

THE CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH  
TECHNICAL ADVISORY COMMITTEE

Thirty-Third Meeting, Rome, Italy, 12-19 March 1984

RICE RESEARCH IN WEST AFRICA

Agenda Item 5 (c)

Proposed Objectives of the Discussion

*Following the completion of the IITA and WARDA EPRs in October 1983, TAC at its 32nd meeting requested the TAC Secretariat to place before it a discussion paper on the division of responsibilities for rice research in Africa among IRRI, IITA and WARDA. This would be the first step in sorting out the responsibilities among all IARCs involved in rice research within the CGIAR as requested by the CGIAR at the time of its discussion of IRRI's Second Review.*

*In accordance with this request, a discussion paper has been prepared. The Committee will now wish to consider the proposals made in this paper with respect to West Africa.*

*In addition, TAC will wish to give guidance for the next steps in the elaboration of recommendations to the CGIAR on the responsibilities for rice research and training at the global level, and the points of interaction and cooperation among Centers and with other interested organizations.*

# **Rice Research in West Africa**

A discussion paper for TAC 33

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From a global perspective, rice in West Africa is relatively insignificant (Figure 1). Most of it is cultivated in systems that have proved largely intractable to past and current research approaches. The crop is spread over a vast geographical region (Figure 2) characterized by poor communication and transportation systems. Return on rice research investments in the region will be modest, relative to many other parts of the world. Nevertheless, rice is a major cereal crop in the region and, for many compelling reasons beyond the scope of this paper, it is necessary and desirable to mount a vigorous research effort to improve production.

Efforts by IRAT contributed to the foundation of current rice research programs in West Africa. Within the past decade three CG sponsored organizations (IITA, WARDA, and IRRI) have initiated significant research and testing activities in the region. These are discussed in detail in the External Program Review (EPR) documents of each Center. The recommendations set forth in the EPR documents are sometimes in conflict. This discussion paper attempts to reconcile the various EPR recommendations and suggest an approach that will provide for the efficient and effective use of CG resources in the region.

All of the CG sponsored organizations are in general agreement on the major ecologies under which rice is cultivated in West Africa (Figure 1). Upland rice is by far the most important (62%) followed by hydromorphic rice (25%), mangrove swamp rice (8%), and irrigated rice (5%). There are also some areas where deepwater rice may be grown.

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### **Deepwater Rice**

Research on deepwater rice in West Africa does not merit the utilization of CG resources. The present and potential area involved is not significant and, based on experience in Asia, feasibility is very low for the improvement of varieties and other forms of technology.

### **Irrigated Rice**

Irrigated rice is not very important in the region and the needs can be met through the introduction of improved germplasm from Asia and Latin America through the International Rice Testing Program (IRTP) coordinated by IRRI at IITA. Where required, IITA should incorporate African-specific pest resistance through simple, inexpensive backcrossing procedures. Facilities and technical expertise for such work are already in place at IITA.

### **Mangrove Swamp Rice**

WARDA, through its special project at Rokupr in Sierra Leone, is best equipped to deal with the improvement of rice production in the mangrove swamp areas. Efforts there have already shown a significant impact and no other institution in the region has the capability or the desire to become involved in this ecology. Efforts should be made to link the research at Rokupr with that of similar ecologies in Asia such as the tidal swamp rice area of South Kalimantan in Indonesia.

### **Hydromorphic Rice**

Hydromorphic rice is not a strictly defined ecology but generally refers to rice growing areas where the water table is close to the surface during most of the growing season. It is often viewed as the wet end of the upland rice spectrum but it is important to realize that the anaerobic condition of the root zone results in a distinct and relatively homogenous ecology in comparison with 'strictly upland' rice.

IITA was instrumental in identifying this ecology and they have directed a vigorous research effort toward it. This is entirely in keeping with their mandate for the humid and sub-humid tropics, as discussed in the recent EPR, and it seems logical and appropriate that IITA should continue to have the lead responsibility for this important ecology.

