

620-11-130-774

I. Introduction:

The Western State MAFF, with USAID assistance, began a two year pilot rice-maize production project during the early growing season of 1971. The results of each year's efforts formed part of the project plan. The evaluation of the first year's activity is intended to guide planning of activities for 1972. Even though information on 1971 results is not only preliminary evaluation, a number of decisions regarding next year's operations must nonetheless be made in the weeks just ahead. In addition growing concern regarding an apparent national food shortage places a premium on identifying lessons to be learned from the Western State experience that are potentially useful to those who must decide what measures are required to increase the production of food, particularly of grain, in the entire country. For these reasons, USAID decided to prepare the present draft report as a basis for discussions with Western State MAFF and other Nigerian agriculture officials.

II. Project Purpose:

Following on several years of joint efforts to develop the State's extension and selected other agricultural production support programs, the Western State MAFF and USAID signed a project agreement with the Federal Ministries of Economic Development and Agriculture on May 12, 1971, for the Nice-Maine Production Project. This agreement provides for a two year pilot effort aimed at:

- a) gaining adoption by a limited number of farmers of recommended practices (including use of improved seed and fertilizer) for growing rice and maize,
- b) improving the delivery of MAFF production support services (notably the

extension, seed multiplication, mechanized services and fertilizer distribution functions" and c) evaluating each year's results. Provided the second year's evaluation shows worthwhile results from the farmers' adoption of improved technology and suggests that the concept approach is feasible, the Project Agreement envisioned a full scale production campaign for 1973-75.

The first year's effort was to have involved 36 extension workers (District Agricultural Assistants) assisting individual farmers and groups in four circles to implement recommended practices on 144 rice or maize plantings. Fulltime MARR rice-maize officers were named in each circle and, together with USAID agronomy advisors stationed in Abakata, Ibadan and Akure, were to provide intensive supervision of all circle and district staff participation in the project. At headquarters in Ibadan, part-time project coordination responsibilities were assigned to the Principal Agricultural Officer (PAO) B, assisted by the USAID team leader. A USAID agricultural engineering advisor was responsible for assisting the MARR officer in charge of seed drying, storage, testing and packaging operations at Koor Plantation and for backstopping the MARR agricultural engineering officers responsible for the Tractor Hire Units (THU's) and other mechanized services in each of the four circles. A State Rice-Maize Committee, comprising key senior Government implementing officers and USAID advisors, would coordinate project planning and implementation. A separate MARR Rice-Maize Division was also envisioned.

The following project activities and results were planned: a) extension workers were to secure implementation by cooperating farmers of recommended packages (see Annex A) on 144 plantings; b) extension workers would receive training for their role in the project; c) the supply and distribution of fertilizer were to be improved; d) extensive seed multiplication drying, storage

personnel are available on all plantings in the Abeokuta Circle and the Ado-Ekiti Circles

Out of 55 group farms around Abeokuta average yields over 1200 lbs/acre were recorded on 87%. Yields averaged of over 1800 lbs/acre on 64% of the plantings. The average yield for rice grown by traditional practices (without fertilizer or the recommended CG-6 variety) is in the 600-800 lbs/acre range.

All five key recommended practices were followed on only 46% of the plantings but those following four or more reached 95%. The most commonly omitted practice, correct plant population, was neglected on 46% of the plantings. Only on 1% of the plantings did the farmers omit fertilizer where it was recommended (it is not generally recommended for rice land during its first season out of fallow). On 5% of the Abeokuta group plantings, all or most recommended practices had been used during at least one preceding season. For 25% plantings, recommended practices had been followed during two or more growing seasons.

For the two Ado-Ekiti Circles, 95% out of 54 farmers obtained average yields of over 1200 lbs/acre, 59% realized yields of over 1800 lbs/acre; 30% of the farmers averaged more than 2400 lbs/acre and yields of 3000 or more lbs/acre were recorded on three farms.

