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EVALUATION REPORT

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WORLD VISION MOZAMBIQUE

AGRICULTURAL RECOVERY PROGRAMME

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EVALUATION TEAM

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EXECUTIVE SUMMARY

The Agricultural Recovery Programme (ARP) was formally initiated in Mozambique in 1989 following small scale seed and tool distributions in 1986 - 1988. Since then the ARP has grown significantly in scale, sophistication and geographical spread. A developmental component was built into the programme from those early days and with the advent of peace in Mozambique the programme is now poised to develop this component as the emergency interventions diminish.

Based on this change in emphasis from emergency to development, World Vision Mozambique requested the current evaluation, with a specific focus on directions and opportunities for future action. Specific issues to be evaluated are outlined in **Figure 2.1.**; the three main areas of concern were identified as Seed and Variety Evaluation, the Informal Extension Network and Training, and Development Activities.

The Evaluation Team consisted of a Canadian agricultural economist and a British agronomist. The four week evaluation period was evenly balanced between field visits in Zambezia and Tete provinces and meetings, interviews and report writing in Maputo.

A development strategy for future activities is summarised in **Chapter 5** which identifies seven main elements for consideration. These elements are outlined below, taking into consideration that the rate of uptake of developmental aspects of the programme depends on continuation of the peace progress and access to Renamo and other remote areas, relatively favourable crop growth conditions for the coming seasons and continued donor support on a multi year basis.

Regarding the development of methodology and systems the team recommends that activities should be focused on three provinces and twelve priority districts for the immediate future. Planning, reporting and monitoring systems should be strengthened, as should partnerships with government and rural communities. Activities which are sustainable by communities should be aimed at, with planned timeframes for withdrawal of external support.

Emergency response activities, which have proved highly successful in the past, should continue on a large scale only for the coming two growing seasons. Inputs should be sourced within country where possible. The team does not encourage expansion of the seed multiplication programme, bearing in mind the limited human resources of ARP and the anticipated alleviation of the emergency situation and consequent reduction in demand for donor funded seed. Seed and tools distributions should increasingly be made on an exchange or cash sale basis.

A number of elements are identified concerning crop improvement and sustainable farming systems. The variety trial work should continue at the current level, while more work should be done on investigations of low input farming systems. To this end, collaboration with other relevant government bodies and NGOs should be improved. A formal agreement with INIA is seen as a prerequisite for further expansion in crop and farming systems research. An expansion of the propagation and distribution of cassava and sweet potato is envisaged, building on earlier success in this area. Seed multiplication under ARP control on the other hand should concentrate on more widespread and sustainable schemes at the leader farmer and community level.

Regarding extension and training, a coordinator at the national level is needed to provide leadership and a more consistent approach in the three provinces. A detailed assessment of existing experience with the formation of farmer organisations is needed before this activity is expanded. The participation of women in training and extension activities should be encouraged and closely monitored.

Other development activities such as the rehabilitation of research facilities and irrigation schemes should focus on a limited number of sites and be implemented only after close consultation with the partners involved. A consultancy with an emphasis on development of a farming systems approach is envisaged. The consultant could provide input toward the design and implementation of studies and surveys of proposed development activities.

While recognizing the problem of rural credit and marketing issues the team does not recommend direct ARP involvement, though there may be a catalytic role for ARP regarding donor actions.

Programme management will become increasingly decentralized as provincial level decision making and budgeting increases in line with an expansion in staff numbers. Counterpart government staff contracts must be carefully established so as to strengthen the relevant government departments.

Specific recommendations are outlined in **Item 5.2.**

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LIST OF ACRONYMS

ARP	Agricultural Recovery Programme (World Vision)
CFA	Agrarian Training Centre
CIMMYT	International Centre for Maize and Wheat Improvement
CPE	Provincial Commission for Emergencies
CV	Coefficient of Variation (of variety trial data)
DANIDA	Danish International Development Agency
DDA	District level Department of Agriculture
DPA	Provincial level Department of Agriculture
DPCCN	National Directorate for Prevention of Calamities
ETC	ARP Extension/Training Coordinator
FAO	Food and Agriculture Organisation
FY	Fiscal Year
GOM	Government of Mozambique
IITA	International Institute for Tropical Agriculture
INIA	National Institute for Agricultural Research
MOA	Ministry of Agriculture
MT	Metric Ton
NGO	Non-Governmental Organization
ODA	Overseas Development Assistance (U.K.)
PESU	Emergency Programme for Seeds and Tools
RENAMO	Resistencia Nacional de Mocambique
SEMOC	Mozambican Seeds Company
SNS	National Seed Service, MOA
UEM	Universidade Eduardo Mondlane
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WVM	World Vision Mozambique
WUS/IBIS	DANIDA-funded rural development project in Zambezia

CHAPTER 1. PROGRAMME BACKGROUND

1.1. Programme Origin, Purpose and Rationale

World Vision Mozambique (WVM) has been an active participant in relief efforts in Mozambique since 1984, with an increasing focus on recovery and development. WVM presently has three major programmes in Mozambique: Agricultural Recovery, Commodities and Health. The WVM Agricultural Recovery Programme (ARP) is the focus of the present evaluation.

WVM agricultural relief activities began in Tete and Zambezia Provinces in 1986. The initial objective was to re-establish food security for families displaced by the war. The original seeds and tools distribution activity has grown over time due to increasing numbers of families fleeing war, the severe drought of 1990-92 and, more recently, the ability to reach families in RENAMO regions of the country following signing of the long-awaited Peace Accord in October 1992: 25,000 Ag-Paks in 87/88, 128,000 in 92/93 and a projected 200,000 for 93/94.

At the same time this emergency activity has evolved over time to support recovery and development in the agricultural sector, adding activities such as testing and selection of appropriate food crop varieties for inclusion in the Ag-Paks, extension and training, and small-scale rehabilitation activities. Despite the large emergency component, which will continue at a high level for 2-3 years as refugees return from neighbouring countries, the programme is increasingly focusing on a longer-term development goal of promoting sustainable productivity increases in the family sector. The Evaluation Team has been requested to provide WVM with input for planning this development thrust.

1.2. The Present Socio-Political Setting

The Peace Accord and relatively good rains encouraged large movements of people within Mozambique in 1992 as thousands of hungry families left RENAMO-controlled areas and refugees returned spontaneously to border regions. If the peace holds (and this document assumes that it will), 1993 will witness massive movements of refugees back to Mozambique and the return of equally large numbers of internally displaced families to their homelands. In the northern part of Mozambique many farm families with access to adequate land will become food self-sufficient in 1993 and have some crops to sell, but the absence of traders and road access may thwart their market plans. Despite government efforts and bilateral/multilateral donor support, the small-scale farming sector (estimated to represent 89% of the rural population in the country) will be largely left to fend for itself in the foreseeable future.

This creates an expanding role for NGOs such as World Vision to address the persisting emergency situation, on the one hand, and the need for development support to the family farm sector on the other. In order for this effort to be sustainable, however, the additional challenge of simultaneously strengthening government and local private structures to assume key activities when the NGO programme terminates must be tackled and achieved.

CHAPTER 2. EVALUATION OBJECTIVE AND METHODOLOGY

2.1. Why The Evaluation

The WVM emergency Ag-Pak programme was evaluated in 1989, the same year the Agricultural Recovery Programme (ARP) was formally started. The ARP was first evaluated in March/April 1992 by a team of evaluators with strong crop improvement backgrounds (Buhr and Sperling). The Peace Accord in late 1992 has dramatically improved the prospects of working with the family sector on longer-range agricultural recovery and development issues. Many rural communities are now accessible for the first time in more than a decade.

Based on this fundamental change, WVM requested the present evaluation of past ARP activities with a particular focus on directions and opportunities for future activities. Terms of Reference (TORs) for the evaluation are given in **Appendix A.**

2.2. Evaluation Issues

The evaluation issues identified in the TORs are presented in **Figure 2.1.** A number of the Seed and Variety evaluation issues are similar to those in the 1992 Evaluation TORs, indicating that a review of these issues under conditions of peace was necessary. Issues in the area of Extension and Training, and Development, clearly reflect the new opportunities that peace affords for longer-term commitment on the part of WVM to agricultural recovery and development.

These evaluation issues are partly addressed in **Chapter 3** of the report, where past and present activities are described and assessed, but many are also referred to in **Chapter 4**, where aspects of a future strategy for the ARP are developed. A number of new issues/areas of analysis emerged as the Evaluation Team defined its scope of work with ARP staff. These include: programme management and staffing, the marketing bottleneck and the institutional interface between the Programme, government and other institutions.

2.3. Evaluation Methodology

Evaluation information-gathering consisted of:

- Review of WVM and other relevant documents (refer to **Documents Consulted**);
- Interviews with WVM staff, government staff at the national and provincial level, community leaders and farmers (both men and women);
- Site visits to communities where WVM has seed distribution and extension activities, WVM variety trials, on-farm variety trials and possible future ARP activity locations, and;
- Interviews with selected donor representatives in Maputo and visits to donor funded activities in support of agriculture in the field.