### **Upland Rice**

All of the CG Centers with rice research activities in West Africa, as well as IRAT, are signatories to the *Inter-center Collaborative Agreement on Upland Rice* which allocates research responsibilities for four general environments. Responsibilities agreed upon for West Africa are:

- Long favorable: IITA
- Short favorable: WARDA/IDESSA/IRAT (savanna) and IITA (humid areas)
- Long unfavorable: WARDA/IDESSA/IRAT
- Short unfavorable: Not defined

IRAT has made a significant contribution to upland rice research in West Africa (Figure 3) and, with proper encouragement, they might continue their efforts in close collaboration with the CG system, to the benefit of all concerned. Their capability is particularly strong for one of the major constraints to upland rice production, the rice blast disease. Their research has been centered at Bouake in the Ivory Coast where they now work under the auspices of IDESSA (Institute des Savannes).

Recently, WARDA has shifted several scientists to their upland rice project at Bouake, which was previously comprised of one plant breeder. In addition to the human resources now deployed there (Table 1), Bouake has several advantages as a center for upland rice research in the region. The Ivory Coast is climatically diverse and there are good records and climatic analyses available. Although Bouake is not situated in an upland rice region the road system is good and provides ready access to representative areas. From the standpoint of families, Bouake is a very attractive

place to live and has excellent schools (both Anglophone and Francophone) and recreational facilities.

**Table 1. Scientists working on upland rice at Bouake, Ivory Coast.**

Position	WARDA	IRAT	IDESSA	Total
Plant Breeder	3	2	1	6
Agronomist	2	.25	---	2.25
Pathologist	1	.75	---	1.75
Entomologist	1	.75	---	1.75
Physiologist	---	1	1	2
Economist	1	---	---	1
Statistician	1	---	---	1
Total	9	4.75	2	15.75

Strategy and coordination will be vital considerations for a successful program at Bouake. Because of the immense variation in the climatic, edaphic, biological, sociological, and economic environments under which upland rice is cultivated the strategy should probably involve the selection of one important system of cultivation and the development of a model research program in which farmers are integrally involved. An intense training effort should be associated with this program. If an impact can be demonstrated it should gradually extend throughout the region through local efforts by the individuals trained. The IITA cassava program has been successful with this approach and it should be tried with other crops including upland rice.

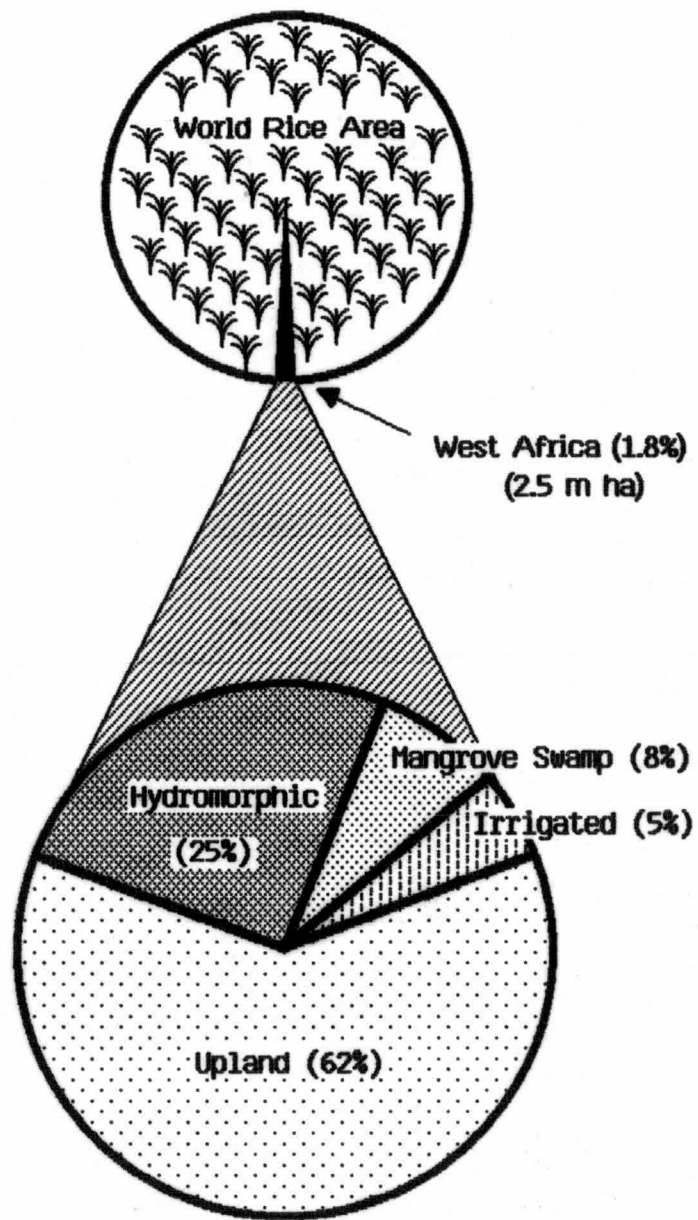
Financial support should be provided to the Bouake project in a manner that will encourage the implementation of such a strategy and the cooperation of all the concerned institutions. This could be achieved by placing an IRRI Coordinator for Upland Rice Research at Bouake and making operational funds available to the project through that position. He could play a key role in the implementation of the

