

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

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From: The Secretariat

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Consultative Group Meeting  
Rome, May 23-25, 1984

Agenda Item 10

Attached is a copy of a paper entitled "Progress Statement on Impact Study". This paper is for discussion under Agenda Item 10 at the May meeting of the Group in Rome.

Attachment

Distribution:

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Progress Statement on Impact Study

April 1984

The Impact Study was formally agreed upon at the November meeting. At this time the Advisory Committee for the Study was named. Dr. Frank Press, President of the U.S. National Academy of Sciences is Chairman. The other six members are:

Dr. J. H. Weniger, Director, Institute of Animal Protection,  
Federal Republic of Germany

Dr. J.N.R. Kasembe, Director-General, Agriculture Research  
Organization, Tanzania

Dr. Yujiro Hayami, Professor, Faculty of Economics, Tokyo  
Metropolitan University, Japan

Dr. I.G. Patel, Director, Indian Institute of Management, India

Dr. Ralph Riley, Secretary, Agricultural Research Council, U.K.

The Advisory Committee had its initial meeting on January 6, 1984 in Washington, D.C. Donor subcommittee members, Dr. Bo Bengsston of SAREC, Dr. Nyle C. Brady of USAID, and the Director of the Study, Professor Jock Anderson, were in attendance. The Committee considered the scope and nature of the Study, refined its specific objectives and approved a revised Terms of Reference for the Study (attached). The second meeting of the Committee is scheduled on October 26, 1984 to review progress prior to International Centers Week.

Initial Work

The Study Director commenced fulltime duties March 1 with fieldwork in Bangladesh and Nepal for five weeks. These countries were chosen as initial case studies in countries where several Centers had been very active and not-so-active, respectively.

Interviews were held with representatives of relevant national and international agencies about the activities, successes and failures, and operating styles of the IARCs. Individuals' opinions of the Centers were solicited.

The primary focus of attention, however, was on perceptions that National Agricultural Research Program (NARP) personnel hold about the IARCs -- past, present and future. In these two countries, the IARCs that have been most active are IRRI, CIMMYT and CIP, and more recently and modestly, ICRISAT, IFPRI and ICARDA. In general, most discussants were very positive and enthusiastic about the IARC programs and contributions, and typically argued that most of the IARC work could only be achieved effectively through IARC-like institutional arrangements. Several people emphasized the continuity of IARC service and contributions as being very important in explaining their high levels of effectiveness.

This is not to say that there were not criticisms of some of the IARCs and some aspects of their work. Critical remarks were diverse in their scope and substance but were usually expressed in a very constructive rather than condemning way. It is intended to catalog the various criticisms that have been and continue to be made about the IARCs, and to marshal "objective" evidence about these as a part of the Impact Study.

#### Next Steps

Appointment of four additional Study staff members (each for about six months) is in process, and approaches are being made to a further eight or so people, mostly from developing countries, to work on the Study for shorter periods (usually about six weeks), mainly on specific country case studies.

Reviews will be commissioned on several aspects of Center activities, such as germplasm collection and management, plant breeding strategies, seed multiplication policies, management training for NARPs, transmission of knowledge, extension and research linkages, environmental aspects of new agricultural technology, effects on income distribution, and impacts of new technology on women. Further needed papers will be identified soon, some by the April 26-27 Workshop on Methodological Problems in Impact Assessment which will be attended by about 20 people including several Center economists.

Attachment

J.R. Anderson  
April 25, 1984

THE IMPACT OF CGIAR INSTITUTES

- Terms of Reference -

(January 31, 1984)

OBJECTIVES

The broad objective of the study is to determine the impact of the CGIAR System (CGS) Institutes (the Centers) on agricultural research capacity and agricultural production in the developing countries recognizing that: (1) the international Centers' technologies flow through national research and extension systems, which make major contributions of their own, so it is difficult to separate the impact of Center research from other research and, since partnership with national research agencies is a key operating principle of the CGIAR, it would be undesirable to separate out a distinct CGS contribution, even if it were possible; (2) making the discoveries that lead to improved technology takes time and always depends on a background of previous research; some Centers have been in existence for too short a time to have produced outputs for possible adoption, and/or are working on commodities or problems where very little previous research exists; and (3) the existence of an "improved technology" is only a necessary condition for increasing production; if there is no means of informing farmers about the technology or if other factors make the use of that technology impossible or economically unattractive to farmers, this may limit application but may not always reflect failure on the part of agricultural research.

