

A Pattern of Practical Technical Assistance:

The Rockefeller Foundation's Mexican Agricultural Program

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The current focus on international problems of insufficient food for populations expanding at alarming rates and the complexities in overcoming these problems can obtain a fresh perspective and draw on effective patterns of attack through a study of Mexican agricultural progress during the past two decades.

In particular, a cooperative effort between The Rockefeller Foundation and the Mexican Government which has been operative during these 20 years has developed and demonstrated concepts and techniques in international assistance which have applicability on a broader scale and can help to resolve some of the very urgent problems facing mankind today.

An invitation extended to The Rockefeller Foundation by the Government of Mexico to participate in a cooperative agricultural research venture was implemented in 1943 with the establishment of the program and assignment of one Foundation scientist to Mexico. This program grew to a maximum Foundation field staff of 18 in 1958. More than 100 Mexican scientists were then directly associated in program research projects from a total of over 500 who had received in-service training up to that time. As local competence and leadership develops, the Foundation's direct participation is being reduced; a staff of 12 Foundation personnel is working in Mexico at present.

During these 20 years of sustained research effort,

attention has been concentrated on improvement of the basic foods of that nation. Initially corn and wheat projects were undertaken in an attempt to alleviate the considerable annual deficiencies in these cereals basic to the Mexican diet. As the program developed, projects were added on soil fertility, bean improvement, plant pathology, entomology, potatoes, vegetables, sorghum, forage legumes and grasses, agricultural information, agricultural economics, and soybeans.

Conducted from the beginning as a truly cooperative program, both Mexican and Foundation scientists have worked in harmony in a team approach to all projects. In 1956 research work was initiated with livestock. From a modest beginning in that year and based upon previous years of experience in forage crops improvement, the animal science program today includes projects in improvement of poultry, dairy and beef cattle, and swine. A similar team approach to the improvement of livestock production includes management, nutrition, and animal pathology.

Statistics Reveal Problems

Mexico is and will continue to be for some time an agricultural country. A brief review of the nation and its agriculture will give an insight into the basic role of agriculture in its economy and general development. This will also serve to identify some of the general as well as specific problems confronting further national progress.

The total area of Mexico is 760,579 square miles excluding the continental shelf, or over 486 million acres, roughly one-fourth of the continental area of the United States excluding Alaska. Arable land is estimated at 74 million acres with about 37 million under cultivation. Of these 37 million acres, about 2 million are humid and 7.4 million are irrigated. The balance—27.6 million acres of tillable land—is in regions of undependable rainfall patterns or are semi-arid. The productivity potential of these lands under the best of known world farming practices today is quite limited. Mexico has approximately 250 million acres of grasslands which support a large animal livestock population of about 40 million head. Forest area is approximately 86 million acres.

The climate of Mexico, which varies from low-altitude humid tropics and desert regions to high-

elevation arid plateaus and temperate zones, depends to a considerable degree on the altitude. High mountain ranges creating isolated valleys and arid plateaus above 5,000 feet in elevation are reflected in extensive temperate zone agriculture; at least 23 million acres of it is marginal crop land and vast arid rangelands. In fact, little more than one half of all arable land is planted to crops each year; the balance is left in fallow primarily because of inadequate moisture or uncertain rainfall patterns.

Mexico's land reform and land tenure systems bear significantly on current agricultural progress. Land reform in Mexico dates from 1915 and resulted directly from the Revolution of 1910. The recognition of the social function of private property is firmly established in the Constitution. Since 1915, over one hundred million acres have been distributed to landless citizens. Greatest activity in effective implementation of land redistribution did not occur until the administration of Lázaro Cárdenas (1935–1940) when over 44 million acres were distributed. Establishment of the Agrarian Code of



1934 and the institution of the National Bank of Ejidal Credit (Banco Nacional de Crédito Ejidal)¹, together with this massive program of land distribution during his administration, gave the agrarian reform a new spirit and meaning as well as additional legal strength. However, the idealistic approach to land reform without adequate technical backstopping, insufficient education opportunities, lack of adequate title to the land, and insufficient credit and equipment considerably weakened the effectiveness of this national effort.