*Inter-center Collaborative Agreement on Upland Rice.* WARDA should welcome this approach as it would provide some insulation from the current demands of their member countries and allow them to mount a sharply focused research effort on upland rice in close collaboration with the other institutions concerned. Also, it would probably be easier for IRAT to contribute to the project if they could work with an IRRI coordinator. Their present arrangement with IDESSA does not facilitate active cooperation with WARDA. IITA should also welcome the arrangement as it will provide them with a clearly defined channel of cooperation and communication in implementing their responsibilities in the *Inter-center Collaborative Agreement on Upland Rice*.

### **Regional Coordination and Training**

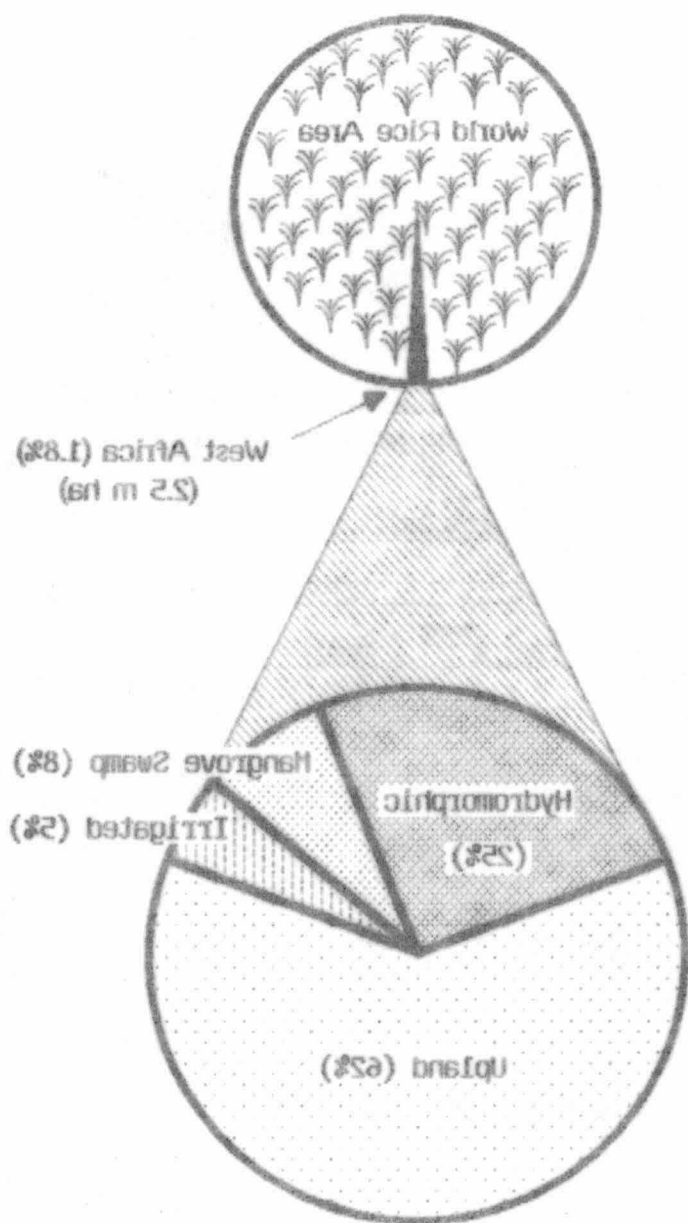
The matter of coordination and the need for training that is closely affiliated with vigorous research programs was stressed above in relation to upland rice but both are of general concern to the improvement of rice production in West Africa. There is an obvious language dichotomy in the region that has not been adequately addressed by any of the organizations involved, particularly as it relates to the coordination of research. If an IRRI coordinator is placed at Bouake it is very important that he be fluent in both French and English. He should also be in close contact with the IRRI Liason Scientist at IITA to facilitate the coordination of testing and other activities in both the Anglophone and Francophone countries.

