstruction No. 656, April 1954, Box 18, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, Meetings 601-790, National Archives II, College Park, MD.

⁹⁰ Minutes of the Meeting of the Joint Commission on Rural Reconstruction No. 656, April 1954, Box 18, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, Meetings 601-790, National Archives II, College Park, MD.

their grain to the government at 20 percent less of the market price in exchange for the state monopolized fertilizer supply.⁹¹ This in effect formed a disguised squeeze and tax on farmers. There has been much debate over grain pricing within the JCRR. The JCRR Commissioners even draw the same conclusion that “the price of rice is extremely low in comparison with the world market price as well as in comparison with the prices of other commodities which farmers need.”⁹² Nevertheless, there was no further action from both the JCRR and the government. Although under the banner of “agricultural-cultivating industry,” a certain portion of the collected grain was actually used to guarantee the supply of the Nationalist military and officials, which was a farfetched interpretation of the transfer of agricultural surplus into industrial construction.⁹³ Additionally, the “fertilizer exchange grains” policy was deeply unfavourable to farmers, and was not officially abolished until 1973. It is no wonder that farmers increasingly grew resentful. Moreover, even under the guidance of the JCRR, there has been connivance or at least inadequate supervision, which led to price gouging and usury. In the Neipu Township of the Taichung County, for example, local farmers’ association maliciously sold rice that market-price was only Old Taiwan \$9,000 per kilogram for Old Taiwan \$10,000 per kilogram to food-deficit villagers.⁹⁴ Then, for those villagers who had no money or rice, the association allowed them to use fertilizer on credit. However, after the second harvest of that year, they charged as high as 30 percent interest

⁹¹ Hai Wen 海聞, “Taiwan zhanhou de jingji fazhan he nongye zhengce de zhuanbian 臺灣戰後的經濟發展和農業政策的轉變 [Taiwan’s Post-War Economic Development and the Transformation of its Agricultural Policy],” in *Taiwan de qishi: tudi gaige yantao jixiang* 臺灣的啟示: 土地改革研討會記詳 [Inspiration from Taiwan: the Seminar on the Land Reform] (New York: Oriental News Press 東方新聞出版社, 1992).

⁹² Minutes of the Meeting of the Joint Commission on Rural Reconstruction No. 425, April 1952, Box 17, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, Meetings 400-600, National Archives II, College Park, MD.

⁹³ John P. Powelson and Richard Stock, *The Peasant Betrayed: Agriculture and Land Reform in the Third World* (Washington, D.C.: Cato Institute, 1990), 264.

⁹⁴ Field Report on Second Taiwan Trip- August 22-30, September 1949, Box 44, Office of Far Eastern Operations, China (JCRR) Subject Files, 1948-1956, National Archives II, College Park, MD.

from those farmers for just a few months period.⁹⁵ Even surprising was the JCRR officials claim that these associations were not loan sharks.⁹⁶ All of these at least testified that the fundamental interests of farmers were not necessarily the same as the government's or the JCRR's. What was sacrificed at the critical moment usually was the interests of the farmers.

In retrospect, during Taiwan's economic boom from the 1950s to the 1970s, the JCRR learned the lessons of the Nationalist's failure in losing rural areas of the mainland China. With the support of the U.S. aid, it sorted out land production relations, applied science and technology, and strengthened publicity and communication. It successfully led Taiwan's Green Revolution, which achieved an innovative leap in rural development. The policy model of international scientific and technological cooperation, agricultural and industrial complementarity, and rural reconstruction proposed by the JCRR has many similarities with the current socialist rural revitalization strategy of the Chinese government and the Chinese Communist Party. Therefore, the successes and failures of rural reconstruction in Taiwan are worthy of in-depth discussion and reference by both modern historians and contemporary policy experts. Finally, in the context of the Cold War, the JCRR's role as both an economic cornerstone for U.S.-Taiwan relations and a pilot initiative in aid diplomacy between Taiwan and Asian and African countries also demands the attention of international relations scholars.

⁹⁵ Ibid.

⁹⁶ Ibid.

CONCLUSION

Starting from the Plant Improvement Project (PIP) of Cornell University and the University of Nanking (1925 – 1931), to the North China Council for Rural Reconstruction (NCCRR) (1936-1943) funded by the Rockefeller Foundation (RF), then to the cooperation between the Chinese Ministry of Agriculture and Forestry (CMAF) and the International Harvester Company (IHC) (1945 – 1948), and to the China-United States Agricultural Mission (CUSAM) (1946 – 1948), and lastly the Sino-American Joint Commission on Rural Reconstruction (JCRR) (1948 – 1979), a series of agricultural cooperative programs emerged from university to governmental levels of two countries. Both Chinese and American agriculturalists and agricultural reform practitioners attempted various paths to develop agriculture in China, including the scientific and technological paths in the PIP and the cooperation between the CMAF and the IHC, the institutional and social approaches in the NCCRR and the CUSAM, and finally the successful comprehensive measures in the JCRR.