Specific Objectives of Impact Study

1. Portray the role and development of the CGS in world agricultural research, with specific attention to:
  - 1.1 building capacity for research and the improvement of agriculture in developing countries;
  - 1.2 especially through human capital enhancement;
  - 1.3 provision of biological and other materials;
  - 1.4 and ideas and approaches to solving problems.
2. Describe the activities of the Centers, through:
  - 2.1 mandate and orientation;
  - 2.2 research programs, by projects and countries;
  - 2.3 inventory of 'outputs,' past, present and under active development.
3. Assess impacts of outputs as comprehensively as can be managed within the Impact Study resources, including:

- 3.1 aggregate effects of new technologies in production of major foodgrains;
  - 3.2 (country) case studies of distributional impacts of specified such new technologies on designated groups, including employment effects on landless laborers and resource-poor farm families, and consumption changes among urban poor;
  - 3.3 case studies of the quantitative effects of center-derived technologies, etc. on yields, input demands, incomes and consumption on farms, both retrospectively, and, where possible prospectively;
  - 3.4 and, relatedly, case studies of adoption of same by farmers in different circumstances;
  - 3.5 and the aggregate impacts on factor demand (especially for fertilizer and irrigation), including for foreign exchange and on the natural environment (including soils, water, etc.);
  - 3.6 and the stability of agricultural production, including its dependence on genetic diversity;
  - 3.7 as well as such farmer-worker-consumer impacts, investigate the impact of Centers on the style, structure, effectiveness of the conduct of agricultural research and policy formulation in developing countries, highlighting the views of CGS held in such countries.
4. Desirable future development of CGS:
- 4.1 and needed further research.

#### METHODS

The developing countries are the intended beneficiaries of the Centers' activities, so the Study will use information obtained from developing country researchers and administrators as a key primary source. That will be supplemented with information from the Centers and from already completed research or new contract research conducted by scholars from outside the system.

The Study will take maximum advantage of research already completed, to avoid unnecessary expenditure of time and money. An extensive bibliography of relevant research materials is being prepared, and copies of such materials are being collected. This will form the foundation of an on-going information system in the CG Secretariat about Centers' activities and accomplishments.

The specific study objectives will be achieved by the methods that are discussed in the following paragraphs.

1. Role of CGIAR Institutions

This part of the Study is to provide a picture of the actual and potential role of the CGS within the world agricultural research and development system by compiling information from a series of indepth interviews with research administrators and research scientists in about 20 developing countries. The interviews will establish the contributions made by organizations outside the study country (including specifically CGS organizations) to research capacity within the country through:

- (a) research techniques and methodologies;
- (b) physical research output, e.g. germplasm;
- (c) training;
- (d) intermediate research inputs, e.g. information and publications;
- (e) organizational and institutional development; and
- (f) research policy and food policy.

The second part of this activity involves an assessment of how international inputs have contributed to national research capacity, and what may reasonably be expected from agricultural research. It also involves an examination of the limited short-run capacity of technology to change the social and economic realities determined by institutional, economic, social, and political factors in the developing countries. This is the major new data gathering activity to be undertaken by the study, expected to absorb about half of the budget.

To effectively contact researchers in the developing countries the study staff will contract with social science researchers from the countries themselves to carry out part of the personal interviews. To insure uniformity in approach across countries, one member of the staff will do at least part of the interviews in each country.

The countries to be included in the study will be chosen on the basis of the following criteria:

- (a) the presence of a CGS center in the country;
- (b) "small" countries as well as larger countries;
- (c) countries where expected "impact" is small as well as well as those where it is expected to be larger;
- (d) countries with a range of ecologies and a range in relative stage of development, but confined to developing countries.

Some information reflecting these facts is contained in the attached Table "Agricultural Research Status of Selected Countries: I and II".

The role of the CGS in the training of national researchers will also be studied in the TAC-sponsored Review of Training. That review will provide information on the nature, extent, relevance and impact of training programs of the Centers.

A case study will be undertaken to document the process by which selected technologies originating in Centers have been transmitted through national programs to farmers. Two or three technological innovations that have been adopted by farmers will be selected. Their origins will be identified and the contributions of the various factors to the process of developing the innovation to the point where it was adopted will be traced, both to and from the Centers. Special attention will be paid to the interactions between national and international researchers.

## 2. Activities of the CGIAR Centers

This part of the study will briefly describe the mandate and program orientation of each Center, and then make an inventory of the "outputs" each Center has produced that are expected to or intended to have an impact on agricultural production and agricultural research capacity in the developing countries. The intention is to list all major discoveries, technologies, methodologies, projects and other concrete contributions that the Centers have made to developing countries.