In the long term, training will be the most productive component of CG sponsored activities in West Africa. To be effective it must be an integral part of vigorous research programs so that trainees will benefit from and contribute to the philosophy and enthusiasm that always characterize such programs. Furthermore, the personal relationships established among scientists in such training programs are invaluable in future research efforts. The WARDA training program at Fendall seems to be a well managed program but, as far as training in rice research is concerned, it is analogous to teaching swimming without the benefit of water.



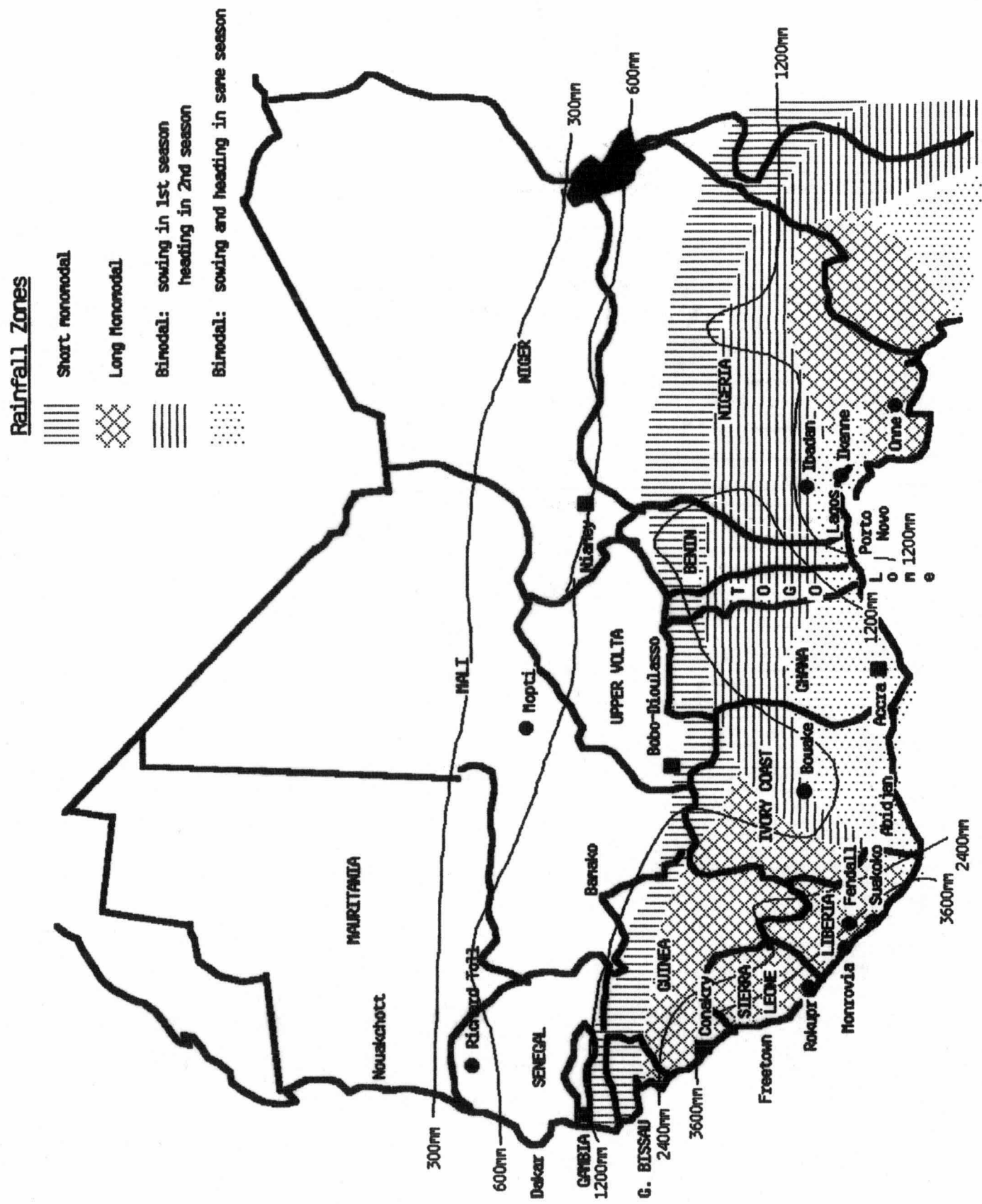
**Figure 1. Rice cultivation in West Africa**

