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Report to USAID/Upper Volta and AID/W March 30, 1976

UPPER VOLTA

SEED MULTIPLICATION PROJECT

Services Rendered

Under the Contract

Between

USAID/W and Experience Incorporated

AID/afr-C-1130

T. Kelley White

Consultant

FORWARD

Following the recommendations of a U. S. Sahel Mid-term Planning Committee which explored the feasibility of an expanded seed production program for Upper Volta and a request for assistance in such a program from the Government of Upper Volta, a modest Seed Multiplication Project was approved by USAID. The National Seed Service (NSS) was established by an official Arrete in May, 1975. Madame Rose Marie Sanwidi has been appointed Chief of the NSS. Seed production began at major research stations in 1974 with operating funds provided by a European Development Fund (FED) Grant. The supply of seed exceeded the demand for planting in the spring of 1975. Seed was again produced in 1975 and the supply is expected to be in excess of effective demand during the spring of 1976.

The Seed Multiplication Project anticipated that, given an initial revolving fund, seed multiplication at major research stations would be self financing. However, due to the accumulation of unsold stocks and difficulty in obtaining payment for seed sold, all stations are requesting additional operating funds to finance 1976 seed multiplication. The Regional Development Organizations (ORD's), responsible for final multiplications, are also expressing

a felt need for a revolving fund to finance seed multiplication.

TERMS OF REFERENCE

Recognizing that the U. S. Sahel Midterm Planning Committee had overestimated the existing effective demand for improved seed and underestimated the need for subsidizing seed production, USAID/Upper Volta requested assistance in reviewing implementation problems and identifying possible solutions. The assistance requested, following approval by AID/W, was provided by Experience Incorporated under Contract No. AID/afr-C-1130, Work Order No. 17.

The specifice types of assistance requested were the following.

1. Estimate the demand for all types of seeds for the next three to five years, based on an Organization for Regional Development (ORD)-Volta Valley Authority (AVV) survey and discussions with researchers.
2. Estimate present cost of: production at existing production sites; processing costs; and delivery costs to ORD/AVV pickup points.
3. Estimate the costs of production of seed, multiplied by ORD's, either directly or using farmer multipliers.

4. Study present pricing methods, with comments as to their efficiency, and suggestions as to alternative methods if appropriate
5. Estimate how much land will be needed to meet the demand for improved seed over the next three to five years.
6. Estimate the size of annual revolving funds needed for operation of both multiplication stations and ORD's.
7. Assess the present project design which calls for five seed multiplication centers and seed multiplication by four ORD's.

The remainder of this report is organized around the seven points enumerated above. For each point an analysis of the current situation will be presented. This analysis will be based on observations and data obtained by the Consultant from interviews conducted and secondary reports collected in Upper Volta during the period March 8-19, 1976[1/]. Based on these analyses, recommendations for future action will be made.

[1/] The Consultant's itinerary and a list of contacts made are presented in Appendix A.

ANALYSIS OF CURRENT SITUATION AND RECOMMENDATIONS

Demand for Improved Seed

The Sahel Mid-term Planning Team in its report[2/] stated, "It is very difficult to predict, before the existance of the seed program, the number of farmers who will demand the seed in future years or the amount of seed which will be demanded at an appropriate price." This statement remains true after limited operation of parts of the system during two crop-years--1974-75 and 1975-76. Production of improved seed was initiated (or continued) at Saria, Farako-Ba, Kamboinse, Niangoloko and Vallee du Kou in 1974. These seed were available for distribution for planting in 1975. In addition there was seed production by ORD's, especially Banfora, Bobo Dioulasso and Ouagadougou.

While data available with respect to 1974 production and 1975 utilization of improved seed is incomplete, it is sufficient to indicate that some producting units were unable to sell all of their production as seed. This was true of millet, sorghum, corn, peanuts and rice. It is only possible to cite examples to indicate the relative magnitude of oversupply (see Table 1). The data presented in Table 1 illustrates the existance of a problem in balancing supply and demand, but they are somewhat

[2/] Sahel Mid-term Noncapital Project Paper, undated

Table 1. Comparison of improved seed production with sales for use as seed--selected production sites 1974-75[1/]