FIGURE 2.1. EVALUATION ISSUES

1. Seed and Variety Evaluation

1.1. What has been the fate (and why) of germ plasm distributed to dislocated farmers through the Ag-Pak program?
1.2. Should the program continue to import seed, and if so, in which contexts?
1.3. How should new genetic selections be made available to a large number of beneficiaries over a wide geographical area?
1.4. What are the best uses of ARP resources in that process and what is needed which is not presently part of the program?
1.5. What are the expected benefits to farmers of developments in this area?
1.6. Is this a favourable investment of project resources on a cost-benefit basis or are there others which are more favourable?
1.7. What are the other areas of potential high impact intervention (eg. the use of fertilizer) and in which circumstances are these interventions justified?

2. Informal Extension Network and Training

2.1. What procedure is likely to be most effective in transferring research results to the family sector?
2.2. How can seed improvement activities be linked to the national priority of training and extension?
2.3. What should and can be done to promote a sustainable agriculture and preserve the environment?
2.4. Should the program hire a trainer to aid in the development of an extension network?
2.5. What levels of training will have the greatest short term impact?
2.6. Are long term training requirements different? If so, different in what manner? If short and long term priorities are different, which should receive priority?

3. Development Activities

3.1. Now that peace is at hand, are the current ongoing notions of development still the most appropriate?
3.2. What new issues have to be defined and addressed to have the greatest probable impact on development in the next 3 to 5 years?
3.3. Should seed production/distribution be used as a development tool? If so, what techniques would be most appropriate?
3.4. Does the initiation and support of farmer NGOs in selected high potential areas fit within the scope of present activities and complement these activities?
3.5. How do all of these activities fit into the overall picture of agricultural recuperation in the post war period and what are the social, marketing and economic implications?

Information from multiple sources was compared where possible to strengthen the quality of data gathered. Interviews with local farmers, especially women, was hampered somewhat by language barriers. While both consultants could speak Portuguese, most women could only speak the local language, requiring mediation through an interpreter which resulted in somewhat uneven results. With the exception of local leaders, many men also have a limited mastery of Portuguese, serving to highlight the constraints for local community development and extension work, as well as the limitations of using written materials.

The evaluation was carried out in Zambezia and Tete Provinces, in addition to contacts in Maputo. The Evaluation Team was unable to visit Nampula Province, where the ARP started activities in 1992, due to a brief illness of a team member. The evaluation itinerary and list of persons contacted is presented as **Appendix B.**

The Evaluation Team consisted of a British agronomist and a Canadian agricultural economist, both with significant prior experience in Mozambique. The third consultant referred to in the TORs was not contracted. In addition to the evaluation activity described in the TORs, the British agronomist was also tasked with conducting one week of separate fieldwork and preparing a special report for UK-ODA. The Team was accompanied by WVM staff and frequently by one or more local government officials. This provided an additional level of insight that was useful for the Team, although interviews with local farmers were most productive when conducted in small groups (1-2 persons external to the community).

The Team conducted field visits during two weeks, with the remainder of time spent on interviews and report writing in Maputo. The evaluation report was submitted to WVM before the consultants returned to their respective countries of origin.

CHAPTER 3. DESCRIPTION AND ASSESSMENT OF THE PRESENT PROGRAMME

3.1. Past Evolution and Present Programme Strategy

A statistical summary of ARP activities for the 1992/93 season, along with an estimate of seeds and tools distribution activities for 1993/94, is presented in **Table 3.1.** A breakdown of crop improvement and extension activities by district, for the 1992/93 season, is given in **Table 3.2.**

The ARP has chosen to operate primarily in the Zambezia river valley provinces (Zambezia and Tete, and parts of Manica, Sofala and Gaza provinces), where the flight of refugees to Malawi has been greatest and insecurity caused by RENAMO attacks a persistent destabilizing factor. (Activities were also started in Nampula Province in 1992). In order to avoid famine and provide seeds and tools when they were needed for planting, the WVM agricultural programme has been structured for quick decisions, fast response times and efficient logistics. This has been achieved to a remarkable degree, as was evident in 1992/93 when Ag-Pak distributions tripled relative to the year before.

Equally remarkable has been the capacity of the ARP programme to build a developmental perspective into what began as a relief activity, despite the demanding nature of the latter activity. Dissatisfaction with the performance of some of the seed imported from neighbouring countries for the Ag-Paks and the lack of a government variety testing system in the region led WVM to initiate replicated crop variety testing. On-farm trials were a natural outgrowth of this testing activity, resulting in 677 farmers involved in these in 1992/93. Consumer preference testing of varieties is closely associated with on-farm trials.

Extension activities to support food production through the efficient use of Ag- and Veg-Pak seeds became a parallel but closely integrated activity, to assist families to attain food self-sufficiency. Likewise the destruction and abandonment of infrastructure in the sector led the ARP to get involved in building and irrigation system rehabilitation in selected sites and on a modest scale. Some small-scale seed multiplication has been achieved.

These various activities are briefly described and assessed below. It is now recognized by WVM that while all of these activities are necessary for agricultural rehabilitation, a process of internal strategy reformulation based primarily on development rather than emergency relief is now necessary. The Evaluation Team provides options in this direction in **Chapters 4 and 5.**

TABLE 3.1 SUMMARY FACT SHEET OF ARP ACTIVITIES

INTERVENTIONS IN PROGRESS - NUMBER OF BENEFICIARY FAMILIES* - SEASON 1992/93

TYPE OF INTERVENTION	TETE/MANICA	SOFALA	ZAMB/GAZA	NAMPULA	TOTAL (**)
AG-PAKS/SEEDS	69,596	13,853	30,192	13,000	128,641 (95)
AG-PAKS/SEEDS - MT	1,049	168	372	171	1,759
HOES - (1-2/FAMILY)	20,364	13,580	11,900	16,441	62,285 (60)
MACHETES	6,775	4,000	3,880	5,590	20,245 (40)
SWEET POTATO VINES	121	-	680	70	871 (85)
EXTENSIONIST TRAINING	21	2	23	10	56 (10)
LEADER FARMER NETWORK	127	28	290	40	485 (50)
FARMERS AT FIELD DAYS	4,020	210	4,050	200	8,480 (60)

* UNLESS OTHERWISE INDICATED (**) GUESSTIMATED % PARTICIPATION BY WOMEN

INTERVENTIONS IN PROGRESS - NUMBERS OF FIELD TRIALS - SEASON 1992/93

TYPE OF FIELD TRIAL	TETE/MANICA	SOFALA	ZAMBEZIA	NAMPULA	TOTAL
ON-STATION REPLICATED	9	-	10	-	19
OFF-STATION REPLICATED	14	-	27	11	52
ON-FARM PLOTS	94	38	425	120	677

OTHER PERFORMANCE INDICATORS - SUPPORT FOR RENAMO AREAS

TYPE OF INDICATOR	TETE/MANICA	SOFALA	ZAMBEZIA	NAMPULA	OVERALL
% OF ALL DISTRICTS	40	100	55	50	53

PLANNED INTERVENTIONS - NUMBERS OF BENEFICIARY FAMILIES - SEASON 1993/94

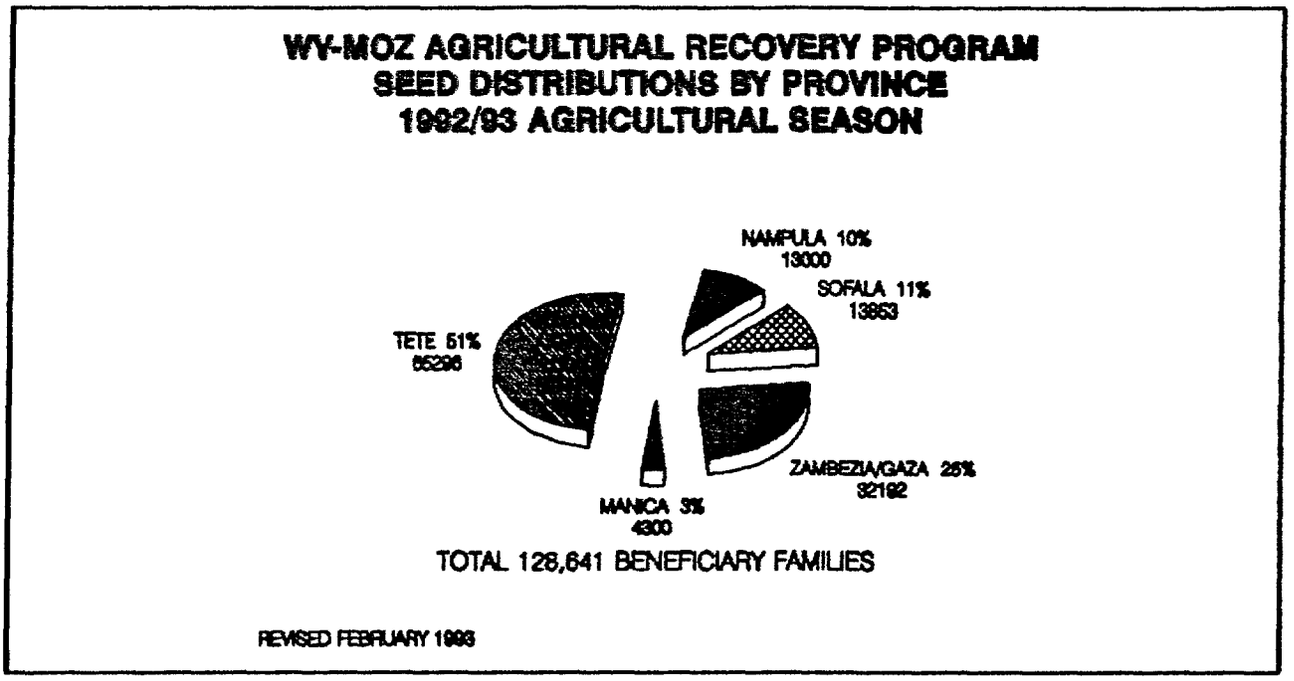
TYPE OF INTERVENTION	TETE/MANICA	SOFALA	ZAMBEZIA	NAMPULA	TOTAL
VEG-PAKS 1993	40,200	28,000	24,600	17,000	110,000
HOES - (1-2/FAMILY)	65,000	35,000	25,000	20,000	140,000
AG-PAKS 1993/94	120,000	30,000	35,000	15,000	200,000

SOURCE: ARP (REVISED MARCH, 1993).