The only other brief period in history in which a comparable area of land has been distributed is the present administration of Adolfo López Mateos. During the past five years, nearly 30 million acres of land have been granted. Together with this renewed impetus on land distribution, an integrated land reform scheme has been developed. A

¹ This bank services exclusively the *ejidos*, which are communities made up of *ejidatarios*, individuals who have received grants of land from the Government under the agrarian reform program.

clearer understanding is emerging of the need for thorough technical planning and continued support associated with land distribution. A concerted effort is being made to provide substantially increased and improved rural education, increased agricultural credit, effective crop insurance, extensive price support for principal commodities, and meaningful, timely communication with the farmers of new technology to increase their productivity. These, however, are problems which have, relatively speaking, near-term solutions requiring increased dedication and effort, additional funds, and improved organization. The more complex problems of inadequate land title, alarming population increase, and the limitations imposed by a finite arable land area urgently require further study.

Ejiditarios are entitled to the land received as long as they work it. They do not, however, have full title nor can they sell or mortgage the land although they can bequeath it to their dependents. At this date, nearly 2 million ejiditarios are working lands assigned to them through definitive titles. It is estimated that these ejiditarios and their families number slightly over 10 million; they depend upon over 100 million acres of crop and grazing land for their food and income. They and their families represent over one-fourth of the population and operate over 40 percent of all crop land.

The average total area per ejido family of five persons is about 50 acres, of which only 13 acres are tillable. The production of about 6 acres is required to sustain the family itself. It has been argued that the amount of land assigned to individual families on ejidos is too small in many cases to permit them to earn a reasonable living. Add to this the facts that nearly half of all arable land is currently left fallow each year because of insufficient rainfall and that production of additional minor areas is lost for various crop failure reasons, and a tragic picture of ejidal farming emerges. Nevertheless, the validity of arguments against small land holdings is being investigated, together with a thorough re-evaluation of the productive capacity of arable lands and carrying capacity of grazing lands. Diverse soils, climate, cropping systems, and market conditions defy a generalized solution to equitable land distribution. General statements and policy which do not consider the complexities of these conditions only serve to confuse the issue and detract from agricultural progress.



The maximum area which a private farmer, as compared with an ejiditario, may own without danger of expropriation is, with certain exceptions, about 250 acres of humid or irrigated land, or 500 acres of unirrigated land, or enough to sustain 500 animal units.

Three Farming Regions

Crop lands of Mexico are roughly divisible into three major geographic-climatic regions. The central high plateau country is characterized principally by temperate zone agriculture, irregular rainfall pattern, prevalence of traditional farming practices, and highest population indices per land unit. Corn production has been basic in this region with little or no crop rotation practiced. Other important crops in the region on either area or value basis include beans, wheat, barley, alfalfa, chile, tomatoes, onions, potatoes, and strawberries. This is not typical one-crop agriculture, but crop rotation

has not been a part of the traditional agricultural production pattern. Most crop lands have been under cultivation for hundreds of years. However, during recent years, increased diversification, crop rotation, increasing use of fertilizers, expanding irrigation facilities, introduction of improved varieties and farming practices have all contributed to significant improvement in agricultural production.

The northern irrigated regions, principally the western and eastern coastal areas characterized by slight rainfall, low density of population, and high temperatures have been greatly expanded as a result of large-scale Federal irrigation projects. During the past 13 years, over 3 million acres have been brought under productive cultivation through these continuing Federal irrigation projects. Two major crops are wheat and cotton. Winter vegetables, sorghums, sugar cane, corn, sesame, safflower, and soybeans enter into the production pattern in a growing effort to diversify and strengthen the region's agricultural economy. However, these irrigated regions still produce most of Mexico's cotton and more than half of the nation's wheat crop, calculated for 1963 at 1,800,000 metric tons. These relatively new agricultural lands are highly mechanized, and technologies applied and yields obtained are quite similar to those in southwestern agricultural regions in the United States.

