UNITED NATIONS

DP

Governing Council of the United Nations Development Programme

Distr.
GENERAL

DP/PROJECTS/REC/36
22 March 1990

ORIGINAL: ENGLISH

Thirty-seventh session
28 May-22 June 1990, Geneva
Item 5 (b) (iv) of the
provisional agenda

PROGRAMME PLANNING

COUNTRY, INTERCOUNTRY AND GLOBAL PROGRAMMES

Assistance for a global project

Biotechnology and Conventional Crop Improvement for Sustainable Agriculture in the Semi-Arid Tropics - The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) (GLO/90/002)

Recommendation of the Administrator

Estimated UNDP contribution:	$6,800,000
Duration:	Five years
Executing agency:	UNDP in association with World Bank and FAO

I. BACKGROUND

1. The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), established by the Consultative Group on International Agricultural Research (CGIAR) in 1972, deals primarily with the improvement of such food crops as sorghum, millets, chick-peas, pigeon peas and ground-nuts which are grown by small farmers with very limited resources in a harsh environment of depleted soils, erratic rainfall and sparse or no irrigation. This region, which is generally referred to as the semi-arid tropics, covers over 50 countries in Asia, Africa, Latin America and Australia. The main objectives of ICRISAT are to: (a) serve as

an international centre for improving the genetic potential of sorghum, pearl millet, pigeon pea, chick-pea and ground-nut; (b) develop farming systems which increase production through more effective use of available resources; (c) identify factors constraining agricultural development and evaluate ways of alleviating them; and (d) support national and regional research programmes through collaboration, conferences and training.

2. Since its inception ICRISAT has received donor support for its sorghum and millet improvement programmes, both at ICRISAT Centre in India and for its programmes in Africa. ICRISAT has made considerable headway in the development of improved varieties of sorghum and pearl millet. These varieties have been released in Burkina Faso, Ethiopia, Guatemala, India, Kenya, Malawi, Mexico, Myanmar, the Niger, Pakistan, Senegal, the Sudan, Zambia and Zimbabwe. The development of a hybrid sorghum by ICRISAT in association with the national programme of the Sudan was a spectacular achievement, since the variety yields three times that of the local variety.

3. The research programmes of ICRISAT on pigeon pea, chick-pea and ground-nut, as well as farming systems, supported by several donors including the United Nations Development Programme (UNDP), have made notable achievements. Several varieties of the three legumes possessing yield stability, resistance to pests and diseases and the ability to withstand the physical stresses of the semi-arid environment have been developed and released through various national programmes. Excellent international co-operation has been developed through multi-country testing trials, conferences and workshops. ICRISAT is also providing training to large numbers of developing country personnel in all aspects of the improvement of the three legumes and farming systems research. In regard to the latter, ICRISAT has developed strong disciplinary research on the optimum utilization of land, water and other farm resources in order to increase crop production in the resource-poor regions of the semi-arid tropics.

4. Notwithstanding the above accomplishments, there is an urgent need to develop resistance in the crops concerned to various biotic and abiotic stresses. Likewise, further work is needed for developing good production practices for intercropping pigeon pea with sorghum and millet in specific agro-ecological situations in East Africa. The project now proposed would not only build on the achievements noted above, but would also help to develop sustainable systems of production suited to environmental and economic constraints for sorghum, millets and pigeon pea in Asia and Africa.

5. The overall progress and accomplishments of the ICRISAT programmes have been evaluated by a panel of independent consultants appointed by the CGIAR Technical Advisory Committee (TAC). This panel strongly recommended the continuation of external assistance on a long-term basis to permit the expansion of the research and testing activities, together with the enlargement of an intensified training programme to benefit, in particular, those countries where agricultural research systems are still weak. The research and training programmes sponsored by UNDP form an essential and indispensable part of a larger effort of several bilateral and multilateral agencies which are providing substantial inputs of seeds, fertilizers, pesticides and agricultural implements, together with additional

technical assistance, to help build up national capabilities in increasing food production in the countries concerned, with special attention being given to African countries.

6. The research and training programmes outlined in the project now submitted by ICRISAT for UNDP's consideration form one component of ICRISAT's core programme reviewed and endorsed by TAC of CGIAR. The current UNDP-supported global project is scheduled for termination at the end of June 1990. While recognizing the need for further UNDP assistance to ICRISAT, UNDP has encouraged ICRISAT to initiate a research programme involving modern biotechnology in conjunction with conventional crop improvement methods.

II. THE PROJECT

7. The broad objectives of the project are to combine biotechnology and conventional crop improvement techniques to breed improved cultivars with high production potential for sustainable agriculture in the semi-arid tropics, in the face of rapidly increasing populations in this geographic region. The project will enable ICRISAT (a) to transfer finished cultivars and élite breeding materials, (b) to provide techniques of biotechnology for crop improvement to national programmes, and (c) to train national staff with a view to increasing food production in the semi-arid tropics. It is a project of collaboration with and assistance to national agricultural research systems for the ultimate benefit of small farmers of the semi-arid tropics.

8. During the period of the project, emphasis will be on modern biotechnological methods to enhance the efficiency of traditional crop improvement methods. While conventional methods of crop improvement have to remain the main basis for crop improvement and production research, biotechnology will be used where these techniques improve the efficiency of traditional breeding methods or where conventional methods fail. A new biotechnology facility is in operation at ICRISAT Centre. The facility includes laboratories for cereal and legume cell biology, virology, radioisotopy and electron microscopy. These laboratories were set up with funds from other donors.