Type seed	Farako-Ba		Saria		Niangoloko		Ouagadougou ORD	
	Prod	Sales	Prod	Sales (Tons)	Prod	Sales	Prod	Sales
Sorghum	2.0	±0	23.3	10.2			1.5	.063
Millet	2.7	±0	13.9	6.0			1.2	?
Corn	13.4	±10	9.2	6.3				
Rice							24.7	16.9
Peanuts					200	120.14	26.5	4.5

[1/] Difference between production and sales was in some cases held in stock and in others sold as grain for consumption.

misleading with respect to the relative magnitude of the oversupply problem and of relative magnitude of demand for various types of seed. Data was not available for the major rice-producing station , Vallee du Kou, so both production and sales of rice seed are greatly understated relative to others. Also in rice more than any other grain the supply-demand situation varies drastically from one variety to another, with some in short supply while others cannot be sold.

The situation with respect to peanuts is probably worse than indicated by the data for the major producing station, Niangoloko. It was reported that of the 120 tons sold to ORD's in 1974 approximately 100 tons went to a single ORD which was able to sell only a small proportion as seed. The rest were sold to OFNACER for consumption.

Annual reports for the 1974-75 crop year (1974 growing season) were available for six ORD's. These reports were reviewed for data concerning distribution of improved seed to farmers. The results are presented in Table 2. Reports were not available for two of the ORD's that have significant seed distribution programs--Banfora and Bobo Dioulasso. Three important implications can be drawn from these incomplete tabulations of ORD seed distribution programs. First, the quantity of seed distributed, even in an important region such as Ouagadougou,

Table 2. Actual distribution of improved seed by ORD's for 1974-75 crop[1/]

	Rice	Peanuts	Corn	Sorghum	Millet
			(Kg)		
Bougouriba Diebougou	8,159	10,000	912	150	0
Fada N'Gourma	2,485	13,336	0	552	300
Centre-Est	a[2/]	4,036	a	a	a
Koudougou	a	a	a	a	a
Kaya	a	a	a	a	a
Ouagadougou	16,887	4,569	a	63	a

[1/] Data presented in this table were extracted from 1974-75 annual reports of the respective ORD's.

[2/] No mention was made of a program for distribution of this type of seed.

is very limited. Second, only rice and peanut seed were distributed in meaningful quantities. Third, two of the six regions apparently had no seed distribution programs, and two others apparently had programs for only some types of seed.

The seed program was just getting underway in 1974, and therefore, one would not expect performance to be spectacular. Unfortunately there is very little data available on seed distribution in 1975. However, the National Seed Service did attempt to establish, on the basis of information obtained from ORD directors, available supplies and needs for seed by each ORD for both the 1975-76 and 1976-77 crop years. A summary of ORD responses for the two years is presented in Table 3. The 1975-76 available supplies of seed reported in this would have been produced during the 1974-75 crop year and 1975-76 demands would have been for distribution to farmers in early 1975. Thus the production-sales data reported in Table 1 and the supply-demand data for 1975-76 in Table 3 are comparable.

The most important insight to be gained from Table 3 and a comparison of that table with data presented in Table 1 and other information obtained through interviews is that the approach being employed by the National Seed Service to establish supply and demand levels is totally inadequate. A few examples will make this clear. Actual sales of sorghum and millet by the Saria Station alone

Table 3. Available Supplies and Estimated

O.R.D. Demands for Improved Seed

1975-76 and 1976-77 Seasons*

Type Seed	Available		ORD "Demands"		Difference	
	1975-76	1976-77**	1975-76	1976-77***	1975-76	1976-77
			(Metric Tons)			
Millet	16.7	13.1	3.56	9.40	13.14	3.70
Sorghum	25.1	18.0	6.06	32.26	19.04	-14.26
Corn	14.1	-	15.17	26.14	-1.07	-26.14
Peanuts	220.5	89.0	228.86	71.52	-8.36	17.48

* Summarized from National Seed Service data

** Incomplete data for current stocks

***Includes expected demand by Volta Valley Authority

exceeded the total demands reported by all ORD in 1975-76. These sales were made to ORD's. For the same year ORD's reported demand for 228 tons of peanuts. As was stated earlier Niangoloko sold 120-140 tons with most going to a single ORD which in turn was forced to sell a large proportion for consumption.