3.2. Emergency Response (Seed Packs and Tools)

From relatively modest beginnings in 1986/87, when 6000 families in Tete and Manica were assisted, the seed packs and tools programme has grown in scale and sophistication to the current 1992/93 season when more than 128,000 families are being assisted in 6 Provinces. The budget for FY 1994 is $7.86m, in support of 200,000 families. Distributions by province are shown in **Figure 3.1** for 1992/93.

FIGURE 3.1.



For further information regarding past and present seed pack and tools distributions, refer to **Appendix C.1.**

The total weight of seed distributed in 1992/93 was 1,700 MT - more than 10% of the national emergency seed requirement for that year. These bare statistics represent a logistics operation on a grand scale; for 1992/93 more than one million individual lots of seed were packaged into individual sacks weighing between 10g and 20kg. From the reception points at Quelimane, Nampula, Beira and Tete the packs entered the WVM logistics apparatus by which it was transported by a range of carriers to 29 districts.

Following the signing of the peace accord WVM has been quick to respond to the needs of farming families within Renamo areas and currently almost 50% of available Veg-Paks and tools are being distributed in these areas. The strategy involves an initial assessment by team members followed by distribution of seed and/or tools on the second visit provided that access is possible.

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Given the remoteness of many of the Renamo held areas as well as the dangers of mined access roads (or those suspected of being mined) airlifts are frequently necessary. Airlift costs should decline dramatically provided that de-mining activities, and road/bridge repairs, are effected.

Care has been taken in the gender awareness aspects of the seed and tools programme. Veg-Pak distributions were witnessed by the Evaluation Team which, together with inspection of distribution lists confirmed that women received the majority of seed packs. The tools provided are hoes and machetes. Both are of appropriate types, according to responses from interviews.

Hoes, generally the more useful of the two tools, cost about 20-25% of the cost of an Ag-Pak and especially in areas of relatively abundant seed supply are a highly cost effective input. More than 62,000 hoes were distributed in 1992/93; more than twice this number is planned for 1993/94, an initiative supported by the evaluators.

3.3 Crop Improvement and Sustainable Farming Systems

Currently DDA/WVM have 8 trial sites where fully replicated yield trials are conducted, for the assessment of the relative yield and other characteristics of rice, maize, sorghum, millet, cowpea, peanut, pigeon pea, beans, cassava and sweet potato. The distribution of these trial sites is given in **Table 3.3.**

Siting of trial locations is coordinated to some extent through INIA, with reference to the major agro-ecological zones in the project area - refer to **Appendices D and E.** Source of plant material is largely INIA with whom WVM maintains a close, but not exclusive, working relationship (refer to Section 4.3.). Coordination of this major research effort is effected by the ARP project manager with assistance from two part time technical associates at the national level and four provincial level coordinators. Supporting staff include two agronomists who work full time on field trials, 25 technicians and a host of temporary casual labour.

Data accumulated from the research programme involves major effort if it is to be consolidated into a usable form which can be of benefit to INIA, SEMOC, NGOs and other agencies concerned with the dissemination of improved plant material. There is a high standard of field work in the trial sites visited. The initial years of work have resulted in the identification of several varieties with a high yield potential compared to local/regional varieties. Notable examples are Matuba maize, Namuesse cowpea (local Zambezia material), Natal Common peanut, Chokwe and WSV 387 sorghum, TIS 2532 sweet potato and Mulaleia cassava.

Improved yield alone is not sufficient basis on which to recommend inclusion of a variety for multiplication and eventual distribution. Characteristics such as earliness ("short cycle"), disease and insect resistance, height, palatability and pounding and storage qualities are often of equal or greater importance to the farmer. For these reasons, as well as to gain insights as to a variety's performance under normal growing conditions, new and promising varieties are tested on "on farm" trials.

This year 485 "leader" or "contact" farmers are participating in this scheme with 677 on-farm trial plots, the purpose of which is to gain further information on acceptability by farmers and some additional yield data. The intention is also to use

Table 3.3 Replicated Variety Trial Sites, 1992/93, 1993/94.

Location	Rice	Maize	Sorghum	Cowpea	Peanut	P.Bean	Cassava	Millet	S.Potato
Zambezia									
Quel./Nicoadala	*	*	*	*	*		*	*	*
Chinde	*								*
(Mocuba)		*	*	*	*	*	*		*
Gurue	*	*	*	*	*	*	*		*
Ruasse		*		*		*			*
Nampula									
(Agronomic Post)		*	*	*	*		*	*	*
Murrupula	*	*		*	*		*		*
(Mutuali)		*		*		*	*		*
Namapa		*		*	*		*		*
Tete									
Field Station		*	*	*	*		*	*	*
Changara		*	*	*	*			*	*
(Chidzolomondo)		*		*	*	*			*
(Tsangano)		*				*			
Niassa									
(Lichinga)		*				*			*
Total Sites	4	13	6	11	9	7	8	4	12

(Planned sites for 1993/94)

Source: ARP

these trials as a means for the extension workers to spread awareness regarding distinction between varieties, and to use them as a spontaneous form of dissemination of "improved" varieties (as perceived by leader farmers' neighbours). The evaluators were not able to conclude as to the effectiveness or value of the above and it is recommended that World Vision monitors more closely the rate of voluntary uptake of new varieties so as to gain a clearer understanding of the value of these observation trials. This does not imply a criticism - costs are minimal while potential benefits are high - but the overall benefit of this work is not easy to assess under the current monitoring system.

3.4. "Farm Family First" Extension Network

As described in Section 3.1, the extension network grew out of an early recognition of the need to assist families requiring emergency assistance to fully exploit the production potential of the seed of improved food crop varieties being distributed to them. Limited staffing did not permit intensive contact with each family, so a network of Leader Farmers (also called Pioneer Farmers in some documents) was created. Data in **Table 3.2** show a total of 485 leader farmers in the ARP programme, of whom 135 or 46% in Zambezia are reported to be women. Observations in the field suggest that the proportion of women leader farmers is somewhat lower overall (25-30%).

In most cases these leader farmers were identified with the help of local DPA/DDA staff and include some of the Contact Farmers the government extension system has attempted to work through. In Tete these leader farmers were described as being farmers with somewhat more resources and initiative than the average. In Nampula, on the other hand, it was reported that the network was comprised of poorer farmers. In fact, the concept of leader farmer is not defined uniformly by all ARP staff, the system is still not fully consolidated (some extensionists do not seem totally familiar with the concept or how it is to work) and statistics in this area are scarce, leading to estimates of participants in many cases.[1]

The plan is for leader farmers to spread knowledge of improved varieties and appropriate cultural practices to a set of farm families within her/his area of influence - estimated to vary from 10 to 20 families by WVM - through field days and other contacts. While the extension concept behind this plan appears valid, the degree to which this spread effect is taking place was observed to be quite uneven at present. **Sufficient experience with this system now exists for WVM to conduct an in-depth assessment, on a sample basis, and revise the system as necessary based on these findings and needs expressed by farmers.**

The Leader Farmer system is served by a network of technicians employed by WVM (12 of whom work partially or totally in extension) and 56 other government extensionists/ technicians who receive some support from WVM and who spend, on average, one-third of their time on ARP activities.[2] Through this arrangement WVM seeks to work in close cooperation with the provincial (DPA) and district (DDA) Department of Agriculture at both operational and staffing levels. The inability of the government to provide satisfactory working conditions for its staff results in the more qualified and motivated technicians gravitating to WVM or other expatriate organizations for

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[1] Data on Leader Farmers and Number of Farmers Involved in the programme by district (Table 3.2) are Best Estimates prepared on short notice by the Programme Manager at the request of the Evaluation Team. Estimates of numbers of female leader farmers are only available for Zambezia province.

[2] In some cases the extensionist has been seconded by the government to WVM and receives full support from the organization.

fulltime employment, however, strengthening activities of these organizations but leaving the government unable to participate as a full partner in either emergency or development activities.

The 56 government extensionists (approximately 10% of whom are women) have received a variety of training by WVM, as have the leader farmers, but systematic evaluation of or reporting on this activity is not presently taking place. The February 1993 ARP Monthly Report does make reference to training courses on crop production system practises in 5 districts of Tete Province attended by 89 leader farmers and extensionists. The fact that this training is taking place at the district level, close to and in many cases in farmers' fields, is encouraging from a development perspective.