9. National programmes in China, India, Pakistan, Thailand and Viet Nam in Asia, and Burundi, Ethiopia, Kenya, Rwanda, Somalia and Uganda in Eastern Africa will participate in the project and receive from ICRISAT improved cultivars, information, training and technology associated with cultivation of sorghum, millets and pigeon pea. Since this is a global project, its strategic components will serve all countries of the semi-arid tropics where these crops are grown. The production of sorghum, pearl millet and pigeon pea will increase in all growing regions of the project countries based on better adapted cultivars and new cropping systems. National agricultural research systems scientists with ICRISAT training and participation in workshops, field days and study tours will have better appreciation of inputs and methodology required to produce higher yields and will possess the information, experience and capabilities needed to formulate and extend to growers production technologies giving the best economic returns for particular agro-ecological and socio-economic situations in their countries. Special efforts

will be made to increase women's participation in training, research and field activities. Involvement of private concerns and government organizations in seed industry will be encouraged.

10. UNDP funds will be provided to develop and transfer improved varieties of food crops and the technology relevant to these crops to national programmes. The project will also provide training and technical support to national programmes to make their research efforts more efficient and to ensure that the improved crop varieties will be made available to the farmers through the national extension services. Strong co-operative links will be established with national scientists who will participate in ICRISAT multi-locational testing of crop varieties in order to screen them for adaptation to insect pests and diseases and other environmental stresses in the semi-arid tropics. ICRISAT headquarters in India will provide all necessary backstopping in the implementation of research, training and development activities of the project. The project also provides for appropriate inputs to enable the Food and Agriculture Organization of the United Nations (FAO) to assist in project activities (e.g., facilitating plant quarantine, selection of trainees and dissemination of information).

11. With the increasing population of the semi-arid tropics, the food production gap is progressively widening. Many of the countries of the semi-arid tropics are at present importing substantial quantities of food from abroad. Based on the research results of ICRISAT in several countries of the semi-arid tropics, many of the crops investigated by ICRISAT have substantial yield potential. Improved and staple yields of these crops will provide adequate food, alleviate hunger, overcome malnutrition and generate cash incomes for the small farmers of the semi-arid tropics. UNDP inputs will serve as a catalyst to the core operations of ICRISAT, to which substantial financial assistance will be provided by the CGIAR donor group over the next several years.

12. The research and training programmes described above, for which full descriptions including the countries expected to participate in them will be made available to UNDP on project approval, are to be implemented by ICRISAT in collaboration with national research institutions of developing countries. As already indicated, special conferences, seminars and workshops will be arranged as needs arise. Participants in those events as well as training courses for them will be carefully selected by ICRISAT, in consultation with appropriate national agencies. Specific components of biotechnology research will be carried out jointly with selected national programmes. Appropriate sums from the UNDP funds allocated to the project will be used for this purpose.

13. In order to assess the impact of the project activities at the farm level and to measure the effectiveness of the various training programmes, UNDP will provide, under its own direct costs component, funds for required consultancies in order to undertake an independent evaluation. It is anticipated that such an assessment will be made at two different periods, midway in the course of the project and at the end. The findings and recommendations of the mid-project evaluation might necessitate the reorientation or modification of project goals, budget and work plans for the remainder of the project. Visits will be made to selected countries around the world in order to provide adequate coverage of the countries involved so

that the assessment will be meaningful. Special attention will be given in that evaluation to the outcome of the project with regard to strengthening national programmes on improvement of the crops concerned as well as extension programmes and the utilization of new technologies by farmers resulting in increased production. Towards the completion of the project, a thorough evaluation of its results and accomplishments will be mounted by UNDP, in consultation with ICRISAT, to be carried out by independent and prestigious consultants.

14. The Administrator intends, through contractual arrangements between ICRISAT and UNDP, to entrust the implementation of this project to ICRISAT, with the clear understanding that the Director-General of ICRISAT will seek the advice of FAO as needed. As in the past, UNDP will follow closely all the developments in this global project and, together with FAO, will participate in the project advisory committee which will be established for the project. A concerted effort will be made to link the training and research activities with field-work being undertaken at the country and intercountry levels. FAO assistance will be sought in implementing national trials and the introduction of new varieties and hybrids as they are developed. The committee, which will include representatives of selected national agricultural research centres, will normally meet once a year, or at such times and places as deemed appropriate by ICRISAT. It will appraise the ongoing training and collaborative research programmes and advise on their future direction.

15. The proposed UNDP contribution is $6,800,000 of which $6,500,000 will be for sub-contracts, while direct costs will account for the remaining $300,000. Direct costs will be used to meet actual expenses incurred by the participation of FAO in the project, mid-project and end-of-project evaluations and project monitoring. The expenditures under the project through 1991 will be contained within the indicative planning figure (IPF) for global projects established by the Governing Council for the fourth cycle. The expenditures covering the remaining period of the project will be subject to approval of the fifth cycle IPF commencing 1 January 1992.

III. RECOMMENDATION OF THE ADMINISTRATOR

16. The Administrator recommends that the Governing Council approve this project.