The supply information for the current crop year, 1976-77, is still incomplete. Millet and sorghum supply reported includes only seed in storage at the Saria Station. In addition Farako-Ba has in storage 11 tons of sorghum and 7 tons of millet, and the Bobo ORD reports 4.7 tons of sorghum and 1.9 tons of millet in excess of their own needs. Thus there is an adequate supply of sorghum to meet the reported needs. While no corn supply is reported, Saria has 7 tons, Farako-Ba has 27 tons and Bobo has 12.3 tons available for other ORD's. Therefore there appears to be a surplus of corn seed.

Data in Table 3 would seem to indicate with respect to peanuts that (1) the demand has declined markedly and (2) the supply and demand have been brought into balance. The decline in demand is only apparent since the effective demand in 1975-76 was much smaller than the ORD's have indicated, as discussed above. On the supply side IRHO actually produced 240 tons of peanut seed. However recognizing that this quantity could not be sold for seed, 160 tons were sold for consumption.

One of the important functions that can and should be performed by the National Seed Service is collection of data and maintenance of records on production and distribution of improved seed at every level of the system. Such data is vital to coordination of the several institutions involved and to the ability to make meaningful estimates of effective demand. The present process of calling a meeting of ORD directors for the purpose of compiling a table of available supplies and anticipated demands is totally inadequate.

Several ORD's, especially Ouagadougou, Banfora and Bobo Dioulasso, have extensive seed multiplication programs in operation. The Volta Valley Authority expects to produce and process all its seed requirements after the current crop year. These institutions are operating almost independently of the NSS, and apparently are using the seed production stations as residual suppliers rather than as a source of foundation seed to be further multiplied. It also appears that they report only "excess" supplies and demands to NSS.

It is not suggested that the NSS should replace or even control these institutions. As will be shown in the discussion of production costs, the ORD's through contract farmers are a more efficient source of seed than are the research stations and government farms. The NSS should be a source of data that can be used in planning

seed production and, in the future, to derive demand estimates.

The NSS should establish a system of reports of 1) actual purchases of seed (by variety and generation) by ORD's from research stations, 2) seed production by ORD's, 3) actual sales (distribution) of seed by ORD,s to farmers, and 4) production of seed by research stations. Reports should be required within two or three months after harvest for production and after planting season for sales--not two or three years later as is now the case with annual reports. The NSS should continue to solicit forecasts of seed needs from ORD's but this should be done by written reports not in a meeting. This will reduce pressure to announce exaggerated needs so as to look good to other directors. Appendix B contains a list of types of information that should be requested in each report.

Until reliable data of the type specified above are available on a timely basis it will be impossible to quantify the level of effective seed demand. However, the partial data that was available provides evidence that current demand is small relative to the levels proposed by the U.S. Sahel Midterm Planning Committee. Only in the case of rice, especially C74, is there an apparent shortage at current price levels. Rice demand is strong because 1) there is a strong demand for rice for consumption, 2) farmers tend to treat rice as a cash

crop, 3) profitable packages of improved seed and supporting technology are available, and 4) irrigated rice production is, in several cases, organized in cooperatives which provide a mechanism for extending new technology.

Improved varieties of peanuts were adopted rapidly because disease resistant lines which gave significant yield increases even with traditional production practices were available. Also the market price for peanuts has been high enough and the market well enough organized to made peanuts an attractive cash crop. It appears that the rate of future growth will depend on an effective extension program including credit for buying seed and a continued strong market for the product. Observers express the opinion that demand for peanut seed will grow more rapidly in the north than in the south where adoption is already rather widespread.

While improved corn seed have sold reasonably well, the quantity has been very small. Corn is grown primarily for home consumption. Most varieties being offered are "cleaned up" local varieties rather than new ones. Growth in improved seed demand is not likely to be rapid under these conditions.

The original emphasis of the Seed Multiplication Project was on sorghum and millet, the most important food grains. This emphasis was based on the belief that a shortage of these grains existed and that improved seed

could contribute significantly to supply. Thus far the demand for improved sorghum and millet seed has been very small, either in absolute terms (see Table 3) or relative to the total areas planted. There are a number of reasons for the lack of demand. First, the varieties available are superior only if combined with fertilizer and improved practices. Even breeders admit that under current production practices the farmer's varieties are probably best. Some work is under way with short straw varieties that have potential for higher yields without fertilizer.