This training activity can be strengthened by developing measurable training benchmarks and an evaluation framework to measure progress towards these. It is also necessary to progressively increase the proportion of women, both as extensionistas and leader farmers, in ARP activities. In addition, all extension staff (WVM and government) should receive training in gender sensitivity so as to better anticipate the needs and opportunities for women in programme activities. Reporting on extension activities, including training, should be carried out systematically and include a statistical breakdown by gender.

3.5. Other Development Initiatives

In addition to the broad scope of activities described above, the ARP has also been active in the physical rehabilitation (and in some cases, new construction) of buildings and irrigation systems. Rehabilitation of buildings has been most common at the replicated variety trial sites, especially the field stations of Chuabo Dembe (Quelimane) and Casa Bamba (Tete City). Small scale irrigation systems have also been built/rehabilitated at a number of variety trial sites to ensure that drought does not destroy the trials (e.g. Chuabo Dembe, Casa Bamba, Nicoadala, Gurue) and are being considered at the following trial and/or seed multiplication sites: Zambezia - Quelimane, Mocuba and Ruasse; Nampula - Murrupula, Namapa and Mutuali; Tete - Fonte Boa (Tsangano).

Support for construction and/or rehabilitation of existing irrigation systems has also taken place as part of the general effort to increase production and productivity in the family sector. Irrigation activities with a focus on family sector production include:

Locality/District/Province		Area (ha)	No. of families	Type of Irrigation	Investment (US$)
Active:					
1. Sombo	Chinde Zambezia	246	500	Tidal river water	$300,000
2. Capanga	Moatize Tete	20	300	Diesel motor/pump	30,000
Planned for Implementation in 1993:					
3. Cancune	Changara Tete	50	100	Diesel motor/pump	30-50,000
4. Chidzolomondo	Macanga Tete	20-30	100	Gravity fed	Food-for-work
5. Mutarara/Sena/Nhacafula		-	300-400	150 Hand pumps	30-35,000

The promotion of irrigation projects is an attractive mechanism for expanding production in upland areas with a prolonged dry season or, as in Sombo, where local conditions (tidal river water) permit irrigation of a large rice-producing area with

a modest investment. Given the availability of river water in the Zambezia river basin, a number of opportunities exist for relatively simple and inexpensive irrigation projects. Of particular interest is WVM's planned experience with simple hand pumps for small-scale vegetable production in the Mutarara/Sena/Nhacafula region.

Irrigation projects using diesel motor/pumps, as at Capanga and Cancune (planned), might appear to offer greater impact, but also offer far greater challenges in terms of sustainability - both social and economic. It is the Team's observation that in the case of the project in Cancune there has been too little discussion and planning with the proposed beneficiaries before taking decisions on system design and equipment purchase. **It is recommended that WVM not plan any future irrigation projects before making the above projects fully operational and before assessing all aspects carefully.** The organizational strength of water users and their commitment to use and maintenance of the system, the economics of production and use/marketing of produce should receive special attention in such an assessment.

The large Sombo irrigation project (500 ha) is more problematic and requires more immediate action. The Evaluation Team concludes that WVM controls too few of the many variables leading to the disappointing performance of this project (less than one-half of area planted this year) to justify continued investment there. On the other hand, the entire project could easily collapse with the sudden withdrawal of WVM resources (cash, food-for-work, government staff salaries). **It is suggested that WVM advise the government of its intention to progressively withdraw from this project over the next two years and assist government, if requested, in preparing a workable development plan for the project and in identifying government, private and/or donor funding for it.**

3.6. Programme Management and Staffing

3.6.1. Programme Management

The management and decision-making structure of the ARP directly reflects the large emergency component of activities to date. In order to respond quickly and decisively to the emergency, much of the planning, decision-making, monitoring and reporting has been assumed by the Programme Manager who, until recently, lived in Quelimane and accumulated the function of provincial ARP coordinator in Zambezia. Staffing has recently been strengthened, permitting the manager to move to Maputo. This will permit the manager to now focus on strategic annual and multi-year planning, global programme monitoring and decentralization of authority and responsibility within the programme. Needed strengthening of communication with donors, other aid agencies and key government partners (INIA, PESU, MOA) will now be possible.

The new WVM management structure for the ARP is presented in **Figure 3.2.** The use of "technical associates" (part-time consultants) is a creative way of sourcing short or longer-term specialized expertise for ARP. The design of Figure 3.2 suggests that these consultants occupy a position in the management structure closer to the manager than do the provincial coordinators, a situation which could become problematic for programme manager/provincial coordinator relationships in the future.

Indication of how the management staff in Figure 3.2 interface with government, other institutions and donors is shown in **Figure 3.3.** These institutional contacts are made primarily by the Programme Manager and the Country Director.

FIGURE 3.2 MANAGEMENT STRUCTURE FOR THE AGRICULTURAL RECOVERY PROGRAM

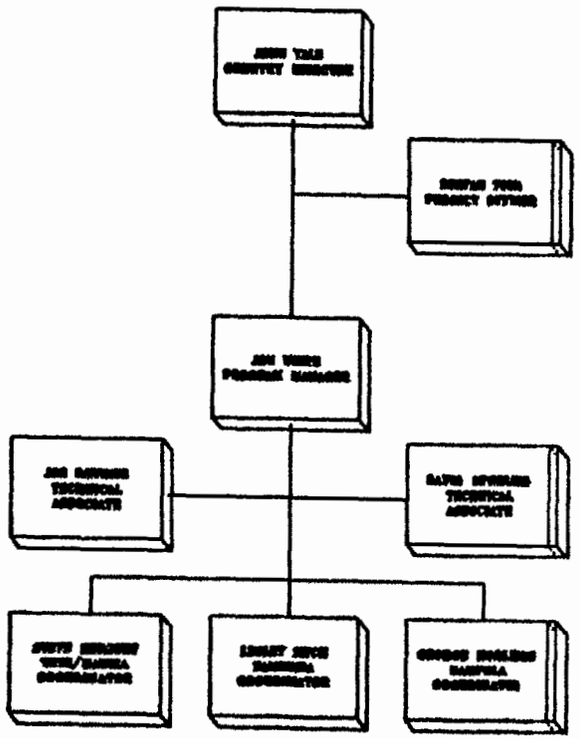

FIGURE 3.3

AGRICULTURAL RECOVERY PROGRAM: INSTITUTIONAL AND DONOR INTERFACE

TYPE OF INTERFACE	COUNTRY DIRECTOR PROGRAM OFFICER	PROGRAM MANAGER TECH. ASSOCIATES	PROVINCIAL COORDINATORS
WV SUPPORT OFFICES	*	(*)	
DONOR REPRESENTATIVES	*	*	
NGO's/UN/RENAMO MAPUTO	*	*	
NGO's/UN/RENAMO PROVINCES		(*)	*
CENTRAL GOVERNMENT	*		
PROVINCIAL GOVERNMENT	*	*	(*)
MIN OF AGRICULTURE		*	
INIA		*	
PROVINCIAL DEPT. AGRIC.		(*)	*
DISTRICT DEPT. AGRIC.			*
FIELD VISITS	*	*	*

* = HIGH LEVEL OF INVOLVEMENT

(*) = LOWER LEVEL OF INVOLVEMENT

SOURCE: ARP

3.6.2. Staffing

The ARP staffing structure in given in **Appendix F.** There are present plans for 13 full-time staff above the technician level and two part-time technical associates. Of the 12 full-time positions filled, 4 are Mozambicans and a total of 3 are women, two of whom were contracted recently. Two of the 5 senior staff members and both technical associates are specialized in plant breeding, reflecting ARP's effort at developing a quality variety evaluation system. All 23 ARP technicians are Mozambican, 2 of whom are women. An additional 56 government technicians work part-time on ARP activities, 10% of whom are women. The Project Manager expressed his interest in contracting more female staff, and recent placements have reflected this.

CHAPTER 4. PROPOSED FUTURE STRATEGY FOR THE ARP

4.1. Assumptions, Timeframe and Methodology

4.1.1. Assumptions

The ARP strategy proposed below is based on the following assumptions:

1.No resurgence of war in the ARP region;

2. No major natural disasters such as the recent widespread drought, although crop production variability in normally low-rainfall areas can be expected;

3. The return of refugees from Malawi and other neighbouring countries will occur largely during 1993-95, with WVM involved in assisting in the provision of basic necessities including seeds and tools (ARP);

4. Returning refugees and internally displaced persons in the ARP region will be able to return to their homelands or find other suitable areas in which to live permanently within the same timeframe, and;

5. WVM will be successful in convincing several major donors of the validity of multi-year funding to carry out the proposed rural recovery/development programme in the ARP region.

Based on the above assumptions, the Emergency Component of the ARP (emergency seeds and tools distribution) will reach an alltime high in 1993/94 (200,000 units) and decrease thereafter, effectively terminating by the end of calendar year 1995 (three more annual AG-Pak distributions). Rural recovery/development activities will be consolidated and strengthened over this same period, comprising the principal ARP activity in WVM FY 1995-96 and beyond. A residual emergency response capacity may be maintained after this date if judged necessary.

4.1.2. Timeframes

The recovery/development programme will have two phases. Up to the end of WVM FY 1993/94 development activities will be combined with a major effort of geographic consolidation, planning, methodology strengthening, training and the securing of multi-year funding. Most ARP staff will simultaneously be involved in the emergency dimension of the programme. It is assumed that the three-year period 1994/95-1996/97 will find the ARP focused primarily on development. WVM should seek staggered three-year funding commitments, some starting in FY 1993/94 (October 1993), to ensure continuity over time.