The tropical south and southeastern areas of Mexico are largely underdeveloped. The agricultural potential of these lands may be considerable both from the standpoint of total national productivity and as a means of gainfully employing the steadily increasing national population. These regions have received special study and development during the current administration in an attempt to expand national food supplies and produce additional export commodities including sugarcane, bananas, coffee, cacao, and henequen.

The dangers inherent in large-scale production of and economic reliance on export crops have been recognized in Mexico, and some progress has been made to diversify the crops of this region to provide greater long-term economic stability of the area.

Three fairly well defined regions of livestock production have developed in Mexico. The northern semi-arid rangelands with a particular orientation toward export of live animals to the United States suffered considerable loss during the hoof and

mouth disease outbreak in Mexico. Livestock shipments to the United States were completely suspended from 1947 until 1951. In 1962 over 765,000 head of cattle were exported to the United States, together with 28,000 metric tons of beef. The 1963 cattle population is estimated at over 25 million head, compared with 14.8 million in 1950 during the hoof and mouth disease epidemic. Significant progress has been made in reestablishing this industry. One of the major factors determining the export orientation of this northern livestock production pattern, principally grass fed steers, has been the previous lack of adequate communications with the densely populated central region of Mexico and lack of adequate slaughter, feeding, and marketing facilities. The present administration has placed considerable emphasis on correction of these deficiencies, not only to improve the national consumption of beef but also to enable the nation to export a processed product of higher value in place of live animals.

The southeastern and eastern low-land tropical region is a major producer of cattle consumed in Mexico. This region has great unexploited potential in the livestock industry which is now expanding as a result of grassland management research.

The central region of Mexico is one of great diversity in livestock production including major dairy herds totaling nearly 1 million head in 1960 producing about 2.5 billion liters of milk. It is also the area of greatest concentration of the egg and broiler industry. Over 3 billion eggs and over 7 million broilers were produced in 1962 in a rapidly expanding national poultry industry. The majority of swine of the national population of more than 11 million head are also produced in this central region.

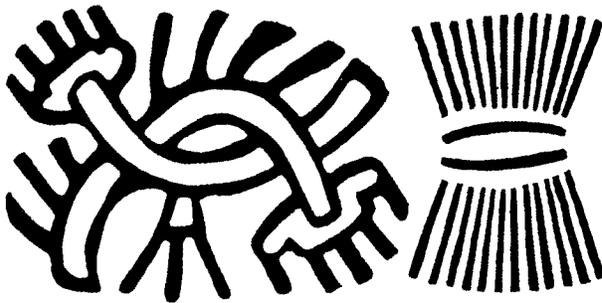
Research Brought Increases

Substantial increases in national corn production in recent years have corrected the previous deficit, and played a key role in the expanded poultry and swine programs. Research results from the Foundation's cooperative program with corn have made possible the diversion of increasing amounts of this crop as feed grain. Research has also assisted in increasing sorghum production from 51,000 metric tons in 1957 to 236,000 tons in 1962. The rapidly growing feed manufacturing industry

has largely developed with increased poultry production.

Over 12 million head of goats and more than 6 million head of sheep graze in the central and northern regions of Mexico.

The population of Mexico according to the census of June 1960 was 34,923,129. This represents an increase of approximately 35 percent since 1950 and 78 percent since 1940. A continuing high birth rate and a substantial decline in mortality rates, principally among infants, account for the average annual rate of population growth of 3.1 percent for 1950-60 compared with 2.8 percent for 1940-50. During 1961 and 1962, the annual rate of population growth was estimated at 3.3 percent,



as compared with estimated annual growth rates in the United States of 1.7 percent and 1.6 percent for each of the same years. The current population estimate is over 37 million inhabitants, thus making Mexico the most populous of all Spanish-speaking nations in the world.

The census of 1950 showed rural population to be 58 percent. During the 1950-60 decade, this percentage decreased to 49. Rural population is defined as inhabitants living in communities of less than 2,500 persons.

The present rate of increase of over 1 million persons per year, with approximately half of these swelling the rural areas, not only requires considerable annual increase in basic food items but also places tremendous pressures on programs to alleviate unemployment and poverty.