An important reason that farmers have not adopted new varieties requiring more inputs is that both sorghum and millet are produced almost exclusively as subsistence crops. Farmers are very risk averse with respect to these basic food crops. There is no well-organized market that can absorb significant increases in production. There is no shortage of sorghum and millet, and except for the height of the drought there has not been. Thus any significant increase in aggregate production in a region or in the country as a whole results in drastic price declines.

This dreary picture does not mean that attempts to develop and disseminate improved sorghum and millet varieties should be abandoned. It does mean that effective demand is going to remain small until truly superior varieties and production techniques, for existing

conditions, are developed and demonstrated to the farmers.

In the long run improved varieties of sorghum and millet are going to be important to the welfare of the country. The population, and thus the demand for food grain, is growing rapidly. Most land currently suitable for production is being used. There is export demand if the domestic market were organized to supply it. Truly improved varieties and production practices would allow farmers to reduce the land and labor dedicated to food production and increase cash crop production in the intermediate run. This would lower the resource cost of food production and increase income levels. In the longer run it will help to meet the expanding demand for food from a growing population.

Thus it is important that work to develop improved sorghum and millet seed adapted to the farmers needs and production situation be continued and intensified. Given the reluctance of the small farmer to gamble with his basic food crop, it will be essential that new varieties and practices be demonstrated to the farmers. This will require an extensive system of village demonstration plots. This should be a function of the extension service of the ORD's. The National Seed Service should not attempt to establish a second extension service.

Costs of Production

Assistance was requested in determining the costs of production of improved seed on the research stations and by ORD's on their own farms and by contract growers. Time did not permit the acquisition of data for all crops on all sites, but detailed data was obtained for the Farako-Ba Station and for rice production by the Ouagadougou ORD on its own farm.

Costs of production, per hectare, for rice, corn, sorghum and millet at the Farako-Ba Station are calculated in Appendix C. These calculations are based on detailed labor, machinery and imput-use records maintained by the Station during the 1975-76 crop year. Labor charges are included for direct labor only. That is, time of station professionals required to plan and supervise operations is not included. Wages used are minimum wages that will be effective beginning in April, 1976. These are approximately twenty percent higher than were effective in 1975. Seed are charged at the official government price, and fertilizer is charged at the subsidized price of 35 CFA per kilogram.

Total production costs per hectare, 1975 yields and cost per kilo of grain produced are presented in Table 4. Costs per kilogram of grains sold as improved seed would be somewhat higher since limited experience shows that

Table 4. Costs per hectare, yield and cost per kilogram for rice, corn, sorghum and millet--Farako-Ba Station

	Rice	Corn	Sorghum-Millet
Cost/ha (cfa)	77,574	75,375	81,304
Yield (Kg/ha)	900	1,200	900
Cost/Kg (cfa)	86.19	63.23	90.34

only 85-90 percent of the grain meets standards for seed. The remainder is sold for consumption at a lower price (18 CFA/kg for corn, millet and sorghum in 1975). Thus production costs are high relative to fixed prices that can be charged.

The seed production operation at Farako Ba is new with only two years of experience. Much of the machinery being used is unfamiliar to the workers resulting in inefficiency of labor and machinery use. When the seed production program is fully implemented grain crops will be rotated with a legume (Stylosanthes). Preliminary results indicate that this rotation will approximately double yield and thus will lower unit production cost by approximately forty precent.

Detailed data on labor and input use in production of short-cycle rice were provided by the Ouagahougou ORD for production on the government farm. Prices paid for labor and other inputs were also provided. The cost of production was calculated on the basis of this information and is presented in Table 5.

The Ouagadougou ORD uses a labor intensive production system (no tractors) as opposed to Farako-Ba. Yields and costs are not directly comparable since the ORD data is for irrigated rice and Farako-Ba data is for upland rice. The ORD wage rate is lower because 1) it is the 1975 wage paid, 2) lower quality labor is used, and 3) labor is hired on a daily basis.

Table 5. Cost of production of short-cycle rice seed--
Ouagadougou CRD

Item	CFA/Ha
Labor 331 man-days @ 200 cfa/day	66,250
Fertilizer (subsidized price)	11,000
Seed (official price)	2,450
Irrigation fees & amortization	15,400
Treatment	3,500
Total cost per ha.	98,600
Yield (Kg/ha)	1,300
Cost per Kg (cfa/Kg)	75.85

Data available at the Sarla Station was inadequate to provide a basis for unit costs calculations for sorghum, millet or corn production.[1] However, partial data indicated that costs are comparable to those achieved at Farako-Ba.