4.1.3. Programme Methodology

The proposed rural recovery/development activities will require significant changes in ARP staffing, methodology and systems. A number of these changes are identified below. In general, the required changes imply:

- Strengthening of planning, reporting and monitoring systems within the ARP
- Developing strong partnerships with government and rural communities
- Increased sharing of planning, decision-making and monitoring/evaluation responsibilities with partners

- Requiring that rural communities increasingly contribute to program costs based on level of benefit and ability to pay
- A focus on activities with self-sustainable potential and a planned timeframe for phase-out of ARP inputs.

Geographic Focus. Another important dimension of programme methodology is the decision of where to focus resources. Emergency needs have led ARP to operate in as many as six provinces, although Zambezia, Tete and (recently) Nampula are considered the target area. While WVM can effectively cover a large area with one-time emergency seeds and tools distribution, the geographic focus of a recovery/development programme must be quite different. **The Team recommends that, until sufficient staff is in place, ARP limit its development activities to three target provinces and within each province follow through on its plan to identify and focus on four priority districts in each.**

The selection of priority districts is still in process and should not be finalized without full discussions with government. The list is presently as follows:

Zambezia	**Tete**	**Nampula**
Chinde	Cahora Bassa or Chiuta	Meconta
Gurue	Changara	Murrupula
Mocuba	Macanga	Malema (Mutuali)
Nicoadala	Tsangano	Namapa

ARP recovery/development activity is incipient in several of these districts and requires restructuring and strengthening in all. It is recognized that the ARP will work with selected key communities in each district, rather than attempting blanket coverage of the whole area. **Present activities in other provinces/districts should be phased out or substantially reduced over the next 12-18 months.**

4.2. Emergency Response Activities

UNHCR has estimated that 877,000 refugees (primarily in Malawi) originated in Tete and Zambezia provinces where WVM in the only NGO with proven capability to deliver emergency support on a large scale using Mozambican staff with a knowledge of the local situation. On the other hand, no one can accurately estimate the numbers of refugees that will return in 1993. UNHCR is choosing to permit the return on a spontaneous basis (rather than an organized large-scale repatriation) due to the inability to successfully transport the large numbers involved over the present road system. Support in the form of food, seeds and tools etc. is to be provided on the Mozambican side of the border to assist (and to attract) returnees.

This plan for a gradual, spontaneous return could go sour rapidly if donors decide to cut funding for refugees remaining in host countries (as EEC is rumoured to be doing in Malawi) or if host governments start pushing refugees across the border. There appears to be inadequate coordination between the major food aid donors and UNHCR in Malawi and their opposite numbers in Mozambique. Planning for both food aid and agricultural assistance required for returnees to Mozambique for the coming months is currently on a guesstimate basis which can only lead either to an oversupply of food or to inadequate food and/or agricultural inputs being available. More information is required from Malawi regarding refugee intentions, regulation of food supplies and government policies.

The World Vision Commodities Programme is seeking funds for local purchases of grain and beans, an activity which deserves increased donor support.

In addition to their support of returnees WVM plans to provide Ag-Paks (and food) to displaced people returning to their home areas both in Renamo and government controlled areas. Again, the total numbers involved are not clear, though WVM has the capacity - and is seeking funding - for the delivery of Ag-Paks to 200,000 families for the 1993/94 season. Despite a fair to good harvest for most areas compared to 1991/92, current predictions are for a total food production of only 3.7 million MT compared to last year's 3.2 million MT. This would leave the country with a 1.3 million MT shortfall. The need for a continued large scale emergency response for the coming 12 months is clear. Assuming an improved situation for the 1994/95 season, WVM can plan for a modest reduction in Ag-Pak deliveries.

Regarding sources of seed and tools, the following observations are made. A proportion of purchased seed not available elsewhere should come from SEMOC, as a stimulant to the Mozambican economy; given previous experience with high prices and delivery delays no more than 15-20% of total seed should be sourced in this way. Forward contracts for varieties such as Chokwe sorghum can be placed with SEMOC for 1994/95 deliveries (see Item 4.3.3. for discussion of seed supply).

Shortage of tools will be an increasingly large constraint to production in the coming years as both harvests (providing home-grown seed) and available land become relatively abundant. WVM may wish to approach manufacturers of tools (in China and elsewhere) for bulk orders at a reduced CIF cost; combined orders with other NGOs or UN agencies may be worthwhile. The FAO/WFP mission debrief of April 2nd 1993 identified the need for 23 million tools.

4.3. Crop Improvement and Sustainable Farming Systems

Before an analysis of the four main components of this sector of the ARP, some discussion of the cost/benefit of distribution of improved seed is interesting. For further discussion of this topic, refer to Item 4.3.3. "Seed Multiplication and Distribution".

The total budget for the 1992/93 ARP was $3.2 million, of which approximately $2.88 million was directly attributable to seed pack costs (total costs minus an estimated 10% costs attributable to research and development, irrigation and rehabilitation). The cost of purchase and distribution of seed packs (Ag-Pak + Veg-Pak + tools) per family supported (128,000 in total) in that year was $22.50.

Assuming an average food production per seed pack (Ag-Pak + Veg-Pak + tools) of 700kg, this indicates a cost of a little over three US cents per kg of food produced. Even allowing for gross oversimplifications in the above analysis, seed distributions appear to be highly effective on a cost basis alone, aside from a range of other benefits when compared to free food handouts. Although not current WVM policy, a similar analysis could be made for locally produced and purchased "seed" grain.

The purchase of locally produced grain for distribution as seed, while not recommended at this stage should be borne in mind by WVM management particularly for self-pollinated and bulky (expensive to transport) crops such as cowpeas. The benefits of low purchase and transport costs should be weighed against the disadvantages of poorer performance and possible lower germination rates - as well as packaging problems - compared to imported improved seed.

Estimations of costs to WVM donors for in-country seed increases/packaging /transport under their supervision must be prepared before final decisions regarding ARP level of involvement in this area can be made. Detailed budgets covering each activity should be drawn up to allow proper management decisions on the advisability of an increased effort regarding seed increase.

Some minor improvements towards efficiency of the programme may be possible through purchase contracts; negotiations for discounts from seed purchasers for bulk purchases/early calls for quotations and early first payment, a more active investigation of Malawi seed exporters, and contracts made directly with tool manufacturers (in China and elsewhere) are recommended.

4.3.1. Variety Evaluation

The relationship developed with INIA is a crucial factor in WVM's future involvement with variety trials/evaluation. The initiative for siting of trials should come from INIA, with WVM in a supportive partnership role. With regard to the sustainability of variety testing WVM should be preparing for the time when INIA, in partnership with DPA/DDA, can take on full control of these operations. Close collaboration is also required with both FAO and UNDP who are increasing their support of INIA (UNDP/GOM. National Family Sector Agricultural Development Programme (Pre-Programme), 1993-95. Maputo, March 1993).

WVM should become active in support of this programme; they are well placed to provide information from the provincial, district and local level regarding farming systems, agricultural data and land use mapping as well as variety and other trials data. Both DANIDA and SEMOC should be encouraged to play a more active role in WVM's variety evaluation; they are valuable sources of improved plant material and trials data. They could even be encouraged to fund part of WVM's future research efforts.

Given the policy of the ARP to cooperate closely with INIA and the MOA, it is essential that all seed or plant material be imported only with prior approval of government.

Variety evaluation has resulted in the identification of some impressive varieties with major yield advances over local varieties (Section 3.3). The value of this work is undisputed and great strides have been made. However, dramatic yield improvements will become increasingly elusive as time progresses and all potentially useful and available varieties are tested. In other words, the advances made in variety evaluation are subject to diminishing marginal returns. Future trial work should tend to concentrate more on farming systems investigations (seed rates/plant population, fertiliser response, weeding etc. referred to in Item 4.3.2.) with a corresponding reduction in emphasis on variety evaluation.

In order to properly assess the impact of the distribution of improved maize and sorghum varieties, **the Team recommends that ARP establish observation areas to measure the impact of cross-pollination on regional food crop productivity.**

The leader farmer network, through the existing extension workers, can be used with increasing effect for variety evaluation "on farm". This approach becomes increasingly relevant as the emergency situation diminishes together with the dissemination of improved varieties through Ag-Pak distributions. The 1992 evaluation suggested that two promising Brazilian cowpea varieties, Pitiuba and Serido, should be included in trials.

Locations of trial sites are described in **Table 3.2**, Section 3.3 and **Appendix E.**

4.3.2. Farm Management Practices

As discussed above, investigations of farming systems/management should receive increased attention from DPA/WVM research staff. The UNDP Pre-Programme of March 1993 states that the accumulation of information regarding farming systems will be the

basis of their programme. The ARP has long recognized the importance of farming systems research and is well situated to assist in the collection of data. The Team recommends that the ARP contract a social anthropologist/farming systems specialist as a consultant to assist in the design of surveys and studies in this area (refer to Appendix H).

Having successfully achieved large increases in average yields through distribution of improved varieties, comparable yield increases might be achieved through fertiliser applications. Inadequate research data on fertiliser response under the variable climatic and soil conditions in the project area does not allow for firm recommendations at this stage. Nevertheless it is recommended that WVM actively pursues all available data, in conjunction with INIA, MOA, UEM, DANIDA and others while simultaneously conducting fertiliser trials on the existing trial stations.