2. Maize:

Data comparable to that above on rice does not exist for practices followed and results obtained by cooperating maize farmers. In the Ondo Circle (around Akure), the USAID advisor estimated before his transfer that no farmers followed all recommended practices and that the average cooperant followed three practices.

out of the six recommended. Very few maize farmers, were able to obtain fertilizer or recommended planting materials because both were very ~~expensive~~ ^{difficult to} obtain at the farm level.

No data is available concerning the extent to which maize farmers followed recommended practices in the other three circles. Harvest time yield samples on five random cooperating farmer plots averaged 2900 lbs. of dry grain per acre. Yields on multiplication plots in nine locations within the Abeokuta Circle were 1745 lbs/acre of dry grain. Further yield data on the Ibadan and Ado-Ekiti Circles may be forthcoming later.

In 1969 the USAID Project leader assisted two groups, one of 12 and the other of 22 farmers, to plant maize using recommended practices. Using a yellow variety, these farmers yields for 1969 ~~averaged 2000 lbs/acre~~ ^{averaged 2800 lbs/acre} and averaged 2800 lbs/acre. When he visited the first group again this year, he found that all but one member who had died were still using recommended practices except that they had not been able to buy fertilizer.

3. Improvement of the Packages:

The recommended rice variety OS-6 and one of the recommended maize varieties (the white W-1) have serious deficiencies. OS-6, though the best presently available improved ^{rice} variety, has a long stalk and is subject to lodging. The W-1 maize, a high lysine variety, probably has no yield advantage over the varieties presently in general use. In addition it is slow drying and its kernels have an unusual mottled appearance. Slow drying seems to go with the high lysine characteristic. This plus softness of kernel makes this variety more subject to attack by stored grain pests. The W-1 yellow maize, apart from its

color, presents relatively few problems and seems to have a yield ceiling in the 3-4000 lbs/acre range under Western State conditions

On September 29 and 30, 1971, IANT convened a meeting of research personnel from IITA, the Federal Agricultural Research Department, the University of Ibadan, IANT and IAH with IANA and USAID officers engaged in the Rice-Maize Project. The attendees were asked to review the 1971 packages for rice and maize and design improved ones for 1972. They confirmed the 1971 package for rice but recommended substantial changes in the maize package (see Annex A). The conference also produced a list of additional research required for possible improvement of rice and maize practices. There was a strong consensus that such meetings should be held at least annually in the future.

4. Implications:

It seems clear that most cooperating rice farmers have succeeded in doubling or tripling their yields over the traditional average and that many of them have followed all or most of the package for two or more seasons. These farmers must realize economic advantages from the package. Yet it would be useful for improving the package to find out rice farmers' economic return from following recommended and alternative advanced practices over that from traditional methods. In particular we should learn the extent to which the economic incentive to group farmers depends on their use of presumably subsidized mechanized services. Even so it seems desirable to disseminate recommended rice practices as widely as possible throughout the rice growing areas of the Western State.

Since the basic outline of the 1971 maize package has been recommended for several years, a question arises as to why it has not caught on. The survey currently being conducted by the University of Ife should help answer this question. Factors involved may include: 1) farmers' resistance to abandoning intercropping (the prevalence of which among maize farmers suggests that higher agronomic performance is required to offset the advantages of intercropping); 2) both improved varieties have distinct liabilities as regards presumptive marketability for human consumption; 3) many farmers encountered marketing difficulties during previous maize promotion programs; 4) inability of MANR to supply farmers with the necessary inputs and 5) the package used to date was probably too conservative to exploit fully the yield potential of the yellow variety.

A likely working hypothesis on maize would be: a) that the white variety's (W-1) yield ceiling would permit only about double the traditional yield at farm level; and b) the recommended yellow maize (Y-1) has a much higher farm level yield potential which the 1972 package should realize to the extent of tripling traditional yields. This may prove sufficient to produce a breakthrough on adoption.