Mexico is now largely self-sufficient in the production of foodstuffs. Imports in 1950 of 7.9 percent compare with 3.1 percent of the total value of imports in 1960. Mexico, unlike many other developing nations, does not depend upon one or two

export commodities for principal sources of foreign income. The three principal items in a diversified list of export products from Mexico in 1962 were cotton, 20.8 percent; livestock and meat, 7.0 percent (value \$74,900,000); and coffee, 7.9 percent. Of lesser importance, fresh and processed foods accounted for 4.7 percent of the total value of exports in 1962. The combined total of all agricultural products was 52.3 percent of the value of total exports in 1962. While imports have exceeded exports every year since World War II with the exception of 1949, exports have increased in total value each year since 1957, and imports have remained practically unchanged since 1957.

The high degree of self-sufficiency in foodstuffs has been accomplished principally through research resulting in the development and use of improved crop varieties and methods of cultivation, increased production and use of fertilizers, and increases in the amount of land under irrigation. The fact that in 1962 54 percent of the country's total labor force was engaged in agricultural pursuits and produced only 20 percent of the country's gross national product points up clearly the continuing need for improvement in agricultural productivity.

The gross national product, based on constant 1950 prices, has shown an average annual increase of 4.8 percent over the years from 1950 through 1962 and has exceeded the average annual population increase of 3.1 percent. It is felt that this gross national product increase has had a corresponding effect on average per capita income. However, rural incomes of very large numbers of people, generally estimated at about 20 million, are so low as to eliminate them from the effective consumer market. The majority of these people live at the subsistence level and have little or no produce for sale, and thus extremely limited purchasing power to contribute to an expanding economy.

Economy Is Brighter

The paradox of a relatively bright economical condition with 20 million people at the subsistence level and a net increase of 1 million inhabitants each year presents a disturbing situation for the national authorities and to the agronomists of Mexico. As Secretary of Agriculture Julián Rodríguez Adame has so clearly pointed out, the basic problem is now one of alleviating poverty and finding means of

productive employment for the rapidly expanding population.

A synthesis of accomplishments of this cooperative agricultural program is necessarily limited in this review to mention of only several of the most significant accomplishments of the 20 year span of operations. These are accomplishments which have not only had measurable impact to date on Mexican progress but which are affecting agricultural development in other areas of the world.

As originally conceived, the program was aimed at improving the quantity and quality of the basic foods of Mexico. In a nation which produced only 3,122,000 metric tons of corn, 250,000 tons of beans, and 587,000 tons of wheat in 1945 to one in which these figures have been increased to 5,561,000, 617,000, and 1,433,000 respectively for 1962, the gross increase is dramatic. It is important to note that total population has increased from about 20 million to over 35 million inhabitants during this same span of years. The very fact that agricultural production has exceeded population growth, thus alleviating hunger and relieving to some degree the poverty of millions, speaks eloquently for the effectiveness of the agricultural research program and the substantial national effort and continuing interest and awareness of the Mexican Government in resolving agricultural problems basic to total national progress.

Average per capita consumption of these basic commodities has also increased significantly during these 20 years. In addition, consumption of other foods essential to adequate human diet such as animal proteins, vegetables, and other crops has increased considerably.

Crop breeding projects have produced more than 60 improved varieties of maize including hybrids, synthetics, and open pollinated types. The Ministry of Agriculture has plans for a maximum utilization of seed of improved varieties in 1963 of 14,775 metric tons, or sufficient to sow about 500,000 acres. Approximately 15 million acres of unirrigated corn are harvested annually in Mexico, which represents 93.7 percent of the total area planted to corn.

Improved varieties when grown under conditions of adequate rainfall or irrigation and following recommended farming practices may be expected to yield up to 3 tons per acre. In sharp contrast, corn produced on almost 7 million acres in Mexico averages about 12 bushels per acre. The considerable

acres of corn being grown annually on marginal land and in areas of unpredictable rainfall patterns presents one of the major obstacles to more rapid progress in improved production of this crop. In spite of this, however, it is considered that if all available technical knowledge were correctly applied to Mexican corn production, the total harvest could be doubled.