Post harvest storage loss is another area of investigation which deserves attention. The problem should be quantified, possibly by surveys conducted through the extension network, before firm recommendations can be made.

Plant population (plant spacing) has long been recognized as a major limitation to yield in Mozambique, and elsewhere. Farmers invariably plant far too much seed per unit area and per station. While the ARP has begun work on this issue, the message regarding seed rate, number of seeds per station and plant spacing must be repeated, and it will take a long time to bring about change. Extension workers should be made more aware of the value of correct plant spacings and encouraged to pass on the message; distribution days are an ideal opportunity to talk with large numbers of farmers simultaneously.

The **biological control** of the cassava mealy bug (*Phenacoccus manihoti*) by the parasitoid *Epidinocarsis lopezi* could have major benefits in the main cassava areas of Nampula (and Zambezia to a lesser extent). All available research data should be collected, and a collaborative venture with MOA/INIA should be initiated.

Ratooning (cutting back of the plant to allow regrowth) of sorghum does not appear to have been investigated. The possibilities of this technique should be looked into in longer rainy season areas such as parts of Nampula.

Striga (Witchweed) is common in some areas. Extension workers do not appear aware of the danger of this parasitic weed and should be encouraged to inform farmers of the danger; plants should be uprooted and removed from fields (and burned if seed is already formed).

Some other farm management practices which may merit further work by WVM/DPA/INIA are listed:

- Erosion control through hand prepared contour bunds, strip-cropping and other appropriate measures;
- Mixed cropping; an excellent publication is available (**Waddington, Palmer and Edje, 1990**) - the three provincial coordinators should have a copy;
- Rhizobium trials with peanuts and cowpeas;
- The potential for Crotolaria and other green manure crops, and;
- Seed selection and storage.

4.3.3. Seed Multiplication and Distribution

The UNDP Pre-Programme gives relatively little consideration to seed multiplication in country, possibly because this phase of the project concentrates on only eight

districts, in seven Provinces.

The status of the Mozambican National Seed Programme is outlined in an FAO document CTA SWA/91/003 (**WOBIL**,1992). The document outlines steps taken, as of February 1992, to introduce a Mozambican seed law. WVM should support any such steps to the extent possible.

Multiplication. The multiplication of seed (for distribution rather than evaluation) under direct control of DPA/WVM can only be justified for a limited range of crops and varieties which are not available commercially. Propagation of sweet potato and cassava on the other hand has great potential and this sector of the programme should be expanded, given the large yield advantages of some recently introduced strains and the modest management input required. There has been good collaboration between WVM/INIA/DPA through the FAO/UNDP funded Rapid Multiplication Project; this is a model of what can be done.

The relative advantages of the ARP expanding its seed multiplication efforts are not clear to the evaluation team, which considers that caution should be taken in expanding the 1993/94 and future programme. More detailed budgets should be prepared; the **total** cost per kg of seed produced, including travel and time consumed, should be compared with the cost of sub-contracting the work, either in-country or externally. Time and effort spent in seed multiplication implies less time and effort available to staff for other activities.

An alternative strategy for seed multiplication (and "instant" distribution and minimum transport costs) of self-pollinated species at the local or farm level is outlined in Item 4.4.1. The strategy to be adopted for maize and sorghum must necessarily be different due to their being open pollinated species. For those varieties which are not commercially available, ARP is justified in directly controlling seed multiplication, the volume of which is estimated by the Team to be in the range of 10-20 MT annually per crop. This would be sufficient to provide 1,000 leader farmers with seed for testing. Any future plans for the multiplication of larger quantities of maize and sorghum under ARP management should take into consideration the cost/benefit of this activity.

Distribution. Past and present ARP emergency seed distribution methods have been virtually perfected and require minimum alterations (other than an increase in weight per Ag-Pak envisaged for 1993/94). However, the anticipated scaling down of emergency seed distribution calls for new strategies if the dissemination of improved varieties is to continue on a significant scale with a range of crops.

Future strategies for plant and seed distribution should focus on the extension network (refer to Section 4.4.) and leader farmers. The concept of "Leader-Paks" has been suggested whereby small packets of both new varieties and minor crops are distributed to leader farmers. The rate of uptake and enthusiasm for the different crops or varieties could be assessed by the extension workers and research staff for future planning. Possible crops for this experiment are: sesame, sunflower, jugo bean, lablab and finger millet.

On-farm trials and other initiatives at the farm level should be continued as a means of informal distribution, though it is not clear to what extent the current system leads to dissemination of material from the leader farmers to their neighbours. A strategy for distribution of seed, excluding maize and possibly sorghum, via seed multiplication at the local community level is suggested in Item 4.4.1, par. 11).

Sale of seed and tools for future years should be considered. DANIDA in Tete and WUS/IBIS in Zambezia have some experience with this approach which have not been altogether positive, but in a quite different political climate; they should be

consulted for information and advice.

The virtual absence of oilseed crops in most areas visited was noted and WVM may wish to address this situation by including sunflower and/or sesame in some seed packs. Protein intake is inadequate in most areas. Provision of fish hooks in seed packs distributed near rivers or the coast could be considered by WVM.

4.3.4. Collection of Regional Strains

ARP has scored a notable success in the identification of a strain of cowpea from Zambezia (Namuesse) which has proven superior to introduced varieties and is in the process of being bulked up for future distribution. Some work has also been done with local selections of promising strains of sorghum and cassava, though this initiative was not evaluated. INIA has suggested that WVM should expand this aspect of the ARP, and for a limited number of self-pollinated crops it may be possible to identify locally adapted strains with useful characteristics for certain agro-ecological niches. Once again, close collaboration with INIA is required.

A collection of promising plant selections of less well known crops such as sesame, jugo bean (Bambarra groundnut), finger millet and a range of medicinal plants may yield some valuable material though it is recommended that the scope of this activity be limited so as not to detract staff from other more gainful activities.

4.4. "Farm Family First" Extension Network

4.4.1. Extension Activities

ARP experience with rural extension was analyzed in Item 3.4 above. While ARP staff have made a credible beginning to extension activities, the methodology used is interpreted and implemented differently among extensionists, both ARP and participating government staff. This creates both a need and an opportunity, both of which can be responded to by the following plan of action:

1. **Extension Coordinator.** Contract an Extension/Training Coordinator (ETC) for the programme, ideally a Mozambican but, if an expatriate, someone with extensive experience in family sector African rural extension (perhaps from a neighbouring country). The mandate of the ETC should be primarily training and monitoring in all three provinces.

2. **Extension Staff.** Necessary staff for the extension system would be one WVM extensionist and 1-3 government extensionists per priority district, each with a bicycle or motorcycle (only where a system of maintenance can be ensured). A team of 4 extensionists could maintain a network of 15 leader farmers each, depending on roads conditions, distance and mode of travel. Each leader farmer could provide information to 20 other farmers, assuming the former is strategically located in the community. Thus direct beneficiaries of such a system can be estimated to be: 4 X 15 X 20 X 4 districts = 4,800 families (approximately 24,000 persons) per province. Through field days and other mass extension methods the number of families receiving impact from such an extension system could be 2-3 times that size.

3. **Philosophy and Methodology.** Because of the diverse way the ARP extension work is presently being interpreted in the field, it is necessary to clarify the extension philosophy and methodology to be used. If ARP staff feels that it should be different in any significant way from the system presently used by government, a consensus on key changes must be reached with each DPA, since it is the intention of WVM to

ultimately turn the extension task fully over to government.

4. **Partnership with Government.** To achieve the task of preparing government to fully assume its rural extension responsibility over time, ARP should budget resources to specifically strengthen (through training, infrastructure rehabilitation, etc.) the government system, while at the same time **actively encouraging bright, young technicians to stay within government.**

5. **Extension Training.** There is need to assess present training methodologies and revise as necessary. All ARP staff, from top to bottom, should receive training in extension methods. The new ETC should make an inventory of and draw on extension training resources available outside of the ARP, as well as utilizing past experience of the programme. In the case of extensionist training, it should be based on strengthening and adapting present practises rather than introducing totally new approaches.

6. **Leader Farmers.** The concept utilized by the ARP of selecting and working through Leader Farmers is valid and should be strengthened. The methodology of choosing Leader Farmers and the mandate they are expected to assume must be clarified. Selection of leader farmers should be preceded by a rapid analysis of the community structure and what these 'leaders' represent in it. The experience with women leader farmers should be assessed and ways found to encourage more of these.

7. **Flexibility in the Leader Farmer System.** Modifications in the leader farmer system, such as rotation of leader farmers in a community over time or the creation of groups of 2-3 leader farmers per community rather than selecting one should be considered, especially if an authoritarian structure begins to develop. The leader farmer mandate should be formulated through discussion with the farmers themselves.

8. **Training Leader Farmers.** Leader farmer training should be transformed into an exchange of experiences rather than top-down communication of technical information. This can be threatening for poorly trained extensionists, but will result in them becoming much more knowledgeable about local farming methods (grassroots farming systems research!) and better positioned to suggest adjustments in how farmers do things.

9. **Focus on the Family.** The unit for extension purposes should be the farm family, as the name of this activity - "Farm Family First" - implies. This has implications for who is invited to field days, who gets training, etc. A logical extension of this is the identification of **Leader Farmer Families**, in which both the man and the woman have a mandate to assist neighbours acquire new planting materials, etc.