People always attempt to identify the factors that led to “failed” cooperation in mainland China, but later succeeded in Taiwan. Despite the constant wars and the chaos and poverty before 1949 in mainland China, there were a few structural factors affecting the results that we can observe in this series of agricultural cooperation between China and the U.S. other than those external problems about which many historians have argued. Agricultural development needs comprehensive efforts in land ownership reform, systematic agricultural technology innovation, research-education-extension cooperative models, and development in other logistic support such as transportation, public communication, rural medical care, and other infrastructure constructions. First of all, none of these cooperative programs solved the fundamental land issue. Although the CUSAM mentioned land reform in its report, there was no further action from the Nationalist

government to implement its agenda. Secondly, although there were the crop seed improvements in the PIP and the introduction of agricultural engineering in the cooperation with the IHC, there were neither financially nor institutionally consistent programs to sustain comprehensive technological innovation. Not until the 1950s did the JCRR lead Taiwan's Green Revolution by relying on high yielding improved crop seeds, chemical fertilizers and pesticides, mechanization, and modern irrigation systems, which completed agricultural modernization in a real sense. Furthermore, the triangular model of research-education-extension was introduced from the U.S. into China through the cooperation between Cornell University and the University of Nanking. While both national and private universities, such as Yenching University or National Central University, joined in this practice, the government also established the NARB and other provincial agricultural research and testing stations to coordinate research nationwide. Agricultural extension at the grassroots' level down to farmers, however, proved the most difficult part in these programs. The CMAF, the NARB, the universities, and the provincial officials, did not have the resources or the mechanism to convince farmers to accept their suggestions. Those scattered extension stations across the country were either short-handed or lacked funding to make a difference. Moreover, without farmers' support, this disjointed machine lost its prime power in developing agricultural industry. Lastly, the development in other social aspects can indeed affect agricultural modernization to a great extent. Many agriculturalists themselves actually neglected this point. There are soft structural inputs like institutional reform of the government, rural public health system building, and nationwide publicity network, as well as hard infrastructural inputs such as three-dimensional transportation improvements, universal electrification, nationwide storage systems, and other infrastructure constructions. In other words, agriculture development cannot be realized unless other supporting mechanisms also get improved along the way.

War, however, is the most frequent word used in relation to these five stories. It is surprising to see the growing importance of agriculture along with China deteriorating into wars, chronologically including the Northern Expedition from 1926 to 1927, the Second Sino-Japanese War from 1937 to 1945, the World War II from 1939 to 1945, and the following full-scale Chinese Civil War from 1945 to 1950. The major theme along the first half of the twentieth century in China was war. While people might argue that the other side of the coin and in the American's case, wars also indirectly brought technological innovations in agricultural production such as the introduction of internal-combustion engine and diesel engine, mechanization, and electrification. In contrast to the U.S., these wars were outside of the North American continent which meant these wars did not directly damage the agricultural industry. All of these modern wars in China occurred exactly in the most populated eastern provinces and repeatedly destroyed agriculture and rural China. However, all these warfare and turmoil did not stop the Chinese people and both Chinese and American agriculturalists from developing agriculture with the purpose of fighting hunger and reducing poverty in rural China.

Along with the constant wars physically hurting China's agriculture, the Nationalist government did not provide an effective solution to solve the immediate problems. Perhaps, given enough time and space, their gradual reform and top-down approach might have achieved a moderate path to agricultural modernization. However, the communist's radical revolution was more appealing to the rest of the country. Nevertheless, at least both sides benefited from the previous Sino-U.S. agricultural communication and cooperation after the Revolution of 1949. Among those Chinese agriculturalists who got trained in this series of cooperative programs, there were a surprising number who chose to stay in mainland China while many also decided to go to Taiwan. Despite their different political stances and the different governments, their efforts to

modernize agriculture and the careers they devoted to helping more farmers were both neutral and genuine. These agriculturalists directly contributed to the success of “Socialist Scientific Farming” in mainland China and the “Green Revolution” in Taiwan during the 1950s and 1960s.

Lastly, American’s roles in these stories were also very interesting. People used to criticize U.S. imperialist foreign policy in China. However, American agriculturalists, private foundations, companies, universities, and government, all had very different aims, stances, approaches, and impacts in these programs. For the first time ever, American’s role became so stereoscopic to the ordinary Chinese people. It was not either good or bad, either black or white, any more. This was a very unique transition in a semi-colonial society after decades of conflicts with foreign powers and the humiliation along with it. American agriculturalists and land-grant universities attempted to technologically improve agriculture in China. Foundations provided funding to institutionally reform rural China. Agricultural implement companies introduced modern technology to China in hope to dominate this vast market. The U.S. government provided comprehensive support and aid to help rebuild agriculture in Taiwan as a part of its Cold War foreign policy. Not a single person or group can represent or define the others, while all of them historically connected with each other. All of these programs at different levels through various channels integrated into a vivid history of the cooperation and communication between the U.S. and China.