Given the limited information currently available, the economic advantages of the recommended maize practices are not yet sufficiently proven to merit large scale dissemination of the package in 1974.

B. Impact of Project on Constraints Affecting Adoption of Improved Technology:

Most of the information used in this section was obtained from the USAID chief advisor ~~manager~~ who obtained MANR Circle-level officers' and the other USAID advisors' written assessments of the main constraints inhibiting the project and their recommendations for dealing with them. Some of the information used also emerged from informal discussions with the USAID ^{project advisors} ~~manager~~. Part of the evaluation aspect of this project consists of surveys of

participating extension workers and cooperating farmers to obtain the same kind of information, plus the extent to which farmers followed recommended practices, and the yield results obtained. This section of the report should be regarded as tentative until confirmed or altered in light of the University of Ife survey results. These are expected to be available by December or January 1972.

1. Transfer of Information (Extension):

The extension effort got off to a poor start due to absence of clear instructions and inadequate training of participating field staff in the recommended packages and their responsibilities for assisting cooperators. There was confusion as to the exact practices to be recommended for maize. Rather than the targeted 144, approximately 650 plantings were brought into the program representing over 1000 cooperating farmers (including group members). Nevertheless dissemination of the rice package went quite well. Present indications are that maize package dissemination among cooperators was poor. Notwithstanding the probable differences between the economic performance of the rice and maize packages, it also appears that the extension effort on rice was stronger than that on maize. Extension field staff suffered from poor incentive to travel because allowances were meager and reimbursement on claims for travel expenses were often delayed.

2. Availability of Credit:

Virtually no credit was available from the Western ~~Regional Agricultural~~ State Agricultural and Industrial Investment Corporation (WSAIIIC) ~~Investment Corporation (WSAIIIC)~~ during the 1971 growing season. The reason was that WSAIIIC had no money for lending. Had there been money, the role of credit in this project would have been limited by the following: a) that loans are not generally made to individuals, b) group applications are not processed until the group registers as a cooperative or joins an existing one, and c) WSAIIIC's internal procedures entail long delays in processing loan requests. There is a consensus that credit would be an important constraint on the widespread adoption of either rice

or maize recommended practices. WMAOC field staff exist in adequate numbers of want a substantial program. WMAOC's interest in this project has progressed to the point that the Corporation wants to launch a rice-maize credit program. Loans would be made only to farmers who follow recommended practices under extension service supervision.

3. Availability of Fertilizer:

Reports from the Abeokuta Circle and from Ado-Ekiti Circle clearly indicate that most rice farmers used fertilizer where it was recommended. However, it is generally observed that very few maize cooperators did so and that fertilizer was available to them only in insignificant amounts. That fertilizer was available for rice cooperators was the result of the strenuous personal efforts of local MARR officers and the USAID adviser to overcome the administrative, financial and logistical obstacles. These included late ordering by MARR headquarters and, due to fuel shortages and breakdowns, lack of transport for moving supplies from central to circle and divisional storage centers. Late payment of their commissions undermined fertilizer agents' incentive to perform. Many of the problems seem traceable to delays in releasing MARR funds.

About 2000 tons of fertilizer ordered for the 1971 season is now (October 1971) on hand and further orders and deliveries are expected. Provided the resulting inventory has the right chemical make up and that demands for other crops are not too great, the supply available to rice and maize cooperators will be adequate if distribution problems can be solved prior to the 1972 growing season.

4. Availability of Improved Seed:

Improved seed was in short supply for the 1971 growing season. Probably only about 25% of the total demand for improved maize and 50% of that for rice was met. The demand in question is not only that from project cooperators. Improved seed is sought by other private farmers and by large unit public agriculture operations such as the farm settlements. It is difficult to assess the genuine demand for improved

seed because it is presently sold for less than going market prices for food grain and buyers are tempted to divert it for food.