10. **Rewarding Community Cooperation.** It is recommended that ARP continue its present policy of not directly remunerating leader farmers, as opposed to the government 'Enquadrador' system. They should continue receiving free inputs from the programme for demonstration purposes and non-monetary forms of compensation for extension work with neighbouring farmers could be considered. Community members need to be encouraged to value the contribution made by the leader farmers to the community and ARP should seek ways to publicly recognize the contribution of both the leader farmer and the extensionists to community well being.

11. **In-Village Seed Multiplication.** The leader farmer can assume a key role in sustainable improved variety seed multiplication at the local level. By focusing on one key crop/year per district, small demonstration areas of the key crop can be planted by leader farmers on the understanding that she/he make at least one-half of the production available for distribution to other families in the community. At a designated meeting or field day, all community members interested in acquiring the new seed would bring an equivalent volume of local seed for exchange. These families

could be encouraged to repeat the process with other neighbours the following year. The number of neighbours involved in seed exchange in any one year will be a clear indicator of how well the extension system is working in that community and/or the local assessment of the new variety. This system will work less well for maize and sorghum varieties (see Item 4.3.3).

12. **Encouraging Productivity.** A system of friendly competition in agricultural production between families, communities and even districts (yield/ha; volume and variety of vegetables; total food produced by the community, % of families receiving and planting improved varieties, etc.) can provide a focus for crop improvement and a stimulus for extensionist and leader farmer alike.

Additional excellent suggestions for strengthening the ARP extension effort are found in the report by the late Paulo Lauret (December 1992), p. 26.

4.4.2. Farmer Organization

The ARP has become interested in the possibility of assisting in the creation of farmer organizations. Farmer organizations can have a number of different functions, several of which may be present in any one organization:

1. Empowerment of local farm families, either politically or in the marketplace;

2. Input purchase, product sale or technology transfer, especially in the case of a new or high-value cash crop;

3. Implementation of a collective production project (eg irrigated production).

The experience with farmer organization in Mozambique, both during colonial time (farmer regimentation, coercion) and during independence (the failed cooperative experience) have been largely negative, resulting in a natural resistance on the part of farmers to commit themselves to such a social structure. Their recent experience with war and violence will tend to reduce the level of confidence even more. Farmers might be quite willing to 'join' an organization, depending on the perceived personal benefit, but may be quite unwilling to accept responsibility or risk. This attitude may explain some of the frustration ARP staff have experienced in working with farmers in irrigation projects, and inevitably leads to collapse and abandonment of such ventures once the external input terminates.

The advice the Team would offer to the ARP staff on farmer organization, based on an admittedly short and superficial visit to some of the project sites is:

1. **Learn for Past Experience.** Assess present ARP experience with organizing groups of farmers, especially in irrigation activities, and identify existing lessons. A review of more recent farmer organization experiences elsewhere in Mozambique would be instructive. Local expressions of organization/ cooperation and the sustainability of externally-promoted organizations should be a particular focus of this review. Ways of promoting community 'ownership' of project activities is equally important.

2. **Be Patient and Listen.** Avoid promoting activities that require new forms of community member organization, especially during the first year of ARP contacts in the community. Consult communities extensively regarding the form of organization they wish to work through and be willing to experiment with alternative systems. (Positive experience with collective seedling beds cited by Project Manager)

3. **Community Surveys.** Conduct rapid community appraisals to understand the social, cultural and power structure of communities, especially (but not only) where collective action would be required to ensure the success of an ARP-funded activity. (Refer to Appendix H).

4. **Existing Community Structures.** Seek to understand and base any attempted organization of the community on existing social organizations or experiences such as: kinship groups; informal labour-exchange or collective work systems in the community, and; common past experiences such as working with a specific plantation crop, experience as members of farmer organizations in Green Zones, etc.

5. **People/Land Relationships.** Where an APR activity requires changes in the present land tenure situation (eg. use of a farmer's land by others for collective irrigation during the dry season), customary land use rights and the conditions under which land can be borrowed for production should be clearly understood.

The overall recommendation on farmer organization is to avoid creating new social structures unless the community has identified the need for them and then draw heavily on community experience in promoting such organizations. A combination of new social structures and new technology (eg. organization for an irrigation project where there is no experience with irrigation) will frequently be too complex a task for sustainability.

4.5. The Training Component

Visits to trial sites indicates that the ARP has been most successful in training its staff and contracted workers in this work. Training will continue to be an important component of the ARP over time, however, with the need for a major input in the area of rural extension over the next 2-3 years.

4.5.1. General Training Suggestions

1. There is a need to identify and assess relevant training resources in Mozambique so as to avoid duplication. The Danida training centres in Zambezia and Tete are one example. Some ARP investment in existing training facilities/courses may be justified in terms of strengthening the overall government training structure.

2. The possibility of carrying out some joint training with the WVM Health Programme should be examined, especially in the areas of community structure analysis, community needs assessment and gender analysis.

3. Gender sensitivity training/analysis will greatly assist the ARP in addressing women's needs, both of female staff members within the programme and of women leader farmers and community members.

4. A system of internal planning, monitoring and evaluation of training activities should be established in which the "trainees" are actively involved in planning the training and encouraged to critically assess the process/results.

4.5.2. Extension Training

Training within the rural extension framework should be understood as an exchange of information rather than a transfer of information. The objective should be to structure training so as to encourage such an exchange:

1. The positive experience of the ARP in training extensionists and leader farmers should be incorporated into any future training activity.

2. Farmer training should take place as close to the local situation as possible, although visits to other farming experiences by selected members of the community can be positive and exchange of information between communities should be encouraged.

3. Wherever possible, farmers who have mastered new technologies should be used in the training of other farmers. The extensionist should see her/himself as the catalyst rather than the 'teacher' in such situations.

4. The use of research stations and variety trial sites for peasant farmer training presents major limitations that have been recognized worldwide. The ARP should incorporate this experience into future training plans.

4.6. Other Development Initiatives

4.6.1. Credit and Marketing Bottleneck

Rural Credit. Despite the lack of formal credit in the rural areas of Mozambique today, **the Evaluation Team would discourage the ARP from developing broad-based credit activities for the family sector** for the following reasons:

- Credit programmes are notoriously hard to manage, requiring specialized staff that the ARP does not have, and;

- Cash production inputs that require credit (fertilizer, certified seeds, inputs for mechanization) will be little used by the vast majority of farmers in the family sector for the forseeable future.[3]

Where purchased inputs are proven to have a high benefit/cost ratio (eg. fertilizer?), the ARP could actively encourage private/governmental/NGO organizations with credit programmes to become active in ARP districts.

Support for Marketing. The Team would make the same general recommendation to the ARP regarding broad-based marketing activities, even though the need for marketing support is evident. The principal constraints to marketing (impassable roads, absence of local traders and destruction of local infrastructure, lack of regional transport) are of a magnitude that ARP alone cannot address.

Notwithstanding the above recommendations, there may be small, case-by-case situations in which ARP can gain experience in and contribute to credit and marketing support:

A. In the case of WVM purchases of local commodities for food aid, ARP should be involved in the planning and monitoring of these purchase operations (but not get involved in operational aspects) in order to:

1. Help the government develop a rapid marketable surplus estimating methodology at the district level;
2. Assess the capability of key farmers, local traders or others to purchase and transport produce to local resale points;

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[3] There are exceptions to this general rule: some farmers in Macanga and Tsangano districts (Tete), heavily influenced by production technology used in Malawi; some farmers in Gurue district, Zambezia and others in Nampula.

3. Measure the impact on local farmers, traders and market prices of this market intervention.

B. In the event that ARP contracts out seed multiplication to producers in the family sector, small-scale 'credit' operations for production input supply - on an individual farmer or group-responsibility basis - could be developed as a mini credit experiment. This experiment should be monitored closely to measure the impact on participating and neighbouring farmers, and carefully documented for future reference.

4.6.2. Selected Rehabilitation Efforts

The impact of the war in Mozambique makes rehabilitation and reconstruction of infrastructure an essential activity. The ARP has already invested some resources in this activity, particularly in the case of needed infrastructure at field station and variety trial sites, and for community irrigation systems (see Section 3.5). These rehabilitation efforts and total cost to date are hard to quantify.

Variety Trial Network. Estimates of the type of investments needed and the cost of necessary future rehabilitation of the proposed ARP variety trial network is shown in **Appendix G.** The Team encourages ARP to move ahead with these plans, but only after they have been discussed and approved on a location-by-location basis by the provincial DPAs and INIA, the national agricultural research organization. The DPAs and/or INIA should assume responsibility for basic maintenance of all such improvements carried out by ARP.

Irrigation Rehabilitation. The Team recommends that, except for small irrigation systems needed at variety trial sites (six such cases are suggested in Appendix G), the ARP should not undertake the construction or rehabilitation of additional community irrigation systems until the ones presently underway are made fully operational and their performance assessed (see discussion in Section 3.5).

Other Rehabilitation. Requests to fund rehabilitation of storage or other structures essential for reducing post-harvest losses or developing local market systems will most certainly arise and should be dealt with within a pre-determined framework for such assistance. The ARP should require a meaningful counterpart effort on the part of communities in such cases.