While agriculture can be so controversial that farmers, agriculturalists, and politicians worldwide would never sit down to fully agree with each other, at the end of the day, I believe we can at least agree that there is some common ground that we can reach from the observation of this series of Sino-U.S. cooperative programs in China. When common Chinese farmers talk about agriculture, it can be about matters as simple and necessary as putting food on the table to feed their families. When both Chinese and American agriculturalists in China talk about agriculture,

it can be as scientific and technological as improving seeds or teaching agricultural engineering courses at the University of Nanjing or at the National Agricultural Research Bureau. When the Nationalist politicians talk about agriculture, it can be as political as discussing a solution to stabilize rural China and determining a legitimate excuse for international assistance. Last, when the American politicians talking about agriculture in China, it can be as diplomatic as a top level international geopolitical strategy.

BIBLIOGRAPHY

Primary Sources:

Archives:

The National Archives and Records Administration, College Park, the United States.

Office of Far Eastern Operations, China (JCRR) Subject Files 1948-1956

Records of the Foreign Agricultural Service, Mechanization, Publications-Taiwan Agriculture

Records of the Foreign Agricultural Service, Narrative Reports

Records of the Food and Drug Administration, 1877-2002

Records of the Office of Foreign Agricultural Relations and its Predecessors 1901-58

The Rockefeller Archival Center, New York City, the United States.

Rockefeller Foundation Archives

The Division of Rare and Manuscript Collections of Cornell University Library, Ithaca, the United States.

Harry H. Love Papers, 1907-1964

Iowa State University Library Special Collections and University Archives, Ames, Iowa, the United States.

Jay Brownlee Davidson (1880-1957) Papers, 1907-1964.

The Archives of the Institute of Modern History, Academia Sinica, Taipei, Republic of China.

Nonglinbu 农林部

Academia Historica, Taipei, Republic of China.

File of the Council for Economic Planning and Development of Executive Yuan 行政院
经济设计委员会档案 079-011

The Archival Center of the Institution of Chinese Agricultural Civilization, Nanjing, China.

The Second Historical Archives of China, Nanjing, China.

Newspapers and Periodicals:

Anhui Nnongye 安徽农业

Benhang Tongxun 本行通讯

Chinese Recorder

Chuannongsuo Jianbao 川农所简报

Dongfang Zazhi 东方杂志

Educational Review

Fengtian Gongbao 奉天公报

Fu Jian Xie He Da Xue Nong Xue Xi Xue Bao 福建协和大学农学系学报

Guangxi Nongye Tongxun 广西农业通讯

Guoli Xibei Nongxueyuan Yuankan 国立西北农学院院刊

Huabei hezuo 华北合作

Huaji 华机

Jin Lin Xue Bao 金陵学报

Jingji Daobao (Beijing) 经济导报

Jingji Zhoubao 经济周报

Jingji Zhoubao 经济周报

Jinling xuebao 金陵学报

Liangzheng Yuekan 粮政月刊

Liaoningsheng Zhengfu Gongbao 辽宁省政府公报

Millard's Review of the Far East

Ming Jian 民间

Minjian 民间

National Reconstruction Journal 学术建国丛刊 (Xueshu Jianguo Congkan)

Nong Bao 农报

Nong Lin Xin Bao 农林新报

Nong Sheng 农声

Nong Xue Za Zhi 农学杂志

Nong Xue 农学

Nong Ye Jiao Yu 农业教育

Nong Ye Tong Xun 农业通讯

Nong Ye Zhou Bao 农业周报

Nongcun Fuye 农村副业

Nongcun jianshe 农村建设

Nongye Shengchan 农业生产

Nongye tuiguang tongxun 农业推广通讯

Nongye Yuanxun 农业院讯

Shehui Gonglun 社会公论

Shiyebu yuekan 实业部月刊

Shuichan Yuekan 水产月刊

Taiwan Yuekan 台湾月刊

The China Critic

The China Weekly Review

Tianjia Banyuebao 田家半月报

Tuan Kan (Hebei) 团刊(河北)

United Daily News 聯合報

Weimin Zhoukan 唯民周刊

Xiandai duwu 现代读物

Xiandai Nongmin 现代农民

Xiang Cun Jiang She 乡村建设

Xin Shijie 新世界

Xin Zhonghua 新中华

Xinbeichen 新北辰

Xingzong Nongyu 行总农渔

Xinzhongguo Huabao 新中国画报

Yanda yousheng 燕大友声

Zhejiang Jingji Yuekan 浙江经济月刊

Zhong Guo Yi Zhou 中國一周

Zhong Hua Nong Xue Hui Bao 中华农学会报

Zhongguo Jianshe (Shanghai) 中国建设

Zhongguo nongcun 中国农村

Zhonghua Guohuo Chanxiao Xiehui Meizhou Huibao 中华国货产销协会每周汇报

Zhonghua Nongxuehui Tongxun 中华农学会通讯

Secondary Sources:

Books:

English

Barclay, George W. *A Report on Taiwan's Population to the Joint Commission on Rural Reconstruction*. Princeton: Office of Population Research, Princeton University. 1954.

Bernhardt, Kathryn. *Rents, Taxes, and Peasant Resistance: The Lower Yangzi Region, 1840-1950*. Stanford, CA.: Stanford University Press, 1992.

Brandt, Loren. *Commercialization and Agricultural Development: Central and Eastern China, 1870-1937*. Cambridge, England: Cambridge University Press, 1989.