These outputs will be from the viewpoint of the Centers. The study team will contrast this list with the perceptions of the developing countries as reflected in the findings under point 1 above.

This activity will require rather modest resources because the Centers themselves will be requested to provide the inventory of outputs, but complete information will require the study team to personally contact each Center.

## 3. Impact on Food Production

As much factual information on the production contributions of new agricultural technologies with which the Centers have been associated will be gathered as is possible. The following are specifically included:

- a) Spread of Rice, Wheat and Maize. Data on the spread of semi-dwarf wheat and rice varieties will be obtained from the most knowledgeable sources in main producing countries, essentially updating Dalrymple's work in collaboration with him at USAID. Similar information on the spread of maize varieties or hybrids associated with CIMMYT/IITA activities will be obtained. This will require (a) an identification of the varieties/hybrids released in each country that have been derived from Centers' materials, along with the year in which each was released, and (b) an estimate of the area sown to such varieties in subsequent years.

- b) New Varieties of Other Crops. Because the development of improved varieties in the other crops has occurred more recently than for rice and wheat it is anticipated that sources other than the official statistics may be needed. National researchers will be asked to provide the best information they have on the subject. Each Center will be encouraged to document the spread and production impact of new varieties of crops other than rice, wheat and maize.
- c) Spread of New Technologies. Centers will be asked to document their perceptions of the spread and production impact of new management practices or farming systems innovations. Some care will have to be exercised to include only technologies that have been developed with contributions from the Centers. Several of the Centers are already engaged in impact-type studies (e.g., CIAT, CIP, CIMMYT and ICRISAT) and the Impact Study staff will interact with involved Center staff to predispose consistency of approach as well as added economy to the Impact Study budget.
- d) Production Relationships. In order to estimate benefits, the relative use of inputs and generation of outputs by pre-existing technologies as well as the new technologies whose spread is to be described as outlined in a, b, and c must be obtained. Some estimates exist in the literature, others may be derived in the course of the Study itself from data that have already been gathered, but no large scale set of farm surveys by Study staff is planned in the Study.

#### 4. Impact on Distribution and Environment

The distributional impact of new agricultural technology has been studied by many researchers. For the Impact Study it is proposed to critically review the studies that have been carried out and summarize the conclusions that emerge about differential adoption of technology by farmers of differing resource (including wealth) situations, differential adoption by farmers in various agroecological zones, and the distribution of benefits to land owners, farm operators, laborers and consumers. A synthesis of the evidence in the form of a review paper will be undertaken, possibly by a contract researcher.

The Study will review research reports of the Centers to document the extent to which researchers at the Centers are making use of genetic pest resistance, biological mechanisms of pest control, vaccines and other approaches which may have less severe impacts on the environment than agricultural chemicals. Evidence on the approaches used will also be collected and integrated in another review paper, again to be undertaken by a contract researcher.



5. Likely Impact of Technologies Being Developed

The contribution of technology to farm production is necessarily restricted to those technologies already developed. There are some technologies that may be ready for release to farmers in the near future, and many others that may be ready for release in some more distant future. The Study will estimate the likely impact of technologies expected to be made available to farmers in the near future by obtaining the best considered judgements of knowledgeable individuals. Because scientists at the Centers are most familiar with the technologies under development, this part of the Study will have to be conducted in close cooperation with the Centers. Each Center will be asked to identify the most important technologies on which it is working but which still require additional research or testing before being released. Estimates of benefits and probabilities of success, together with the number of units affected and prices, can be used to compute expected benefits. Those, together with estimates of the time involved can be used to estimate the present value of future benefits.

SUMMARY TIMETABLE

November 83 The Consultative Group (CG) appoints Advisory Committee (AC), Study Director (SD) and approves abbreviated Study plan.

December 83 SD participates in TAC Workshop on Training in the Centers.

January 84 AC meets initially, SD refines Study plan.

March 84 SD begins fulltime work from Washington; drafts questionnaires, elaborates plans, launches pilot studies, clarifies staffing.

April 84 SD orchestrates workshop with Center Impact Study staff.

May 84 SD makes progress report to CG meeting in Rome.

June 84-  
October 84 Concentrated implementation of Study plan and conduct of as much of the Study as possible.

26 October 84 AC meets to review progress.

November 84 SD makes verbal interim report to CG on likely key findings of the Study.

February 85 SD finishes fulltime work on the Study. He hopes drafts of most aspects of the Study have then been assembled.

May 85 AC reviews Study.

October 85 SD completes final reports on the Study.

November 85 AC presents final synthesis to CG.