Considerable research emphasis is currently being placed on breeding corn varieties for unique drought and frost resistance. In 1962 three new hybrids, H-26, H-27, and H-28, were released for commercial production under natural rainfall conditions at high elevations where both drought and frost are common crop hazards. These hybrids appear very promising and represent an initial phase of research to improve corn yields in the less favorable production areas. Of other recent introductions, the white dent hybrid H-507 developed for the humid tropical regions is capable of producing up to 3 tons per acre under optimum agronomic practices. H-412 developed for the northern irrigated low-elevation regions produces over 2 tons per acre. These yields are realizable goals for the farms of the areas.

Deficits Overcome

Through the use of these and other improved varieties, proper use of fertilizers, and other recommended farming practices—all results of the cooperative research program—not only have deficits been overcome but Mexico has been able to launch special regional production improvement campaigns such as the "Plan Jalisco". This has increased production in that principal maize area by 500,000 metric tons in 1962, the fourth successful consecutive year of the campaign. This "Plan" together with others developing in Veracruz, Chiapas, Guanajuato, also favorable regions for corn production, provide a margin of total production security against crop failures in less favorable areas.

Results of the national wheat improvement project have been even more spectacular. The latest outstanding achievement in the long series which has marked improved wheat production was the introduction in 1961 of the two first semi-dwarf stem rust resistant varieties in Mexico, Pitic 62 and Penjamo 62. In the 1962-63 production season, these two varieties were grown on more than 75

percent of the total national area cultivated to wheat. Improved yielding ability combined with maximum disease resistance are making possible yields of over 50 bushels per acre with these new wheats in some areas. National average yields in 1945 of 7½ bushels per acre have been increased to 32 bushels per acre in 1963.

Greater resistance to lodging under conditions of heavier fertilizer application with concurrently higher yields make these dwarfs exceptionally well adapted to irrigated production conditions. It is conservatively estimated now that by 1965 over 90 percent of the total wheat crop will be harvested from improved dwarf varieties.

Mexico is now producing sufficient wheat to carry over about 300,000 tons per year. However, in 1944 more wheat was imported than was grown in the country—509,000 tons imported versus 374,000 tons produced.

The development of high yielding varieties with resistance to prevalent races of the stem rust pathogen has not only resulted in this very favorable production situation, but also has significantly reduced the danger of severe loss from this disease. In the past, stem rust infections have reached regional epidemic proportions and resulted in tremendous economic loss in Mexico, as well as in the United States and Canada.

Current research is aimed at developing composite wheat varieties which will have several types of resistance to stem rust. Such varieties are mechanical mixtures of phenotypically similar but genotypically different lines for resistance to prevalent rust races. The plant breeders must constantly be prepared to modify the makeup of the composite varieties under production as rust race populations shift. Preliminary trials with these composites are promising.

For 11 consecutive years, the cooperative program has assisted in making possible an increase in national average yields. Production of over 80 percent of the wheat crop on irrigated lands, under ecologically less diverse conditions, lends a greater degree of universality to research recommendations, including fewer principal varieties and more broadly based fertilizer applications than is characteristic of other basic food crops. Not only do these conditions improve the opportunities for the application of large-scale production, but also somewhat simplify the agriculture extension task. These

developments in wheat improvement point up the effectiveness of the research program and testify clearly to the degree of effective communication between farmers and researchers.