Largely because USAID advisors allocated much of their time to the operational problems involved, adequate improved seed will be available to meet anticipated Western State demand in the 1972 season (see Annex B). This effort was seriously handicapped by lack of funds, nevertheless, MARR succeeded in expanding their seed multiplication program from 50 Acres in 1970 to 600 Acres in 1971. Some of the seeds produced had to be sold at harvest because preparations for storing it were not completed on schedule. (see 7. h. Financing).

Circumstantial evidence suggests that some seed may have entered the market illegally. The seed multiplication operation was scattered over so many separate installations that surveillance was very difficult.

5. Availability of Mechanized Services:

Mechanized services provided through MARR Tractor Hire Units (THU) were significant to the operations of rice group farmers and to the seed multiplication effort. In general THU services were highly dependable. Services are not delivered on schedule. Drivers tend to be inadequately trained and disciplined. Cultivators and rice harvesters are in short supply. These results are apparently

caused by a) observance of civil service procedures not consistent with timely delivery of the services farmers need at peak periods in the growing season, b) budgetary constraints, c) work planning and management and d) supervising engineers' lack of practical knowledge concerning the machinery in their charge

6. Storage and Marketing:

This project has thus far dealt only indirectly with farmers' problems of storing and marketing their produce. The rice and maize packages both contain recommendations that farmers dry and store part of their crop for sale after prices climb several months after harvest.

Marketing will probably not pose much of a problem for farmers during 1971 owing to the present shortage and high current prices for rice and maize. Marketing problems are apt to be more severe, however, during 1972, especially if the recommended rice package is disseminated on too wide a scale. The reason is that farmers will probably be stimulated by this year's high prices for maize and rice to increase production during the next growing season - whether or not they are given better technology to use.

MAAR has drying and storage bins with considerable capacity. Much of this equipment is in disrepair. USAID supplied much of this equipment under a previous project. USAID, on a reimbursable basis, is now assisting MAAR to procure the additional equipment and spare parts needed to render these bins operational. It is not clear what role these facilities are intended to play in the project. Available information concerning the operations of government fertilizer distribution, seed multiplication and mechanization operations does not bode well for the success of a purely government run price support, storage and marketing program. Such a program

would require specially trained, disciplined and well motivated staff; highly efficient logistical operations; adequate, timely financing; and highly capable management. Though the Western State could undoubtedly muster the human and financial resources to meet these requirements, doing so would have an exceedingly costly impact on other high priority programs.

Rice milling is presently by methods requiring parboiling to prepare the rice. This imparts a rancid odor and taste to the rice.

Farm storage of paddy results in comparatively little loss (as little as 10% from one season to next as estimated by one USAID advisor). However, farm level storage of maize by traditional methods is said to result in much greater wastage within two - four months.

7. Planning and Management of MARR and USAID resources:

a. Coordination and Administration:

This project appears to have suffered extensively from a lack of integration into normal MARR planning and decision - making systems. Headquarters project coordination has suffered from the fact that this responsibility was assigned to a PAO with many other conflicting demands on his time. The Rice-Maize Committee's membership ^{until recently did} does not include officers responsible for headquarters functions, such as fertilizer distribution, planning and evaluation, that are essential to the project. It appears that both sides have treated the project as primarily a USAID undertaking requiring liaison with MARR headquarters, rather than a MARR planned, managed, financed and evaluated effort assisted by USAID.

b. Financing:

A high percentage of the problems encountered with all aspects of this project trace back to inadequate budget levels, to tardy release of approved funds and to unduly centralized MARR financial control. To what extent these

problems arise within and can be remedied by MARR is not clear. It may be that they are caused by systems and procedures extending beyond MARR's immediate control.

c. Staffing:

By and large the quantity and the competence of staff assigned to this project have been adequate. This project has, however, revealed a pattern weakness in providing MARR personnel, particularly those in the field, with the supervision and logistical support they need to carry out their assignments. Field staff are authorized travel and transportation allowances which may consider too low. Even then these allowances are apparently difficult to collect. Headquarters officers seemed to give relatively low priority to monitoring the progress on tasks assigned to field staff and to assisting them when they encountered obstacles. This lack of staff supervision and support is highly inconsistent with the aims of the present pilot effort designed to produce high performance on a limited scale in order to test the various elements of the package.

d. Evaluation:

Evaluation, though basic to the aims of this phase of the project, was not planned with sufficient lead time and precision, either by USAID or the MARR. The result was a series of uncoordinated and contradictory requests to the MARR Planning Unit for assistance in surveying the economic and agronomic performance of the packages in farmers' hands. It is doubtful that any useful economic data will be forthcoming for 1971. Fortunately, it appears that two surveys administered by the University of Ife - one to extension workers and the other to farmers - will provide useful information on the difficulties encountered by

extension workers, the extent to which the farmers followed recommended practices and their reasons for not doing so. This information should become available by December or January. Yield and practices checks carried out by the extension service are available for the bulk of rice farmers, but not for appreciable numbers of maize cooperators.

Annex A: Rice and Maize "Packages"

Annex B: Seed Multiplication Results

Upland Rice "Package" for Western State*

Practice	Traditional	1971 Package	1972 Package
Land clearing	Incomplete land clearing	More complete clearing	Complete clearing
Cropping pattern	Intercropped	Sole cropped	Sole cropped
Seeds	Local seed	OS-6	OS-6
Planting	Broadcast 50 pounds per acre	30 pounds per acre 5 seeds per hill 12" x 12"	30 pounds per acre 5 seeds per hill 12" x 12"
Weeding	One weeding	2 - 3 weeding	2 - 3 weeding
Fertiliser	None	20 - 20 - 0 ^{one} application	20 - 20 - 0 ^{split} application
Pest control	None	Chemical termite control Bamboo or palm fence for rodent control	Chemical termite control Bamboo or palm fence for rodent control
Expected yield	400-1000 Ave 800 lbs/A	1000-3000 Ave 2,000 lb ⁺ /A	1000-3000 Ave 2,000 lbs/A
Value at 60 lb*	Other £0/0/0 Rice £20/0/0	£ £50/0/0	£50/0/0
Estimated cost Products*	18/7/6	32/17/6	32/17/6
Net return	4/2/6	17/2/6	17/2/6

* Cost of production data is based on estimates made by USAID Advisor (L.O. Rothney) after interviewing farmers in preparation for rice field days and tours. Price of rice is based on conservative rate of 6d per pound rather than the current inflated price of 8d.

Maize "Package" for Western State*

Practice	Traditional	1971 Package	1972 Package
Cropping pattern	Mixed cropping	Single cropping	Single cropping
Variety	Local	WS-1, WY 1	WY 100, WY 100
Plant Population	8,000 plants per A	14,500 plants per A	20,000 plants per Acre
Soedbs Preparation	Partial removal vegetation Partial loosening of soil. Plant on heaps	Complete removal vegetation Well loosened soil Plant on ridges	Complete removal vegetation Well loosened soil Plant on level
Fertiliser	None	3A-16-16	73-50-50
Weeding	Once	Twice	Up to three times as required
Expected Yield	500-1000- Ave 800	1200-2400 Ave 1800	2,000-3,600- Ave 2,800**
Value @ £30 WTA	Value of Maize £11:3 Value of other crops £2:0:0	£24:9:-	£39
Estimated cost of Production*	£9-0-0	£15-0-0	£18
Net returns	£4-3-	£9-90	£21-0-0

* Cost of production data is based on estimates made by USAID Advisor (Al Vann) through interviews with farmers in preparation for 1971 field days and tours. Price is calculated at conservative rate of £30-0-0 per MT rather than the current inflated price of £45.

** Western Yellow 1 variety has higher yield potential than Western White 1. WY 1 may not be able to reach the projected 1972 yield level.

AGR:DFCarter:gov:10-15-71