In general, seed production costs at research stations and on government farms are high relative to official prices for seed and relative to the price paid for contract production by farmers. The principal reasons for high production costs are 1) high cost of hired labor resulting from minimum wages that must be paid and low productivity of labor and 2) inefficient combinations of machinery and labor. There is a tendency to have people follow machines to make sure they are operating correctly or to provide a helper to do things that the operator could do for himself. If labor is expensive enough to justify mechanization, it is too expensive to use in such unproductive ways.

No attempt was made to calculate costs of production for contract seed producers. Under the contractural arrangement used the farmer is provided inputs (seed and fertilizer) on credit, is supervised in production techniques, and sells seed to the station or ORD at (or below) the official price established by the government. The costs of inputs furnished are deducted before payment

[1] A detailed record of labor and input use was kept during the 1975 production season, but the data could not be found.

is made. The farmer uses his own land and family labor in production so that the only cash costs he incurs are for seed and fertilizer, which are provided on credit. It is advantageous for him to produce improved seed if he can obtain a higher return to land and labor than by producing other crops either for home consumption or sale. Since there seems to be little difficulty in obtaining contract producers, one must conclude that this arrangement is advantageous to the farmers.

The official prices to be paid producers for improved seed produced in 1975 as established by the Ministre Du Plan Du Developpement Rural De L'Environnement Et Du Tourisme are

Rice	55 F/Kg
Millet	55 F/Kg
Sorghum	55 F/Kg
Corn	30 F/Kg
Peanuts	45 F/Kg.

A comparison of these prices paid for farmer production with calculated production costs in Tables 4 and 5 indicates that direct production is from 50 to 150 percent more costly than contract production. This comparison is somewhat misleading since cost of supervision is not included in either set of costs, but is probably somewhat higher for contract production. I.R.H.O., which uses contract production of peanuts extensively, has estimated that total cost, including supervision, is from 65-72 F/Kg

with contract production and 102 F/Kg with direct production.

Given these relative costs, it is desirable to move seed production to contract farmers at the earliest generation consistent with maintenance of purity of variety. I.R.A.O. uses contract producers for the R-2 generation and indicates that R-1 production is feasible.

Pricing of Improved Seed

Prices to be paid farmer producers of improved seed and prices charged for sales to ORD's by seed production stations or other ORD's are fixed by government arrete. The stated basis for determining official seed prices is the official price of grain for consumption plus thirty percent. Official prices for the 1975 crop (1976 marketing season) for consumption grain and seed are presented in Table 6. The thirty percent price differential does not hold exactly, but of more interest is that it appears to be thirty percent above the retail food price. Thus the difference in price paid a farmer-producer between consumption grain and improved seed is almost one hundred percent. This would explain why farmers appear anxious to produce improved seed under contract.

It is not clear how the thirty percent differential between consumption grain and seed prices was selected. The institutions producing improved seed, ORD's and research

Table 6. Official prices of grain for consumption and improved seed--1976 marketing season[1/]

Grain	Consumption		Improved seed		
	Paid Farmer	Charged Consumer	Paid producer	Charged O.R.D.	
				Untreated	Treated
	(F/Kg)	(F/Kg)	(F/Kg)	(F/Kg)	(F/Kg)
Rice	-	-	55	59	72
Millet	18	30	35	39	45
Sorghum	18	30	35	39	45
Corn	18	30	30	34	39
Peanut	-	-	45	50	-

1/ Source: Arrete No. 002002/M. CODIM/DC/CI Ministre du Commerce, du Developpement Industriel et des Mines and Arrete No. 64/PL/DR/E-T/D.S.A. Ministre du Plan du Developpement Rural de L'Environnement et du Tourisme.

stations, agrue that the price is too low, and relative to their present cost of production it is. Many observers suggested that the price charged the farmer (official price to ORD plus markup to cover sacks and handling cost) is too high and discourages use of improved seed. The official price paid farmer-producers appears adequate to attract a sufficient number of producers.

In a competitive market environment the price of a product will tend toward its cost of production, including a normal return to owned resources such as land and family labor. However, in a situation such as exists in the Upper Volta seed industry where wages are fixed, fertilizer prices are fixed, seed and grain prices are fixed, and a large share of production is by government institutions it is very difficult to determine the market value of anything.

