

**Scientific Agriculture Across Borders:
The Rockefeller Foundation and Collaboration
between Mexico and the U.S. in Corn Breeding**

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This project focuses on the development of scientific agriculture in Mexico during the 1930s to the 1960s; specifically, research done on corn by Mexican and U.S. scientists. The Rockefeller Archive Center's collections give a rich and detailed picture of the long process from the initiation of the Office of Special Studies in 1941-1943 by the Rockefeller Foundation (RF), through the development of a thriving research program in the Mexican national context during the 1940s and 1950s, to the cessation of direct involvement in Mexican research and an international focus in Rockefeller Foundation-sponsored agricultural research. While it may seem odd to distinguish among the different crop plants, differences in the histories of research on the various staple grains in the twentieth century are striking. Any sort of "green revolution" with corn was very different than that with wheat, particularly in Mexico, a center of great diversity and long history of the corn plant.

During my first visit to the Rockefeller Archive Center, I reviewed the better-known documents in the Rockefeller Foundation Archives, Record Group 1.1, Series 323 (Mexico), particularly those pertaining to the creation of the foundation's Office of Special Studies (OSS). These files document the visions of RF administrators and agricultural scientists for Mexican agriculture at the outset of the RF's first operating program in agriculture. RF-affiliated scientists believed that agricultural research in

Mexico should center around "scientific agriculture," a vision which dovetailed with the ideas of prominent Mexican agronomists. A picture of pre-OSS agricultural science in Mexico, as well as of the goals of Mexican and U.S. scientists and administrators in the early 1940s, emerges from advisory council reports (especially the sections by E. C. Stakman and Paul Mangelsdorf), correspondence between members of the advisory council in the United States and J. G. Harrar in Mexico, and correspondence between RF administrators and Mexican government officials.

In the RF's Mexican Field Office Files (Record Group 6.13, Series 1.1), I focused on corn research in the period between 1943 and the mid-50s. A long series of corn reports exists in Office of Special Studies files and in Edwin Wellhausen's files. Many of these are technical reports that detail the kinds of varieties that the OSS was breeding, breeding strategies and questions, and the locations where the varieties were being tested and in what regions the OSS intended to distribute them to farmers. A necessary part of this history involves the Mexican government's National Corn Commission (CNM), established in 1947 to propagate and distribute "improved" corn seed, and the Mexican Field Office Files contain much correspondence between Wellhausen and other OSS scientists, and CNM officials. This documentation provides one view of the way the OSS integrated its activities, at times grudgingly, with those of Mexican institutions.

I have used extensively the oral histories of Edwin Wellhausen and Paul Mangelsdorf, the two scientists most involved in the corn program, and the "Trip Reports" from the 1940s by RF advisors Elvin Stakman and Paul Mangelsdorf [Record Group 1.2, Series 323, Box 10, Folder 60]. Paul Mangelsdorf reported on the Mexican Agricultural Program three different times in the 1940s, and, not surprisingly, paid special attention to the corn program. These trip reports were not "official," in that they were not submitted to the RF Board of Trustees or to the Mexican Government. They are rich sources of frank opinion and of growing perspective over time of the RF's activities in Mexico. The highly influential positions of the authors makes the reports' importance even greater. Not only were Mangelsdorf, Stakman, and Richard Bradfield instrumental at the Mexican Agricultural Program's formation (with their recommendations that a program should indeed be started and what they believed it ought to look like), but through their positions on what came to be known as the Agricultural Advisory Committee they continued to influence the Mexican Agricultural Program's development through the 1940s and 1950s. There also exists a complete run of the *Folletos Tecnicos*, *Folletos de Divulgacion*, and *Folletos Miscelkneos*, published by the Office of Special Studies [RG 1.2, Series 323, Boxes 11-14].

I found very useful the documentation of several conferences sponsored by the Rockefeller Foundation through the Office of Special Studies. In particular, the series of geneticists' meetings initiated in the 1950s illustrates the developments and strategies envisioned for young Latin American breeding programs. Likewise, materials on the Germplasm Conference in 1959 elucidate U.S. scientists' understanding and continuing questions about corn breeding in the tropics and the United States and the directions that advances in the Mexico program would take. Record Group 6.13 also contains

documentation of the actual corn collecting and germplasm banks, representing part of the complex story of collecting and using the tremendous diversity of corn in the tropics.

During a second trip to the Archive Center, I focused my research mainly on the RF's Mexican Agricultural Program (MAP) during the 1950s and 1960s. The Rockefeller Archive Center's records are rich in the years around 1960, the period of transition from the foundation's sponsorship of a national program, the Office of Special Studies (OSS), to an international program, the International Maize and Wheat Improvement Center (CIMMYT). For the corn breeding program, the shape that this transition took was largely the result of the work of Edwin Wellhausen, first the geneticist in charge of the corn breeding work of the OSS and director of the OSS in the early 1950s. By the late 1950s the OSS had almost twenty years of experience with corn in Mexico: its farmers, the climatic regions, and a growing understanding of corn's genetic diversity. Wellhausen was in charge of the international expansion of the OSS's corn program, first known as the Inter-American Corn (Maize) Improvement Program, which existed during approximately the years 1959-1963 [RF, Record Group 6.13, Series 1.1, Box 30].