- Buck, John Lossing. *Development of Agricultural Economics at the University of Nanking: Nanking, China, 1926-1946*. Ithaca, NY: New York State College of Agriculture, Cornell University, 1973.
- Buck, John Lossing. *Land Utilization in China: A Study of 16,786 Farms in 168 Localities, and 38,256 Farm Families in Twenty-Two Provinces in China, 1929-1933*. Chicago: The University of Chicago Press, 1937.
- Buck, Pearl S. *The Good Earth*. New York: John Day Company, 1931.
- Bullock, Mary Brown. *The Oil Prince's Legacy: Rockefeller Philanthropy in China*. Washington, D.C.: Woodrow Wilson Center Press and Stanford, CA.: Stanford University Press, 2011.
- Bureau of Foreign Agricultural Relations. *Report of the China-United States Agricultural Mission Report No. 2*. Washington D.C.: Bureau of Foreign Agricultural Relations, United States Department of Agriculture, 1947.
- Caspar, Caulfield. *Only a Beginning: The Passionists in China, 1921-1931*. Union City, New Jersey: Passionist Press, 1990.
- Chen, Cheng. *Land Reform in Taiwan*. Taipei: China Publish Corporation, 1961.
- China-United States Agricultural Mission. *Report of the China-United States Agricultural Mission*. Washington, D.C.: Office of Foreign Agricultural Relations, United States Department of Agriculture, 1947.
- Committee on Agricultural Engineering, Hansen, Edwin L., Davidson, J. Brownlee, Nong lin bu, International Harvester Company et al. *Introducing Agricultural Engineering in China*. Chicago: International Harvester Corporation, 1949.
- Faure, David. *The Rural Economy of Pre-Liberation China: Trade Expansion and Peasant Livelihood in Jiangsu and Guangdong, 1870 to 1937*. Hong Kong: Oxford University Press, 1989.
- Gold, Thomas B. *State and Society in the Taiwan Miracle*. Armonk: M.E. Shape, 1986.
- Griffing, John B. *A Christian School with a Rural Message*. Nanking, China: University of Nanking, College of Agriculture and Forestry, 1924.
- Hsieh, S. C. *Agricultural Development and its Contribution to Economic Growth in Taiwan: Input-Output and Productivity Analysis of Taiwan Agricultural Development*. Taipei: Chinese-American Joint Commission on Rural Reconstruction, 1966.
- Joint Commission on Rural Reconstruction and Huisun Dang. *Land Reform in Free China*. Taipei: Joint Commission on Rural Reconstruction, 1954.

- Love, Harry H. and John Henry Reisner. *The Cornell-Nanking Story: The First International Technical Cooperation Program in Agriculture by Cornell University*. Ithaca, New York: Department of Plant Breeding, New York State College of Agriculture, Cornell University, 1963.
- Myers, Clyde Hadley. *Final Report of the Plant Improvement Project*. Nanking, China: College of Agriculture and Forestry, University of Nanking, 1934.
- Powelson, John P. and Richard Stock. *The Peasant Betrayed: Agriculture and Land Reform in the Third World*. Washington, D.C.: Cato Institute, 1990.
- Rockefeller Foundation. *The Rockefeller Foundation Annual Report 1917*. New York: Rockefeller Foundation, 1917.
- Rockefeller Foundation. *The Rockefeller Foundation Annual Report 1936*. New York: Rockefeller Foundation, 1937.
- Shen, T. H. *Sino-US Cooperation in Agricultural Science and Technology. Collected Papers about Agricultural History in China*. Taiwan: Taiwan Biography Literature Press, 1979.
- Shen, T. H. *The Sino-American Joint Commission on Rural Reconstruction: 20 Years of Cooperation for Agricultural Development*. Ithaca, NY.: Cornell University Press, 1970.
- Shen, Zonghan. *The Sino-American Joint Commission on Rural Reconstruction: Twenty Years of Cooperation for Agricultural Development*. Ithaca, NY.: Cornell University Press, 1970.
- Stross, Randall E. *The Stubborn Earth: American Agriculturalists on Chinese Soil, 1898-1937*. Berkeley, CA.: University of California Press, 1986.
- Tawney, Richard Henry. *Agrarian China*. Shanghai: Kelly & Walsh, 1938.
- Thomson, James Claude. *While China Faced West: American Reformers in Nationalist China, 1928-1937*. Cambridge MA.: Harvard University Press, 1969.
- Wilde, Parke. *Transforming Agriculture and the National Economy in Taiwan: LEE TENG-HUI and the Joint Commission on Rural Reconstruction (JCRR)*. Ithaca, NY.: Department of Agricultural, Resource, and Managerial Economics, Cornell University, May 1997.
- Yager, Joseph A. *Transforming Agriculture in Taiwan: The Experience of the Joint Commission on Rural Reconstruction*. Ithaca, NY.: Cornell University Press, 1988.

Chinese

- Agricultural Machinery Operation and Management Office 农林部善后救济总署机械农垦复员物资管理处. *Jixie Nongken fuyuan gongzuo gaikuang (35 nian 9 yue zhi 12 yue)* 机械农垦复员工作概况(三十五年九月至十二月) [Overview of Mechanical Reclamation and Demobilization (September to December, 1946)]. Nanjing: Agricultural Machinery Operation and Management Office, 1947.