It is clear that someone must pay the costs of production of improved seed if they are to be produced. This can be accomplished by setting prices sufficiently high that the farmer pays full costs, or the government can subsidize the cost of producing improved seed. There seems little justification for long-term subsidization. A subsidized price may stimulate adoption, but if improved seed are really more productive it probably is not necessary.

It is also clear that farmers will not knowingly pay more for improved seed than they are worth. What a kilo-

gram of improved seed is worth to a farmer depends on its yield advantage over traditional seed for the system of production used. For example, if traditional sorghum seed is applied at 15 Kg per hectare and with traditional practices yield 400 Kg/ha, while improved seed planted at the same rate and with the same practices will yield 500 Kg/ha, the improved seed resulted in a 100 Kg increase in output with no additional cost. If sorghum sells for 18F/Kg the value of 15 Kg of improved seed is 1800 F or 120 F/Kg more than traditional seed.

There are a number of problems with the current pricing system. First, they seem to be completely arbitrary--based on neither cost nor value. Second, they allow no variation among varieties of a given grain. For this reason the ORD of Ouagadougou must produce short cycle rice directly but can contract long cycle production. Short cycle yields are low and production cost high relative to long cycle varieties. At the same price per kilogram farmers refuse to produce short cycle seed. Third, they are based on official prices for consumption grain which cannot be, and are not, enforced. The government publishes a price list but does not have resources to buy surplus grain when the official price is too high, and does not have stocks of grain to sell when the official price is too low. If official prices for seed are adhered to, improved seed will be sold for consumption

when the market price is high. This has happened recently with rice.

The system of prices does not seem to differentiate between generations of seed multiplication. The costs of producing early generations, R-o and R-1, are higher than for later multiplications because of increased labor and lower yields associated with removal of off-type plants. The current, rigid pricing system discourages control of varital purity. It also encourages the ORD's to use research stations as residual suppliers of seed for direct sale to farmers rather than as sources of foundation seed for further multiplication. Given the high costs of production on research stations, this is very expensive, and the cost is paid by the government.

The system also does not recognize the existance of different grades of seed. Prices are established for treated and untreated seed. Judging from early experience with rice trading at Farako-Ba, 100 Kg of ungraded rice yields approximately 60 Kg first quality, 25-30 Kg second quality and 10-15 Kg of grain not suitable for seed. Farako-Ba is selling first quality at treated seed price, second quality at untreated seed price and third quality for consumption. Thus the price differential between treated and untreated seed is probably insufficient to cover cost of processing. One hundred kilograms of untreated seed is worth 5900 F at the official price. Assuming it yields 60 Kg first quality, 25 Kg second

quality and 15 Kg third quality which are worth 72, 59 and 30 F/Kg respectively, the 100 Kg of graded seed would be worth 6245 F. This assumes zero loss of weight. For sorghum and millet the differential is smaller and thus the problem likely more serious.

Removal of price controls from both consumption grain and improved seed would lead to more efficient pricing. However, if this is politically unacceptable, a system of prices based on cost of production would seem to be preferable to the existing system. By trial and error prices could be adjusted to approximately balance supply and demand. It should be recognized that farmers may refuse to pay these prices for some types of seed. This should be taken as a sign to either cease production of that seed or do a better job of demonstrating to farmers its true value.

Area to Be Planted

Since adequate data was not available to make meaningful estimates of effective demand for the various types of seed, it is also not possible to estimate the area of land that will be required for seed production during the next several years. However, given the experience of 1974-75 and the apparent supply-demand situations for 1975-76, there appears to be no need to expand production of any seed other than rice over the 1975 level. Rice seed area at Vallee du Kou is being

increased for 1976. The area in peanut seed production can probably be reduced by at least fifty percent from the 1975 level. Production of sorghum, millet and corn at approximately the 1975 level at Saria together with the total area of 25 hectares (allocated as per Mr. Poulain 's alternative II) at Tarako-Ba should be adequate to meet 1977 demand.

There is no indication that demand for corn, sorghum, millet or peanuts is going to grow rapidly. Therefore production should be adjusted gradually from current levels based on trends in utilization. These trends will be more visible after a third year of experience and improved reporting systems.