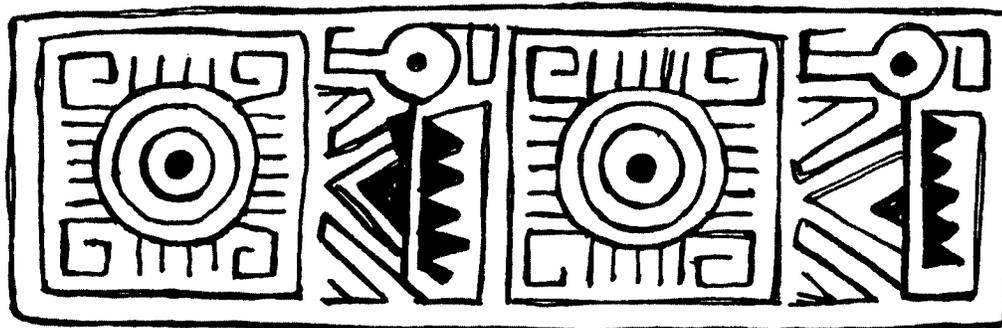
Similar substantial results have been achieved with other food crops: (1) Higher yielding bean varieties introduced with improved disease resistance; (2) productive, late blight resistant potato varieties opening up the possibility of widespread market and home garden production of this crop which has been a luxury item in the diets of most rural Mexicans; (3) the introduction of high quality, more productive vegetable varieties for both market and home garden uses; (4) development of higher yielding alfalfa varieties; (5) and introduction of other more productive forage crops. Comprehensive annual reports of both The Rockefeller Foundation Agricultural Sciences program and the Ministry of Agriculture of Mexico adequately document this progress.

Results achieved with livestock have also been significant. Broiler production is up 300 percent, egg production 250 percent. Program research projects have contributed to these increases, as they also have to management, nutritional, and disease studies with dairy and beef cattle and swine, resulting in increasing availability of meat and dairy products.

The indispensable modifications of traditional agricultural practices and successful introduction of new cultural methods associated with the use of improved seeds in many cases represent especially significant accomplishments. Cultural patterns and concepts of agriculture are changing. Technological improvement is now expected by the farmer and solicited from the Mexican scientists who have now clearly demonstrated their capabilities' to the nation.

New Programs Developed

More than 700 Mexican scientists have received in-service training during the past 20 years in the various aspects of the program. As the needs appeared, agricultural extension programs have been developed and seed production facilities installed. Many of these capable young scientists have assumed major responsibilities with these organizations. More than 125 of these men and women, however, are directly involved as staff members of



Mexico's Instituto Nacional de Investigaciones Agricolas and the Instituto Nacional de Investigaciones Pecuarias (National Institute of Agricultural Research and National Institute of Livestock Research respectively). A number of these scientists are now in positions of complete responsibility for projects which in the early years of the program were headed up by Foundation staff. This growing level of competence is largely responsible for the gradual reduction of Foundation staff in Mexico and at the same time has made possible a gradual shift in emphasis of Foundation effort to the international application of research results from the Mexican program.

The Foundation's total investment over this 20-year span is summarized in the following table. The annual operating budgets expended by the Rockefeller Foundation on research projects of the program were supported over the years by approximately the same level of investment in the program by the Mexican Government.

**ROCKEFELLER FOUNDATION FINANCIAL SUMMARY
PROGRAM IN AGRICULTURAL SCIENCES IN MEXICO
FROM 1943 THROUGH 1962**

Operating Program Research Funds.....	\$8,474,811.50
Scholarships and Fellowships.....	1,395,008.56
Grants (through 1963).....	4,685,464.00
	\$14,555,284.06

Through a scholarship-fellowship program of the Foundation which has operated in conjunction with the field program over these years, 150 young scientists (including agronomists, chemists, biologists, and veterinarians) have obtained advanced degrees from foreign universities. The majority of these scien-

tists are staff members of the Instituto Nacional de Investigaciones Agricolas and the Instituto Nacional de Investigaciones Pecuarias. Others have assumed roles of responsibility in teaching, research, and extension with other institutions throughout the nation. In addition, 60 others are currently enrolled in graduate study programs under Foundation sponsorship, bringing the total to 210 awards for advanced study granted since the initiation of the cooperative agricultural program.

The great lasting benefits of any foreign assistance program are measured in the degree of competence developed nationally in the resolution of continuing needs and problems. The research projects provided the vehicle for training and the development of increased capabilities and confidence on the part of Mexican colleagues. The cooperative program, beyond its significant achievements in increasing food production and beyond the numerical listing of progress in food production, has accomplished far more lasting benefits as a result of its role as catalyst in speeding the development of agriculture through providing the opportunities and vehicle for development of capabilities of Mexican agronomists.