- Bai, Hewen 白鹤文. *Zhongguo jindai nongye keji shigao* 中国近代农业科技史稿 [History of Agricultural Science and Technology in Modern China]. Beijing: China Agricultural Science and Technology Press, 1996.
- Bao, Ping 包平. *Er Shi Shi Ji Zhong Guo Nong Ye Jiao Yu Bian Qian Yan Jiu* 二十世纪中国农业教育变迁研究. Beijing: Three Gorges Press, 2007.
- Beijing Agricultural Engineering University 北京农业工程大学. “Zhongguo nongye jixiehua zhongyao wenxian ziliao huibian 中国农业机械化重要文献资料汇编[Compilation of Important Literature on Agricultural Mechanization In China].” Beijing: Beijing Agricultural University, 1988.
- Chen, Tongbai 陳同白. *Congshi yuye gongzuo wushinian* 從事漁業工作五十年 [Working in the Fishery Industry for Fifty Years]. Taipei: China Fisheries Association 中國水產協會, 1977.
- China Association for Science and Technology. *Zhongguo kexue jishu zhuanjiazhuanlue-nongxuebian-zuowujuan* 中国科学技术专家传略·农学编·作物卷 [Chinese Experts in Science and Technology: Agriculture-Crop]. Beijing: China Science and Technology Press, 1993.
- College of Agriculture of the University of Nanking. *Jinling daxue nongxueyuan sanshinian lai shiye yaolan* 金陵大学农学院卅年来事业要览 [Overview over the past 30 years of the College of Agriculture at the University of Nanking]. Nanjing: College of Agriculture of the University of Nanking, 1943.
- Committee of the History of Nanjing Agricultural University 南京农业大学发展史编委会. *Nanjing Nongye Daxue Fazhan Shi* 南京农业大学发展史 [The Developmental History of Nanjing Agricultural University]. Beijing: China Agriculture Press, 2012.
- Department of Agriculture of Southeast University. *Guoli dongnan daxue nongye gaikuang* 国立东南大学农科概况 [General Situation of Agricultural Department at the National Southeast University]. Nanjing: Department of Agriculture of Southeast University, 1926.
- Fei, Xu 费旭 and Zhou, Bangren 周邦任. *Nanjing Nongye Daxue Shizhi (1914-1988)* 南京农业大学史志(1914-1988) [The History of Nanjing Agricultural University(1914-1988)]. Nanjing: Nanjing Agricultural University Press, 1994.
- Gu, Changsheng 顾长声. *Chuan Jiao Shi Yu Jin Dai Zhong Guo* 传教士与近代中国. Shanghai: Shanghai People Publishing House, 1981.
- Guo, Wentao 郭文韬 and Cao, Longgong 曹隆恭. *Zhongguo Jindai Nongye Kejishi* 中国近代农业科技史 [The History of Agricultural Science and Technology in Modern China]. Beijing: China Agricultural Science and Technology Press, 1989.

- He, Lian 何廉. *He Lian Hui Yi Lu* 何廉回忆录. Beijing: China Wenshi Press, 1988.
- Hua, Shu 华恕. *Zou Bingwen Jinianji* 邹秉文纪念集. Beijing: China Agriculture Press, 1993.
- Huang, Junjie 黄俊杰. *Taiwan "tugai" de qianqian houhou—nongfuhui koushu lishi* 台湾“土改”的前前后后—农复会口述历史 [The Whole Story of the “Land Reform” in Taiwan—The Oral History of the JCRR]. Beijing: Jiuzhou Press, 2011.
- Huang, Junjie 黄俊杰. *Taiwan Tu Gai De Qian Qian Hou Hou* 台湾“土改”的前前后后. Beijing: Jiu Zhou Press, 2011.
- Huang, Junjie 黄俊杰. *Nong Fu Hui Yu Taiwan Jing Yan* 農復會與臺灣經驗. Taipei: San min shu ju 三民書局, 1991.
- Huang, Junjie 黄俊杰. *Zhongguo Nong Cun Fu Xing Lian He Wei Yuan Hui Shi Liao Hui Bian* 中國農村復興聯合委員會史料彙. Taipei: San min shu ju 三民書局, 1991.
- Jiang, Menglin 蔣夢麟. *Xinchao* 新潮 [New Tide]. Taipei: Biography Press 傳記文學出版社, 1967.
- Jiang, Menglin 蔣夢麟. *Zheng Fu Zai Tai Shi Nian De Nong Cun Jian She Ji Qi Ying Xiang* 政府在臺十年的農村建設及其影響. Taipei: Zhongguo Nongcun Fuxing Lianhe Weiyuan Hui 中國農村復興聯合委員會, 1963.
- Jiang, Mudong 蔣慕东. *Ershi shiji zhongguo dadou fazhan yanjiu* 二十世纪中国大豆发展研究 [Research about the Development of Chinese Soybean in 20th Century]. Beijing: China Three Gorges Press, 2008.
- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diyiqi* 中國農村復興聯合委員會工作報告第一期 [JCRR General Report I]. Taipei: Joint Commission on Rural Reconstruction, 1950.
- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diershisaniqi* 中國農村復興聯合委員會工作報告第二十三期 [JCRR General Report XXIII]. Taipei: Joint Commission on Rural Reconstruction, 1971.
- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dishiliuqi* 中國農村復興聯合委員會工作報告第十六期 [JCRR General Report XVI]. Taipei: Joint Commission on Rural Reconstruction, 1965.

- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dishiqiqi* 中國農村復興聯合委員會工作報告第十七期 [JCRR General Report XVII]. Taipei: Joint Commission on Rural Reconstruction, 1966.
- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dishisiqi* 中國農村復興聯合委員會工作報告第十四期 [JCRR General Report XIV]. Taipei: Joint Commission on Rural Reconstruction, 1963.
- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diqiqi* 中國農村復興聯合委員會工作報告第七期 [JCRR General Report XII]. Taipei: Joint Commission on Rural Reconstruction, 1956.
- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dijiuiqi* 中國農村復興聯合委員會工作報告第九期 [JCRR General Report XIII]. Taipei: Joint Commission on Rural Reconstruction, 1958.
- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Diliuqi* 中國農村復興聯合委員會工作報告第六期 [JCRR General Report XI]. Taipei: Joint Commission on Rural Reconstruction, 1955.
- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dibaqi* 中國農村復興聯合委員會工作報告第八期 [JCRR General Report XIII]. Taipei: Joint Commission on Rural Reconstruction, 1957.
- Joint Commission on Rural Reconstruction 中國農村復興聯合委員會. *Zhongguo Nongcun Fuxing Lianhe Weiyuanhui Gongzuo Baogao Dishijiuiqi* 中國農村復興聯合委員會工作報告第十九期 [JCRR General Report XIX]. Taipei: Joint Commission on Rural Reconstruction, 1968.
- Kong, Xuexiong 孔雪雄. *Zhongguo jinri zhi nongcun yundong* 中国今日之农村运动 [China's Rural Movement Today]. Shanghai: Zhongshan Wenhua Jiaoyuguan 中山文化教育館 [Sun Yetsen Cultural Education Press], 1934.
- Lian, Heng 連橫. *Taiwan Tongshi Xiace* 臺灣通史下冊 [The General History of Taiwan, Vol. 2]. Taipei: Datong Shuju 大通書局, 1984.
- Liu, Jiafeng 刘家峰. *Zhong Guo Ji Du Jiao Xiang Cun Jian She Yun Dong Yan Jiu (1907- 1950)* 中国基督教乡村建设运动研究(1907- 1950). Tianjin: Tianjin People's press, 2008.

- Liu, Zhiwei 劉志偉. *Meiyuan Shidai De Niaoshi Bingbu Ruyan* 美援時代的鳥事並不如煙 [Times during the Age of U.S. Aid was not that Romantic]. Taipei: On Books 啟動文化, 2013.
- Ma, Qiusha 馬秋莎. *To Change China: The Rockefeller Foundation's Century-long Journey in China* 改變中國: 洛克菲勒基金會在華百年. Guilin: Guangxi Normal University Press, 2013.
- Nanjing University. *Jin Lin Da Xue Jian Xiao Yi Bai Zhou Nian Ji Nian Ce* 金陵大學建校一百周年紀念冊. Nanjing: Nanjing University, 1988.
- North China Council for Rural Reconstruction. *Huabei nongcun jianshe xiejinhui xunlian weiyuanhui jilu* 華北農村建設協進會訓練研究委員會紀錄 [Record of Training Research Committee of the NCCRR]. Peiping, North China Council for Rural Reconstruction, date unknown.
- Qian, Jianju 千家駒 and Li Zixiang 李紫翔. *Zhongguo xiangcun jianshe pipan* 中國鄉村建設批判 [Criticism of China's Rural Construction]. Shanghai: Xinzhi shudian 新知書店, 1937.
- Qian, Jianju 千家駒. *Zhongguo de xiangcun jianshe* 中國的鄉村建設 [Rural Construction in China]. Date unknown: Dazhong wenhuashe 大眾文化社, 1937.
- Shen, T. H. 沈宗瀚. *Zhongnian zishu* 中年自述 [Readme in the Middle Age]. Taipei: Taiwan Biography Literature Press, 1984.
- Shen, Zhizhong 沈志忠. *The Sino-USA Exchange and Cooperation in Agriculture from 1897 to 1949* 近代中美农业科技交流与合作研究. Beijing: Three Gorges Press, 2008.
- Shen, Zonghan 沈宗翰. *Shen Zong Han Zi Shu* 沈宗翰自述. Hefei: Huang Shan Shu She 黃山書社, 2011.
- Shen, Zonghan 沈宗翰 and Zhao, Shuya 趙雅書. *Zhonghua Nongye Shi- Lunji* 中華農業史-論集 [The Chinese Agricultural History]. Taipei: Taiwan Commercial Press, 1979.
- Shen, Zonghan 沈宗翰. *Nongfuhui yu woguo nongye jianshe* 農復會與我國農業建設 [The JCRR and the Agricultural Industry in China]. Taipei: Commercial Press, 1972.
- University of Nanking 金陵大學秘書處. *Si Li Jin Ling Da Xue Yi Lan* 私立金陵大學一覽. Nanjing: the Library of the University of Nanking, 1933.
- University of Nanking. *Jinling daxue liushi zhounian jiniance* 金陵大學六十周年紀念冊 [60th Anniversary Album of the University of Nanking]. Nanjing: University of Nanking, 1948.