Revolving Funds

Both research stations and ORD's express the need for a revolving fund to finance seed production since buyers normally do not pay for seed purchased until the following harvest season. Thus the producing units must have financial resources sufficient to produce two crops--one of which is already harvested and sold on credit and a second one which will be harvested before the first one in paid for. After two years the system would be self-sustaining if prices covered cost of production, all seed were paid for, and supply and demand were approximately in equilibrium (i.e. stocks were not being accumulated). Rapid growth in demand would require additional revolving

capital since each year's production would be larger than the last, and thus, total production cost greater than the flow of cash generated by previous year sales.

Station Directors at Saria, Farako-Ba and Niangoloko either had prepared or were preparing request for revolving capital from the Seed Multiplication Project for the 1976 crop. It was recommended that sufficient funds be provided to allow production at the minimal levels suggested in the previous section. Financial assistance should be determined on the basis of cash-flow budgets rather than total cost budgets. That is, the Project should not provide funds to pay depreciation and interest charges on invested capital which do not constitute actual cash costs.

An additional infusion of operating capital may be required for the 1977-78 crop, but it should be small unless seed demand should increase significantly. There is a danger that with a pricing system which is unrelated to cost and which does not consider inflation there will be a need for continuing subsidies. The Project should not become involved in providing subsidies. If the government wants a subsidized seed program it should provide a budget. Otherwise the seed program will be inoperable at the end of the Project.

The Seed Multiplication Project should not become involved in providing revolving capital for ORD seed multiplication and distribution programs. The ORD's had

resources for their seed programs, but these funds were tied up in grain purchases for OPNACER which is now unable to buy grain from the ORD's. Given ORD budgeting procedures, there is no assurance that funds provided to finance seed production would not become absorbed in some other program.

Observations on Project Design

The original project design was much too optimistic with respect to the level and rate of growth of effective demand for improved seed. It was also unrealistic in its assumption that the seed production centers would be self supporting after one year of operation.

Original estimates were that effective demand by the end of the fifth year of the project would be 731 tons of millet, 1,256 tons of sorghum, 638 tons of corn, 368 tons of rice and 560 tons of peanuts. Sorghum, millet, corn and probably peanuts will fall far short of those levels. Rice demand may reach those levels. The need for facilities at six locations--Niangoloko, Vallee du Kou, Kamboinse, Mogtedo, Saria and Farako-Ba--to process projected seed supplies is also excessive. Rice processing facilities are already installed at Vallee du Kou, Kamdoinse, and Mogtedo. This should be more than adequate for the next five to ten years. Equipment for cleaning and grading rice, sorghum, millet and corn is installed and operating at Farako-Ba. An identical facility is being installed

near Ouagadougou by the Volta Valley Authority for its seed program. These two facilities should be more than adequate to process corn, sorghum and millet demanded for the foreseeable future. There would appear to be no need to install the processing equipment planned at Saria. This is especially true if an agreement can be worked out to process Saria seed at the Volta Valley installation, thus avoiding cost of transport to Farako-Ba. The only reason for processing equipment at Saria would be to provide capacity for the distant future, say after 1985.

The installation of peanut processing equipment at Niangoloko could be justified on the basis of present and expected volume, but its value is doubtful. Peanut seed are distributed in the shell to reduce insect damage and spoilage. Thus, the complicated grading equipment would be of limited benefit.

The anticipated seed processing center at Fada N'Gourma should be postponed until development of that market is clearer.

Major emphasis of the Project and of the National Seed Service has thus far been on production and processing of improved seed. This seems to be the least pressing problem. The capacity to produce (multiply) seed exists. What is missing is an organization and system for coordination, planning and quality control. At present there seems to be little thought being given to control of quality of seed and purity of varieties.

There is not even a standard set of grades. For example Farako-Ba grades rice seed Catagory I (best) to Catagory III (unfit for seed) while the Vallee du Kou grades rice seed Catagory III (best) to Catagory I (unfit for seed). This will cause confusion among buyers.

Likewise no one seems very concerned with the generation of multiplication. Seed processed at Farako-Ba are tagged to indicate variety, grade and year of production, but not generation. This will not encourage confidence in the Seed Service.

The second technician position on the Seed Multiplication Project should be filled by a person with experience and training in a Crop Improvement Association or similar organization. Such a person could provide much needed leadership in organizing the quality control section of the NSS.

The National Seed Service desperately needs to acquire a staff and begin training. If development of the human infrastruction is not begun soon, the Project will terminate leaving nothing but buildings and machines behind. This will not build a seed service.