

ORGANIZATION OF AFRICAN RICE EXPLORATION, CONSERVATION AND ASSESSMENT

W.M. Steele and S.D. Sharma
IITA, Ibadan, Nigeria

INTRODUCTION

We make these suggestions for the organization of rice conservation in Africa on the assumption that collaborating scientists meeting in Paris shall have identified and agreed upon priorities for future rice exploration, and that new work can begin in 1977. Furthermore, we urge the meeting to consider the desirability of asking an organization well based in West Africa to take responsibility for coordinating these activities. There are four reasons why we consider this to be very important :

- a - West and Central Africa have been and will probably continue to be the most important regions in which we do this work.
- b - Successful exploration in such a politically diverse region depends very largely upon close and cordial personal contact with national government officials and agricultural scientists over several months of the planning phase of every exploration mission.
- c - The logistics of exploration require a well-founded local base.
- d - Strong local control is required for continuing effective coordination of the evaluation rejuvenation of rice germplasm in African environments which represent the major ecosystems to which rice is adapted.

WARDA, IRAT/ORSTOM and IITA are organization of international character established in West Africa, and so well placed to take this responsibility ; and IRRI, though located far away, must be integrated into the conservation program to make maximum use of their wide experience and expertise. It seems probable that IRAT/ORSTOM and IITA will make large inputs, certainly with regard to the involvement of their personnel, and in the logistics of exploration and evaluation. They will work with WARDA when necessary to plan exploration, and in the evaluations.

To ensure close collaboration between the four organizations we suggest :

- a - That IITA take responsibility for coordinating future work. We are willing to do so, and believe that there are good reasons why this arrangement is desirable.

First the valuable contribution available from IRRI may be most effectively used if it is integrated directly through the coordinating organization. Because IRRI and IITA are sister Institutes this will be administratively efficient, and in practice IRRI and IITA staff can work together closely in all phases of the program.

- b - IITA has on its staff an experienced rice conservationist whose major work will be to collect, evaluate and conserve rice germplasm. He is a member of a team of three scientists and two postdoctoral fellows who form IITA's "Germplasm Collection Unit". They are supported by technical staff, and have the backing of all IITA's research support services for

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germplasm collection, evaluation and conservation. IITA has a medium (5°C) term seed store and hopes soon to have a long-term (-18°C) seed store.

- c - IRAT/ORSTOM will have the dominant role in Francophone Africa and will collaborate with IITA/IRRI in exploration and evaluation wherever possible.
- d - WARDA will make whatever inputs it can in terms of personnel and materials for exploration and evaluation, but its chief role may be to liaise with West African governments in planning our work.

Our views on the organization of various aspects of the work are discussed in more detail later.

FUNDING

Paying for this work to be done is, of course, the first problem to be solved. We assume that collaborating organizations will pay the salaries, travel and accommodation expenses of their own personnel. IITA and IRRI will certainly do so. Further, when IITA personnel and vehicles are involved in exploration we shall pay the drivers' wages, the costs of fuel and vehicle maintenance, taxes and tolls and other incidental expenses of the exploration term. We hope that IRAT/ORSTOM will agree to do the same if their vehicles and drivers are used. To a limited extent IITA may provide money to assist the evaluation and rejuvenation of rice germplasm by other organization ; but we expect this work to be done mostly at established research centres where adequate staff and funds are already available.

We request that the Paris meeting discuss and identify any need for additional money to support rice conservation in 1977 and subsequent years. For example, new finance may be required for one or more vehicles and for exploration equipment, as well as to support any large extension of rice evaluation, rejuvenation and distribution activities (exchange of existing collections).

EXPLORATION

1. PLANNING

We recommend that IRAT/ORSTOM accept responsibility for planning exploration at the national level in Francophone Africa, and that IITA do the same in Anglophone Africa. We would expect both to work with the administration of WARDA if assistance is necessary to establish contacts with West African governments and national research organizations.

Working several months ahead of proposed exploration such planning should aim to achieve :

- a - A cordial working relationship with, and possibly the involvement of national government officials and local scientists.
- b - Freedom of entry and of movement for personnel and vehicles.
- c - Accommodation bases.
- d - The involvement of knowledgeable local personnel to act as guides and interpreters.
- e - The cooperation of the leading national agricultural research organization, especially as a depository for seed donated to the country in which it was collected, and for the safe storage of duplicate samples until the necessary plant quarantine authority has approved their export across national frontiers.

