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CASSAVA LITERATURE COLLECTION PROJECT



Project Proposal

Cassava and CIAT

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Manihot

Cassava is probably the most widely cultivated starch-producing plant species in the lowland tropics of the world, and one of the major sources of carbohydrates for the inhabitants of these regions.

This root crop has been largely overlooked by research workers in temperate climate countries. No tropical country, where the crop is grown in large quantities, has organized and maintained an improvement program of satisfactory scope and duration to produce significant results.

Cassava has a great potential as a major food and feed source and as raw material for industry in the tropical lowlands. The development of this potential merits a strong research effort.

CIAT has established the following goals in order to develop production systems for increasing cassava production in the tropics. These goals are:

- a) To explore and collect cultivars and related wild species of *Manihot* in the countries where variability is present, with emphasis in the primary centers of origin (Northern South America and Middle America), in order to establish a germ plasm bank representative of the world's variability.
- b) To classify and evaluate the genetic variability of the collected material as a basis for future work. The germ plasm bank will constitute a reservoir of breeding material available to researchers throughout the world for the improvement of this important tropical crop.
- c) To identify superior cultivars that can raise present yield substantially.
- d) To find production systems that maximize the efficiency of planting methods; control of pests, diseases and weeds; adequate fertilizer application and harvesting procedures.
- e) To develop more practical and efficient systems of drying and using cassava as human food, animal feed and for industrial use, with emphasis in economic mechanization schemes that can be used by small or large growers.

- f) To obtain superior varieties through plant breeding with higher yield capacity, increased starch and protein content and nutritional quality of the roots; with resistance to diseases (particularly, mosaic) and adapted to cultivation in heavy soils, and with levels of HCN content in accordance with the final use of the roots (food, feed or industry).
- g) To provide practical training in varietal collection, evaluation, improvement and testing as well as in crop production methodology and in plant protection, to young scientists from major cassava producing areas.
- h) To exchange information, materials and scientists with other national and international institutions concerned with the improvement of cassava throughout the world.

The Literature of Cassava

One great obstacle encountered by scientists studying cassava is that the literature on the subject is widely dispersed and often hard to obtain. While the literature of cassava has been well identified, there is no library or information center where an attempt has been made to systematically collect the literature to make it readily available to interested scientists.

Identification of the Literature

Retrospective

The two major bibliographies:

Montaldo, Alvaro. Bibliografía de raíces y tuberculos tropicales. Maracay, Universidad Central de Venezuela, 1967. and Supplements, 1968, 1969. (2688 references on cassava)

Hermann, Luiza S.E. Bibliografía da mandioca. Campinas, Instituto Agronomico, 1968. (2255 references)

Minor bibliographies:

Commonwealth Bureau of Pastures and Field Crops. Production of cassava, 1951-69. (42 references)

Graner, E. Bibliography of the agriculture and utilization of the tapioca plant. Sao Paulo, 1941. (54p.)

Henain, A.E. and Cenoz, H.M. Bibliografía sobre mandioca. Corrientes, Argentina, Universidad Nacional del Nordeste, 1967. (26p.)

- Ingram, J.S. Selected bibliography on cassava. London, Tropical Products Institute, 1970. (35p.)
336 references
- Le Clerc, J.A. Partial list of references on cassava and tapioca. Washington, D.C., 1938. (8p.)
- Rosas, S., Carlos, and Brambilla, A., Juan. Bibliografía peruana de yuca. 1970. (49 references)
- U.S. National Agricultural Library. Dictionary catalog, 1862-1965. (Sections on cassava and tapioca: 77 references)

Current

- Bibliography of agriculture. (U.S. National Agricultural Library)
- Tropical abstracts. (Royal Tropical Institute)
- Field crop abstracts, Plant breeding abstracts, Nutrition abstracts and reviews, World agricultural economics and rural sociology abstracts, Review of plant pathology, Review of applied entomology (ser.A) (Commonwealth Agricultural Bureaux)
- Bibliografía agrícola latinoamericana. (AIBDA)
- Biological and agricultural index. (Wilson)
- Biological abstracts. (BIOSIS)
- Bioresearch index. (BIOSIS)
- Chemical abstracts. (American Chemical Society)

Two newsletters, Tropical root and tuber crops newsletter and Noticiero tuberosas are useful regarding announcements of new and important works on cassava. In addition, the Tropical Products Institute is considering a bibliographical project by which they would be able to disseminate bibliographies on cassava, as well as other root and tuber crops of importance in tropical areas.