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**Figure 2. Rice research and coordination facilities in West Africa.**





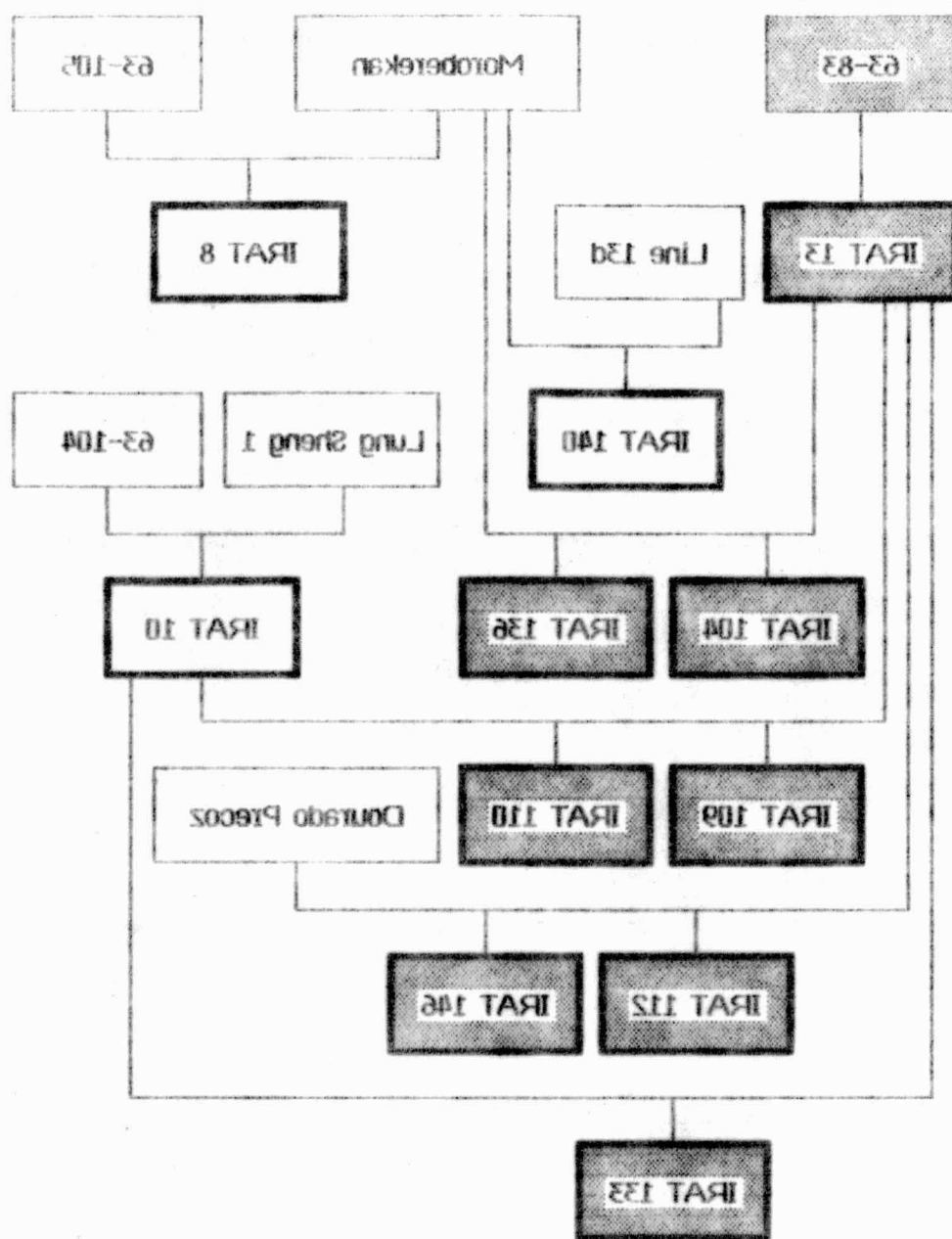


Figure 3. Genealogy of IRAT upland rice varieties.  
(Gray boxes are derivatives of 63-83)