- Wang, Hongyi 王红谊, Zhang, Kai 章楷, and Wang, Siming 王思明. *Zhong Guo Jin Dai Nong Ye Gai Jin Shi Lue* 中国近代农业改进史略. Beijing: China Agricultural Science and Technology Press, 2001.
- Wang, Siming 王思明. *Zhong Mei Nong Ye Fa Zhan Bi Jiao Yan Jiu* 中美农业发展比较研究. Beijing: China Agricultural Science and Technology Press, 1999.
- Wu, Guanghua 吳光華 and Jiao Weicheng 焦維城. *Nongfuhui sanshinian jishi* 農復會卅年紀實 [Thirty Years' Records of the JCRR]. Taipei: JCRR, 1978.
- Wu, Xiangxiang 吳相湘. *Yanyangchu zhuan- Wei qianqiu xiangcun gaizao fengdou liushi nian* 晏阳初传-为全球乡村改造奋斗六十年 [James Yen - 60 Years of Hard Work for the Global Rural Reconstruction]. Changsha: Yuelu Press 岳麓书社, 2011.
- Xia, Rubing 夏如兵. *Zhongguo jindai shuidao yuzhong keji fazhan yanjiu* 中国近代水稻育种科技发展研究 [Rice Breeding Technology in Modern China]. Beijing: China Three Gorges Press, 2009.
- Yang Chengfeng 杨乘风 and Zhao Deshun 赵德舜. *Hezuo Chuanxipian (Tuhua wenda)* 合作传习片(图画问答) [Cooperative Training Pictures (Q&A)]. Tingfan: The National Rural Service Training Institute, 1940.
- Yang, Wanfa 楊萬發. *Zhongguo nongcun fuxing lianhe weiyuanhui tekan xin ershisi hao-gongye wuran yingxiang nongyehuanjing diaocha baogao* 中國農村復興聯合委員會特刊新二十四號-工業污染影響農業環境調查報告 [Special Issue No. 24 of the JCRR Report-- Investigation Report on The Impact of Industrial Pollution on Agricultural Environment]. Taipei: JCRR, 1976.
- Zhen, Dhua 郑大华. *Min Guo Xiang Cun Yun Dong* 民国乡村建设运动. Beijing: Social Sciences Academic Press, 2000.
- Zhonghua Nongxuehui 中華農學會. *Zhonghua Nongxuehui Chengli Qishi Zhounian Jinian Zhuance* 中華農學會成立七十周年紀念專集 [The 70th anniversary album of the founding of the Agricultural Association of China]. Taipei: Zhonghua Nongxuehui 中華農學會 [Agricultural Association of China], 1986.
- Zhou, Bangren 周邦任 and Fei, Xu 费旭. *Zhong Guo Jin Dai Gao Deng Nong Ye Jiao Yu Shi* 中国近代高等农业教育史. Beijing: China Agriculture Press, 1994.
- Zhou, Xin 周昕. *Zhongguo nongju fazhanshi* 中国农具发展史 [History of Development of Farming Tools in China]. Jinan: Shandong Science and Technology Press, 2005.
- Zhou, Xiuhuan 周琇環. *Nongfuhui shiliao dierce* 農復會史料第二冊 [The Historical Materials of the JCRR, Vol. 2]. Taipei: Academia Historica, 1995.

Articles:

English

Baker, John Earl. "JCRR MEMOIRS, Part I. The Mainland" *Chinese American Economic Cooperation* 1, No. 1 (June 1952): 1-11.

Carstensen, Fred V., and Werking, Richard Hume. "International Harvester in Russia: The Washington-St. Petersburg Connection?" *Business History Review* 57, No. 3 (1983): 347-366.

Editorial. "China's Rural Reconstruction." *The China Critic* 27, No. 4 (1939): 58.

Edmunds, Charles K. "Modern Education in China." *The Journal of International Relations* 10, No. 1 (1919): 62-86.

Farmer, B. H. "Perspectives on the 'Green Revolution' in South Asia." *Modern Asian Studies* 20, No. 1 (1986): 175-199.

Hu, Charles Y. "Review: Report of the China-United States Agricultural Mission." *Pacific Affairs* 21, No. 2 (June 1948): 203-205.

Swope, Gerard and Richard J. Walsh. "Mass Education Movement and JCRR." *Far Eastern Survey* 20, No. 14 (1951): 145-148.

Tao Dinglai. "Brief history of agricultural engineering development in China: In memory of Mr. Zou Bingwen." *International Journal of Agricultural and Biological Engineering* 1, No. 1 (August 2008): 8-11.