Location of the Literature

The bibliographies of Montaldo and Hermann are based on references sent to the compilers from many sources. The compilers themselves have not attempted to collect the publications they have listed. Montaldo, for example, has in his possession 64 of the 2688 references in his bi-

bliography. The publications themselves are scattered in libraries throughout the world. The majority of these libraries do not seem to centralize their publications on cassava, either by physically separating the publications or by providing centralized access through cataloging; exceptions as they are known are mentioned below.

Libraries with Important Collections on Cassava:

1. National Agricultural Library, U.S.A.
2. Food Research Institute, Stanford University, U.S.A.
3. Instituto Interamericano de Ciencias Agrícolas, Costa Rica
4. Instituto Agronómico, Campinas, Brazil
5. Tropical Products Institute, England
6. Royal Tropical Institute, Netherlands
7. Agricultural University, Wageningen, Netherlands
8. Institut de Recherches Agronomiques Tropicales et des Cultures Vivrières, France
9. East African Agriculture and Forestry Research Organization, Kenya

With the National Agricultural Library the possibility is being explored that they may be able to provide us with a listing prepared by computer of the publications they have on cassava. The Royal Tropical Institute has provided us with a listing of all the publications they have on cassava (622 items); the Food Research Institute has 133 pamphlets and reprints on cassava; and with the Tropical Products Institute we are currently corresponding about the possibility of receiving a listing of the publications they have on cassava.

While we are not yet finished establishing all the locations of cassava literature, we have probably identified the major locations of such literature. The Library with the greatest quantity of cassava literature is perhaps the National Agricultural Library, and this library has not attempted to make a special collection of its cassava literature, with its attendant advantage of easy access. On the other hand, a library such as that of the Royal Tropical Institute, which has cataloged its cassava collection in order to provide immediate access to it, does not have too large number of cassava publications.

The European bibliographical centers for cassava are in England, the Netherlands and France. These seem to be well-organized libraries and there should be no difficulty in exploiting their resources through correspondence. Other areas of the world may present different problems, however. So far, no library important in cassava in Asia has been found, yet several Asian countries are important producers of cassava. It is presently being explored with the European libraries as to possible sources of information in this respect, and also with ICAR in India. The possibility should be kept open, however, of travelling to Asia to secure cassava publications wherever they may be, in experiment stations, ministries, etc. It may also be necessary to travel in Brazil, Paraguay and Colombia.

Scientists who maintain their own collections of cassava literature are important in respect to collecting the literature because their collections may often contain papers not included by the usual bibliographical services. Two scientists with cassava literature collections identified so far are:

1. Dr. David Rogers (University of Colorado) (About 375 publications)
2. Prof. William O. Jones (Food Research Institute) (1400 publications)

Methodology of Collecting the Publications

The first step would be to collect all the bibliographies and lists of cassava publications. This would include bibliographies prepared for us by bibliographical journals not covered by Montaldo or Hermann, based on the articles the journals have listed on cassava, and also lists from libraries and individuals who could supply lists of the publications they have.

The second step would be to collate these lists and bibliographies into a single, comprehensive list. This list could then be reviewed by the appropriate scientists to determine which of the publications should actually be collected by CIAT. If the collation is done manually, it would need three or four months, at least, to prepare the cards, collate them and produce a single listing. If done by some type of mechanical means, it may take considerably less time; however, at present it is not known if facilities to enable CIAT to undertake mechanical collation will be available.

There may be some question as to what kind of a review of literature citations is necessary. In many cases, it simply is not known if a certain publication on cassava is useful or not; the publication has to be read first. For the IRRI rice bibliography, publications earlier than 1951 were excluded, as well as publications of a popular or semi-scientific nature. CIAT scientists have pointed out that there is a concentration of cassava literature appearing early in this century which could not reasonably be excluded. They have also indicated that there may be value in popular or semi-scientific information since a good part of the work on cassava has been done on meager budgets which have precluded publications in many technical journals. Despite the exclusions of the IRRI rice bibliography, there were over 7000 citations in the first volume alone; the largest cassava bibliography, that of Montaldo has 2688 citations. We could reasonably estimate that the total number of publications on cassava in existence is somewhere between 3,000 - 4,000, including publications not included in bibliographies and publications appearing since the bibliographies of Hermann and Montaldo were published.

Whether or not it was decided to proceed with the collation of the various lists, the work of securing the publications could begin immediately.

Mechanics of Assembling the Literature

The Cassava Literature Collection Project is envisioned as a unit apart from but working closely with the Library of CIAT. The Project would have its own Director, staff, and systems of acquisition, cataloging and shelving.