Concurrent with the operating research and the scholarship programs, the series of grants has assisted over the years in strengthening developing institutions, enabling outstanding scientists to broaden their understanding of agricultural activities in other parts of the world and to work with Mexican institutions.

Education Aided

Direct assistance through the program as well as grants to educational institutions in Mexico by the

Foundation has assisted in strengthening and expanding agricultural education. Support has been provided to the Escuela Nacional de Agricultura at Chapingo over the years, particularly in the establishment of the Colegio de Post-Graduados of that institution. Classes were formally inaugurated in 1959.

Support has also been provided to the Escuela Superior de Agricultura "Antonio Narro" of the University of Coahuila, to the Escuela Particular de Agricultura, Ciudad Juarez; to the Instituto Tecnológico de Estudios Superiores at Monterrey to assist in the development of the Escuela de Agricultura y Ganadería; and to the Escuela de Agricultura y Ganadería of the University of Sonora, Hermosillo. Also receiving Foundation support have been the Universidad Nacional Autónoma de México for the Facultad de Medicina Veterinaria, and the Universidad de Veracruz, also for the Facultad de Medicina Veterinaria.

Other institutions have received grants from The Rockefeller Foundation. However, these few examples will serve to illustrate the comprehensive and complementary nature of support to education which has been provided to assist in overcoming the serious lack of trained plant and animal scientists in Mexico and to assist in promoting research in these institutions. Other interests, both public and private, have provided principal support in this effort, as well as supporting other scholarship programs for advanced study abroad.

The Foundation's investment in staff time in Mexico has only totaled approximately 250 man-years. In addition, temporary consultants and research associates have been assigned for short periods to assist in specific research projects.

Agricultural research and production and scientific competence had advanced to a level in 1960 that made possible the reorganization of Federal research organizations. The Instituto Nacional de Investigaciones Agrícolas was established by Presidential decree on December 6, 1960. The cooperative program that had functioned as a direct dependency of the Ministry of Agriculture and Livestock was fused into the new Institute together with the entire experiment station system. Some Foundation staff members continue as cooperators in projects of the National Institute; others have been freed for assignment to other programs and to developing international aspects of the Founda-

tion's Agricultural Sciences program.

One of the most recent developments in continuing to carry forward the results and patterns of operation from the national to international level has been the appropriation by the Foundation of \$1 million for the establishment of the International Corn and Wheat Research Institute headquartered in Mexico. This international center was officially established in Mexico City on October 25, 1963.

During the past decade, Mexico has overcome national deficiencies of basic food crops. The cooperative agricultural program has assisted in accomplishing this goal. Impressive as this is—and it has been hailed by Mexican and international figures alike—it is still realized by these acclaimers and by the Mexican scientists that national consumption statistics as measured by self-sufficiency in basic foods do not necessarily correlate directly with adequate human diets. The clearly stated goal of Mexican agriculture today is to overcome the inadequate diet, poverty, and growing unemployment of great sectors of the rural population. The challenge is great, and it will strain the resources of the nation and its leaders. However, a degree of confidence now exists which is solidly based upon successful past accomplishments over similar imposing problems and an awareness of a growing number of outstanding capable young scientists.

The agricultural program which The Rockefeller Foundation and the Mexican Government have actively sustained over the past 20 years stands as the unique example of long-term productive cooperation of its type in the world today. Research results from this endeavor have not only contributed significantly to Mexico's progress but have effectively developed and demonstrated new patterns of action for national and international development in the world today—a world which urgently requires immediate action to alleviate widespread hunger and to develop the sound agricultural basis on which expanding, stable economies can be built and indispensable improvement in human well-being can be realized.

It is believed that this total of Foundation staff time in the program is modest in relationship to accomplishments over the 20-year period. The significant point is that continuity of effort on the part of dedicated scientists has accomplished much with conservative annual investments of manpower and funds.