Chinese

Cao, Xingsui 曹幸穗. "Cong yinjin dao bentuhua: minguo shiqi de nongye kexue 从引进到本土化: 民国时期的农业科学[China's Agricultural Science and Technology in Minguo Period: From Introduction to Domestication]." *Gujin Nongye* 古今农业 [Ancient and Modern Agriculture] No. 1 (2004): 45-53.

Chen, Yixin 陈意新. "Meiguo xuezhe dui zhongguo jindai nongye jingji de yanjiu 美国学者对中国近代农业经济的研究." *Zhongguo Jingjishi Yanjiu* 中国经济史研究 [Researches in Chinese Economic History] No. 1 (2001): 118-137.

Hai, Wen 海聞. "Taiwan zhanhou de jingji fazhan he nongye zhengce de zhuanbian 臺灣戰後的經濟發展和農業政策的轉變 [Taiwan's Post-War Economic Development and the Transformation of its Agricultural Policy]." In *Taiwan de qishi: tudi gaige yantao jixiang* 臺灣的啟示: 土地改革研討會記詳 [Inspiration from Taiwan: the Seminar on the Land Reform]. New York: Oriental News Press 東方新聞出版社, 1992.

- Qu, Zhaowen 区昭文. “You meiguo di nongye jixiehua taolun dao woguo xianshi nengfou nongye jixiehua (futubiao) 由美国底农业机械化讨论到我国现时能否农业机械化(附图表) [Discussion on Agricultural Mechanization in America to Whether China Can Mechanize Agriculture at Present (Attached Chart)].” *Xiandai shengchan zazhi* 现代生产杂志 1, No. 7 (1935): 54-65.
- Shen, Zhizhong 沈志忠. “Jindai zhongmei nongjiju shiye jiaoliu yu hezuo tanxi (1898-1948nian) 近代中美农机具事业交流与合作探析(1898-1948年) [An Analysis on the Exchange and Cooperation Between China and the United States in Agricultural Machineries and Implements in Modern Times (1888-1948)].” *Journal of Nanjing Agricultural University (Social Sciences Edition)* 10, No. 4 (Dec. 2010): 128-134.
- Wang, Xianming 王先明 and Xu, Yong 徐勇. “Huabei nongcun jianshe xiejinhui shulun (1936-1942) 华北农村建设协进会述论(1936—1942) [The North China Council for Rural Reconstruction (1936- 1942)].” *Lishi Jiaoxue* 历史教学[History Teaching] No. 4 (2015): 10-16.
- Xue, Yueshun 薛月順. “Taiwan caoxia wangguo de xingcheng 1968-1988- zhengfu yu mingjian banyan de juese 臺灣「草蝦王國」的形成（1968-1988）—政府與民間扮演的角色 [The Formation of the Shrimp Kingdom in Taiwan (1968-1988)-- the Role played by the Government and the People].” *Academia Historica Journal* 國史館館刊 No. 24 (2010): 139-175.
- Yang, Cuihua 杨翠华. “Technology Assistance in American Aid: An Aspect in the Beginning of Taiwan’s Postwar Industrialization 美援技术协助: 战后台湾工业化开端的一个侧面.” *Cold War International History Studies* 冷战国际史研究 No. 1 (2008): 175-210.
- Zhang, Zhiwei 張智瑋. “Nongcun fuxing weiyuanhui yu nongcun zhengjing zhixu chongzheng de changshi (1933-1936) 農村復興委員會與農村政經秩序重整的嘗試 (1933-1936).” *Zhengda Shicui* 政大史粹 No. 24 (2013): 49-81.

Unpublished Materials:

- He, Shuqing 何淑琴. “Meiguo nongkejia sanweiyiti moshi de yinru jiqi yingxiang yanjiu 美国农科教‘三位一体’模式的引入及其影响研究 [Introduction and Influence of the Trinity of Integration of Agriculture Production, Scientific Research and Education in America].” Master’s thesis, Nanjing: Nanjing Agricultural University, 2011.
- Lin, Jiemin 林傑民. “Cong meiguo dao Taiwan: sijianhui de yizhi yu guoji nongye jiaoliu gongzuo 從美國到臺灣：四健會的移植與國際農業交流工作(1951-1965) [From the United States to Taiwan: Transplant of the 4H-Club and International Agricultural Exchange Work (1951-1965)].” Master’s thesis, Fu Jen Catholic University, Taiwan, 2012.

- Lu, Yan 鲁彦. “Jinlin daxue nongxueyuan dui zhongguo jindai nongye de yingxiang 金陵大学农学院对中国近代农业的影响 [Influence of College of Agriculture at the University of Nanking on the Modern Chinese Agriculture].” Master’s thesis, Nanjing Agricultural University, China, 2005.
- Wiggins, R. G. *Annual Special Report of the Plant Improvement Project*. unpublished, 1930, Rockefeller Center Archives.
- Zhu, Xuhua 朱旭華. “Zhongguo nongcun fuxing lianhe weiyuanhui yu Taiwan tudi gaige 中國農村復興聯合委員會與臺灣土地改革 [The JCRR and Taiwan’s Land Reform].” Master’s thesis, National Chengchi University, Taiwan, 1992.