Acquisitions

Once it is decided to order a publication, it would have to be determined from where to order the publication. This decision would be based on (1) Previous knowledge as to where a publication is located, i.e. we have the reference from a certain library or individual; (2) Searching through union lists or published agricultural library catalogs to locate a library that might have the publication; (3) As a last resort, correspondence would have to be initiated in an attempt to locate publications not to be found through the usual means.

The publications would be ordered according to the requirements of the supplying sources, be this by coupons, special order forms, etc., and paid for by coupons, check, per deposit arrangement, etc.

Methods of Making the Literature Available

Cataloging

The card catalog of cassava publications would be divided into four parts: (1) Author; (2) Title; (3) Subject; (4) Country. This means that every publication would have a card in each section, and in the case of subject, perhaps more than one card. For subjects we would use the same eleven subjects that Montaldo uses in his bibliography.

The publications themselves would be arranged on the shelves in chronological order of accession. The approach to them would be through the card catalog, by author, title, subject and country. All publications, including books, pamphlets, papers and journal articles would be cataloged in this specialized manner.

Acquisitions Lists

As the publications are received and cataloged, regular lists of them would be distributed to interested scientists in CIAT and around the world.

Photocopy Service

At all times it will be possible to acquire photocopies of any of the publications in CIAT's cassava literature collection. This service would be made available on a world-wide basis. Scientists will know what CIAT has through the acquisitions lists.

Translation and Abstract Services

Publications on cassava appear in at least the following seven languages: English, Spanish, Portuguese, French, Dutch, Italian and German. While translation and abstract services will undoubtedly be necessary at some time, perhaps these services should wait until the literature is here, cataloged and reviewed. As it would not be necessary to continue with as large a staff to maintain the cassava literature collection up-to-date as to do the original collecting and processing, some of the positions used for the original staff could be assigned to an abstractor and/or translator.

Computers and Automation

Some form of computerized bibliographical control would give a great deal more flexibility in exploiting the literature, especially in terms of subject approach. It would also be invaluable if it were ever decided to publish in book form the catalog of the cassava literature collection at CIAT.

Time Schedule of Project

1. To have identified and located sources of the literature, including having in hand all relevant bibliographies and lists: this work has already begun and should be completed by August 31, 1971.
2. Collating the different lists of the literature: three-four months.
3. Collecting and cataloging the literature: could begin anytime after August 31, 1971, when funds, equipment, supplies, staff and space are available.
4. First acquisitions list: one month after the collection has begun.
5. The bulk of the literature should be at CIAT and cataloged by one year after the collection has begun.
6. The collection and processing of all retrospective and current literature should be completed by eighteen months after the collection has begun.
7. After the completion of step 6, it will be necessary to keep up with the current literature, and also it may be advisable to begin at this time with translation and/or abstracting services. With the completion of step 6, it would be appropriate to bring out in book form the catalog of the cassava literature at CIAT.

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Budget for Cassava Literature Collection Project

The budget is based on a two year period for the collection of the literature up-to-date. The actual time required may well be less, and in this case the positions listed below could be assigned to an abstractor and/or translator. The Research Associate, however, would have to be retained in order to keep up with the literature, and an annual sum, perhaps \$2,000.00, should be provided to purchase the publications, supplies, etc.

1. <u>EQUIPMENT</u> (Including electric typewriter, microfilm reader-printer, catalog card duplicator)		US\$	8,000.00
2. <u>PERSONNEL</u>	<u>Sal. Monthly</u>		<u>Annual</u>
1 Project Director			22,260.00
1 Research Associate	\$4,500.00 (US\$225.00) x 16		3,600.00
1 Secretary-Typist	4,000.00 (US\$200.00) x 16		3,200.00
1 General aide	1,000.00 (US\$ 50.00) x 16		<u>800.00</u>
	Total	US\$	29,860.00
	Total (2 years) includes 6% added for the second year	US\$	61,511.00
3. <u>THE LITERATURE ITSELF</u> (Including bibliographies made for us by information services; some reference books; Xerox use)			20,000.00
4. <u>TRAVEL</u>			3,000.00
5. <u>SERVICES</u> (Binding, printing, etc.)			1,000.00
6. <u>SUPPLY OF PHOTOCOPIES TO SCIENTISTS WHO DO NOT HAVE ACCESS TO FUNDS OF FOREIGN EXCHANGE</u>			500.00
7. <u>COMPUTER EQUIPMENT</u> (Keypunch, verifier, collator)			<u>20,000.00</u>
	Grand Total	US\$	114,011.00

Thomas Bloch
Librarian