2. EXPLORATION MISSIONS

- a - Leadership : In Francophone Africa IRAT/ORSTOM, in Anglophone Africa IITA.
- b - Personnel : Usually two plant collectors and the driver. The identity of plant collectors will depend upon the region explored and the leadership agreed upon. On this basis IRAT/ORSTOM and/or IITA will always be involved, one or other sometimes accompanied by personnel from other collaborating organizations (which may include national organizations in the country explored).
- c - Vehicles : Normally, but not necessarily, four-wheel drive vehicles will be used. IITA offers one such vehicle for use within reasonable range of Nigeria (at most 3-4 days drive from Ibadan). Working in countries farther away, or if more than one exploration team is at work, IRAT/ORSTOM or WARDA would make a vehicle available, or one must be purchased.
- d - Local Bases : We recommend that exploration be from few well chosen bases to which teams return repeatedly after periods in the field. The alternative, which we do not favour, is continuous travel with few nights spent in many bases.
- e - Data collection : A standard French/English field data collection form, specifically designed to meet our needs in Africa, should be adopted and then used in all future work. Standardization here is important, especially in regard to describing pest and pathogen incidence and the local environment. It will assist in the subsequent task of documentation.

In principle, we favour the least complex data collection forms to meet these needs.

- f - Sampling Technique : We request that the Paris meeting discuss and agree upon the adoption of a standard seed sampling method for use in the field. Essentially, we have in mind that standard sampling methods will improve the value of future evaluation because we shall have a clear understanding of what was put "in the bag" during collection.

(We emphasize these references to standardization because scientists with various background, training and language will be involved in the work).

3. PLANT QUARANTINE

We believe it to be very important that national and regional plant quarantine authorities be informed of our plans for future exploration, and that they are given advance notice of the services we may request from them.

Among the collaborating organizations involved in West Africa, WARDA may be best able to liaise with plant quarantine authorities for the movement of rice collections within and from West Africa.

CONSERVATION

Samples of the collection of rice from Africa must enter the world collection maintained in long-term storage by IRRI and the laboratories with which it collaborates.

In so far as facilities for safe long-term storage are also available at IITA and in Paris it may be desirable that African material shall be conserved also in those centres. This is logical if we agree that seed in permanent storage must be rejuvenated in West African environments similar to those from which it was collected.

The question of medium-and short-term storage of "working collections" is closely related to agreed policy for evaluation. IITA is able to store working collections, and in so far as WARDA may be involved in evaluation, they may also wish to keep parts of any collection in medium-term storage.

The danger here is in creating a burden of seed increase and distribution activity exceeding that which is necessary for secure conservation and effective evaluation. An agreed policy is required.

EVALUATION

Effective evaluation and the work of documentation and analysis which it generates are perhaps the most costly routine activities we shall undertake. We strongly favour evaluation in several locations representing the African ecosystems where rice production is or can be successful. (IRRI will independently evaluate in the Asian ecosystems). But such locations must be few in number for cost efficiency, and they must be carefully selected not only to represent a range of environments, but also as places where the best scientific methods are used by well qualified personnel (including pathologists, entomologists and other specialists). These requirements effectively restrict site selection to existing agricultural research organizations, or their sub-stations in Africa, and so it seems probable that IRAT/ORSTOM, IITA/IRRI and WARDA will undertake the work.

Standardized experimental practice and descriptors.

For comparative analysis of evaluation data from several locations the need for standard field experimentation methods needs no emphasis. These standards should be defined by the coordinating organization. We believe it to be equally important that a standard set of descriptors be defined to evaluate rice. As well as characters of interest to breeders such a standard set should include several others known to be highly heritable and which can be used to "label" and identify rice accessions. (In the longer term we should bear in mind the value of isoenzyme analysis as a tool in categorizing and classifying germplasm collections).

DOCUMENTATION

IITA proposes to use the EXIR system for the computer management, analysis and documentation of all its germplasm collections. Dr. Steele will visit Colorado in March, 1977 with IITA's biometrician so as to hasten the use of the system in Ibadan. Once EXIR is operational at IITA, and in view of our probable involvement in rice evaluation, we will undertake the documentation (and publication) of rice germplasm data if asked to do so.