Inter-American Maize Improvement Program

of the Rockefeller Foundation

Director and Coordinator: E. J. Wellhausen

Special Consultants: H. F. Robinson
G. F. Sprague
P. C. Mangelsdorf

I. Objectives:

A. Latin America

1. Develop personnel capable of conducting research and experimentation leading to the further improvement in the production of maize in Latin America.

2. In cooperation with U. S. Scientists, produce information, data, etc., leading to a better understanding of heterosis and quantitative inheritance which is fundamental to the development of more efficient breeding methods.

3. Aid in the development of high yielding and hazard resistant variety of maize for the important corn producing areas.

4. Stimulate research leading to the improvement in cultural practices.

5. Aid in bringing about a steady increase in maize production in accordance with the demands of each area through the utilization of improved varieties together with improved cultural practices.

B. U. S. A.

1. Stimulate interest in and assist in the evaluation and utilization of exotic germplasm for the further improvement of maize in U. S. A.

2. Develop cooperative international research programs in such areas as quantitative inheritance and through such basic research determine the nature and magnitude of problems in extracting useful genes from exotic germ plasm.

II. General Procedures:

A. Organization of Regional Programs

1. Develop four regional maize improvement programs in Latin America as follows:

   (a) Middle American region
   Mexico, Central America and the Caribbean.

   (b) Andean Region
   Colombia, Venezuela, Ecuador, Peru and Bolivia.

(c) Brazil
Tropical and semi-tropical areas.

(d) Southern
Argentina, Chile, Uruguay, Paraguay and Rio Grande da Sul in Brazil.

2. Promote the development of one principal research and training center in each region:

(a) Middle America--Mexico at Chapingo and associated facilities.

(b) Andean--Colombia at Tarbantita and associated facilities, and/or La Molina, Peru.

(c) Brazil--Peracicaba.

(d) Southern--Argentina, Pergamens and associated facilities.

3. In the next few years concentrate on the development of an international basic research and training center in maize at Chapingo, Mexico, which, with the aid of interested U. S. institutions, could train up to the Master's degree level:

(a) By concentrating there a competent research and teaching staff.

(b) By developing a basic research program of international importance.

4. The development of these international regional research and training centers would, in large part, have to be assisted by funds and people from U. S. A. or other countries interested in aiding food production in Latin America.

B. Training
(Cooperative with U. S. A.)

1. Select competent young graduates from the various institutions of Latin America who might be interested in maize improvement and send them to the principal research and training center serving their region to participate in and get acquainted with some of the practical phases of corn breeding and production.

2. After a year or more of practical work at the center they will return to their respective countries or programs and participate in local corn improvement work.

3. Those with continued interest and competence would be sent to Chapingo on OAS, RF, etc., scholarships to study toward the Master's degree and participate in certain phases of the basic research projects.

4. After a maximum period of two years at Chapingo they would again return to their respective countries and/or programs to continue with the corn improvement work.

5. Again the most competent ones who show continued interest and enthusiasm in their work would be encouraged to work toward a Ph.D. degree. They would apply to an appropriate institution in the U.S.A. and select or be assigned a problem in basic research pertaining to some phase of corn improvement. The problem should be acceptable to the major professor in the U.S. institution where they intend to do further study and be of a nature contributing knowledge to their regular corn breeding work.

6. The R.F. would aid in the supervision of this research by placing a competent man in the area (again acceptable to the institution and major professor) and by occasionally making it possible for the major professor to visit the student and to discuss his research.

7. When the data for the thesis problem has been obtained, the student would then proceed to the U.S. institution where he would concentrate on course work and conduct the analysis of his thesis data while completion of requirements for the degree.

8. Some of the best of the resulting Ph.D.'s would be concentrated in the other regional research and training centers to gradually build these centers to a point where they might also give Masters' degrees. As this plan progresses, it is hoped that the center at Chapingo will have advanced sufficiently in staff and stature to give training at the Ph.D. degree level. A similar development should occur at the other centers.

9. In the development of the first center at Chapingo, a search should be made throughout the Americas for competent Latin Americans or others who know the language, have the high level training and interest needed, that may not now be fully employed, who could be transferred to Chapingo to work, to learn and to teach. Such a staff might be assisted periodically by competent people from the United States.

C. Basic Research
(Cooperative with U. S. A.)

1. Develop regional cooperative research programs on a project basis (depending on the availability of funds and personnel) involving the:

   (a) Identification, origin and relationships of races of maize through morphological, genetic, cytogenetic and physiological studies. Development, description and storage of germplasm pools would be an integral part of this program.

   (b) Systematic evaluation of the different germplasm complexes for further improvement of maize for various regions in Latin America, U. S. A., Europe, Asia or Africa, etc.

      (1) for special characters such as disease resistance, insect resistance, drought resistance, nutritive value, fiber content.

(2) combining ability or a source of new genes or gene complex for yield.

(c) Nature of heterosis and quantitative inheritance.

(d) Development and evaluation of new breeding methodology.

(e) Genetic constitution and mode of inheritance of qualitative characters.

(f) Nature and magnitude of problems inherent in the effective utilization of exotic germplasm.

(g) Improvement in cultural practices.

(1) chemical weed control,

(2) chemical fertilizers,

(3) water conservation.

(h) Plant protection.

(1) identification and control of insect pests and diseases.

(i) Special uses of maize in human and animal nutrition and manufacture of special products.

D. Implementation of the Basic Research

The most competent U. S. and Latin American scientists will be invited and encouraged to take the initiative in the development and direction of projects on topic in No. C above. Because of the total scope of the research, a wide range of talents will be required. Funds to support the various phases of the research will be sought cooperatively from U. S. and Latin American agencies.

E. Organization of an Inter-American Society of Maize Workers in Latin America (open to membership in U.S.A.) and Publication of a Journal (Latin American Crop Science)

The research workers will be organized into a society for the promotion of fundamental research in maize improvement. Regional meetings will be held once a year at which time programs and results of research will be discussed. Once every three years a general meeting will be held in conjunction with the Latin American Plant Science Congress (scheduled to be held in Argentina November-December, 1961).

A journal will be organized and sponsored by the society for the publication of results of research submitted by members.