Wellhausen's international program grew out of the Office of Special Studies' experimenting with breeding methods and collecting thousands of varieties of Mexican corn. He proposed that the international program would support basic research in corn genetics that would unlock the genetic secrets of corn yield and enable scientists to breed "supervarieties" in Latin America and elsewhere around the world. Wellhausen believed that the next great increase in corn yields was to originate out of the genetic diversity of tropical corns and in utilizing methodologies elaborated in tropical countries (the first great increase in yield was, of course, hybrid corn developed in the United States and widely cultivated from the 1930s onward). From a Mexico-focused program, Rockefeller Foundation-sponsored corn breeding work would expand and begin moving corn germplasm around the world. This international program was the second phase in which RF-funded agricultural geneticists acted in practical, creative ways in exploring the science of agriculture and in modifying the standard practices in the United States in that period.

Some of Wellhausen's emerging connections with agricultural scientists in the United States at this time were H. F. Robinson, Paul Harvey, and R. E. Comstock at North Carolina State, and John Lonnquist at the University of Nebraska [RF, Record Group 6.13, Series 1.1, Box 31]. These and other researchers gave seminars or taught short courses at the new Mexican Graduate School (Colegio de Postgraduados) in the many instances where there lacked sufficiently trained Mexican scientists. These researchers also received Latin American students for masters and doctoral-degree work at their home institutions. Thus, the nascent graduate institution in Mexico was intimately tied to the international corn project, at the same time as it was to play a key role in agricultural research and in the training of young, promising Latin American scientists [RF, Record Group 6.13, Series 1.1, Box 18].

One aspect of the Inter-American Corn Program that had not existed in the earlier years of corn breeding in the OSS was an interest in the possible uses of exotic corn germplasm

in the United States corn belt [RF, Record Group 6.13, Series 1.1, Boxes 11 and 12]. Prior to 1960, corn breeders in the United States had experimented little with germ plasm sources outside the borders of the country. Just as corn breeders met with challenges as they tried to use Mexican corn varieties in breeding programs in India or Africa, to use germplasm from tropical places in the United States was also problematic. Wellhausen designed the international corn program to address these challenges simultaneously. In February 1959, Wellhausen organized a Germplasm Conference and invited leading agricultural scientists in Mexico, the United States, and other Latin American countries [RF, Record Group 6.13, Series 1.1, Box 23]. Participants in the conference presented wide-ranging questions about the future of the corn plant and the future of corn breeding: the kinds of corn crosses they ought to explore, the timing of selecting plants and inbreeding, the contributions of quantitative genetics.

This international corn improvement program was short-lived. In 1963, the International Maize and Wheat Improvement Center (CIMMYT) was formed, funded by the Rockefeller and Ford foundations and the Mexican government [Record Group 1.2, Series 323, especially Box 25]. An important issue was the relationship the new institute would have to Mexican institutions, namely the National Institute for Agricultural Research, the National Agricultural School, and the Graduate School in Agriculture. Rockefeller Foundation staff were divided over whether the new institute should be primarily a Mexican institution, or whether it ought to have clear autonomy from the Mexican government and jointly sponsor specific projects with the Mexican institutions. Initially, in 1963, CIMMYT was part of a new Mexican center for agricultural research, education, and extension. But in 1966, CIMMYT received a charter as an international organization. These developments had powerful implications for the national research programs in Mexico. In some respects, a dichotomy continued after the mid-1960s similar to the one that had prevailed during the 1940s and 1950s, in which an underfunded national program, weighed down by governmental bureaucracy, existed side by side with an internationally-sponsored program that enjoyed abundant funds and administrative autonomy from federal government bureaucracy or control.

The RF staff's involvement with the Mexican national program continued after the Office of Special Studies was closed in 1960. The OSS and the Mexican government's Agricultural Research Institute (which functioned from 1947 to 1960) were merged to form the National Agricultural Research Institute (INIA). Foundation staff continued to work with INIA well into the 1960s, and the RF made grants for INIA projects [RF, Record Group 1.2, Series 323, Boxes 29 and 30]. RF scientists often found it difficult to work with the new organization, largely because of political tensions among INIA staff. INIA's budget was low, relative to what the Office of Special Studies's had been, and the newly formed federal agricultural research program continued to struggle with the same challenges as the earlier Agricultural Research Institute: insufficient funds for ambitious agricultural research programs, and insufficiently trained workers and scientists for those programs.