Roads and Bridges. Improvement of rural roads and bridges will also be an urgent need in the programme area. While there is experience in Nampula to suggest that food-for-work projects can be successful in overcoming this bottleneck in certain situations, ARP should encourage other organizations to assume this task. (The Commodities Programme of WVM may be able to provide the food).

Livestock. Livestock is not important in all districts, but it appears to be especially só in Tete Province. The Team has been informed that livestock health is a problem and that no system is in place to assist farmers in this area. The Team encourages ARP staff to examine this issue on a district-by-district basis. Since the Health Program of WVM is concerned with human nutrition and has facilities in a number of localities for storing and distributing vaccines, vaccines for small animals (poultry and swine) could conceivably be supplied through the same system. The NGO VETAID is now active in Mozambique and is looking for project opportunities, so the ARP might only need to provide a catalytic role in this process.

4.6.3. Specific Studies and Data Base Needs

The recovery/development proposal presented in this document requires a different

knowledge base of the districts and communities in which the activities will take place than has been true for the earlier, predominantly emergency activities of the ARP.

Four areas of studies and benchmark surveys are identified below. More detail on what these would be comprised of are given in **Appendix H.**

1. A Rapid Rural Appraisal of the 12 priority districts where the ARP plans to work.

2. A Social Structure Survey of each major community where the ARP plans to carry out rural extension activities.

3. A Benchmark Study of a small number of families in representative areas.

4. Farming Systems Studies, to understand the logic of peasant production in the ARP region.

A detailed plan for the analysis, distribution and effective use of the results of these studies/surveys should be in place before they are undertaken.

4.6.4. Environmental Impact

Transition to a more developmental phase of ARP will permit greater attention to environmental impacts, both positive and negative. The major environmental issues will be:

Positive Environmental Impacts:

1. **Soil Erosion.** Expanded research on soil erosion control methods and improved ground cover through more complex intercropping combinations and rotations.

2. **Soil Fertility.** Research on biological fertilizer techniques (legume nitrogen fixation, green manuring, etc.) and chemical fertilizer response in selected cases.

3. **Disease and Insect Resistance.** Selection of new varieties for these characteristics.

4. **Drought resistance.** Selection of new varieties for these characteristics.

5. **Reforestation and Erosion Control.** While the ARP does not plan to focus on large scale reforestation, the activities with fruit tree propagation and small demonstration areas for erosion control will make a modest contribution to environmental stability.

Possible Negative Environmental Impacts:

1. **Salinization of Soils.** Can result from poorly designed or managed irrigation systems.

2. **Water-borne Diseases.** Schistosomiasis contamination in irrigation projects (Sombo project).

3. **Biological Diversity.** Possibility of loss of local landraces due to blanket introduction of new varieties during emergency seed distribution. Continued potential problem for maize and sorghum introductions during development phase due to rapid out-crossing with existing seed stock.

It is recommended that ARP develop an environmental impact checklist for use in the case of release of new planting materials and specific projects such as irrigation, and report systematically on progress in monitoring environmental impact in the programme area. Any existing government guidelines in this regard should be followed closely.

4.6.5. Institutional Interface

ARP emphasis on recovery/development will require new dimensions of partnership with both local communities and government, since these programme activities will ultimately be turned over to one or the other. The ARP has signed Agreements of Collaboration with the DPA in Zambezia (**Appendix I**) and Nampula provinces, has submitted a draft agreement to INIA and will prepare one with the DPA in Tete.

The new dimension of partnership referred to above will require:

- Joint planning, monitoring and evaluation of activities with communities and government;
- Formal working agreements with all relevant levels of government, which might include the district level;
- Assistance to government, as necessary, to permit full participation in programme planning, monitoring and evaluation, and;
- A commitment from government to progressively assume tasks presently undertaken by ARP and a plan for eventual phase-out of WVM.

ARP staff are also encouraged to follow through on plans to visit development projects within and outside of Mozambique to discover lessons learned in these experiences that might have application in the programme area. In addition, the Team encourages ARP staff to consider a more operational form of cooperation with other NGOs in the provinces where it is working. While this is not always easy to achieve, benefits in the areas of reduction of duplication of effort, exchange of plans and methodologies, etc. will ultimately benefit everyone, including the ARP rural beneficiaries.

4.7. Programme Management and Staff

Management. Management of the emergency component of the ARP has been quite centralized, given the need to make fast decisions. As the development component of the programme expands, more decentralized decision-making combined with well-documented management systems become imperative. Provincial coordinators can become responsible for programme planning and implementation at that level, freeing the programme manager for overall coordination, contacts with government and donor, monitoring and evaluation.

Staffing. Present staffing is shown in **Appendix F.** For Tete, WVM is seeking a new provincial coordinator (the present one is finishing his two-year contract) and an agronomist for field trials. As the Nampula programme expands, another agronomist will be required there. The Team recommends that WVM recruit an experienced extension/trainer coordinator (Item 4.4.1). Given the present strength of the ARP Crop Improvement component and the anticipated evolution of the programme, new provincial coordinators should have a broad agronomy background and ideally some experience in

extension.

A continued search will take place for qualified local staff to progressively replace expatriates in the programme. WVM has recently recruited one local agronomist and is in the process of contracting an MSc level staff member, both of whom work for government. **Despite the great difficulty in finding local staff, ARP is strongly encouraged to pursue secondment arrangements with government in such cases, on a time-sharing or other suitable basis, so as to not weaken government staffing structures.**

Planning and Budgeting. As development activities based on multi-year funding become the dominant ARP thrust, annual plans and budgets will be developed at the provincial level in close cooperation with government. These will then be aggregated to form an annual ARP plan, incorporating activities of the project manager, consultants and national government (eg INIA). It is suggested that for FY 1993/94 (October 93-September 94) the ARP calculate from the total programme budget the costs of the principal components of agricultural recovery/development activities.

Reporting. External reporting by ARP has been on a monthly basis, prepared by the programme manager for the entire ARP programme. Annual reports are necessary in order to analyze the degree of progress being made relative to planning targets. In the future, provincial coordinators should report to the programme manager with a copy going to provincial government authorities. It appears that provincial progress reports are only being circulated to government in Tete at the present time. Administrators of the ARP priority districts in each province should be added to list of persons receiving the provincial reports.

CHAPTER 5. A DEVELOPMENT STRATEGY: ELEMENTS AND RECOMMENDATIONS

The Team strongly supports the transition of World Vision's Agricultural Recovery Programme from one providing emergency inputs (seeds and tools) to one focused primarily on recovery and development. In fact, the ARP has already made significant steps in that direction. Assuming that the peace process continues as planned and no major natural disasters occur, this transition can be completed within three years.

It is recognized that up until the end of calendar year 1994 the ARP will be involved in the largest emergency operation of its history in Mozambique. Nevertheless, the Team is of the opinion that many elements of the development strategy proposed in Chapter 4 and summarized in Section 5.1 can be implemented during this period. Specific recommendations that require WVM-ARP action in the near future are presented in Section 5.2.

5.1. Elements of an ARP Development Strategy

1. Methodology and Systems Development

The following areas require strengthening:

- Planning, reporting and monitoring systems within the ARP;
- Partnerships with government and rural communities;
- Sharing of planning, decision-making and monitoring/evaluation responsibilities with partners;
- Rural community contribution to program costs based on level of benefit and ability to pay, and;
- A focus on activities with self-sustainable potential and a planned timeframe for phase-out of ARP inputs.

Geographic Focus

- Limit development activities to three provinces until the ARP has recruited sufficient trained staff to permit expansion.
- Follow through on the plan to identify and focus on priority districts (12).
- Activities in other provinces/districts to be gradually phased out.

2. Emergency Response Activities

- Continue the excellent seeds and tools distribution activity while needed.
- Continue sourcing emergency inputs commercially.
- Support national seed production by sourcing part of emergency needs from SEMOC or other local commercial supplier.
- Resist organizing a large-scale multiplication system for emergency seed, given the complex logistics involved and the probable collapse of the seed market once the emergency is over.

3. Crop Improvement and Sustainable Farming Systems

Variety Evaluation and Farming Practices Research

- Continue the variety trial work to confirm results to date and identify new planting material, but expand farming practices research.
- Diminishing marginal rates of return (ie. smaller productivity increases from new varieties) can be expected from future variety trial work.
- Continue and consolidate contacts with government and selected NGOs (eg Danida) to expand collaboration on research.
- Sign agreement with INIA to officially recognize the ARP testing network before new resources (human or financial) are invested.
- Establish observation areas to measure the cross-pollination impact of introduced maize and sorghum varieties on local seed stock.
- While trials to determine plant/soil/fertilizer responses are valid, research on farming practices should maintain a major focus on low-input, low-risk farming.
- Continue searching for regional plant material with promising characteristics and add these to national collections where relevant.
- Contacts with international research institutions should be made in consultation with INIA.

Seed Multiplication and Distribution

- Seed multiplication managed by ARP should be limited to seed required for research needs or, in special circumstances, to seed that is not readily available commercially.
- Propagation and dissemination of sweet potato and cassava should be expanded.
- ARP emergency seed distribution is efficient, but future distributions will frequently not be in ARP priority districts.
- Promote seed multiplication and distribution for self-pollinating varieties at the community level wherever possible, using the ARP extension system.
- The ARP may need to continue periodic distribution of maize and sorghum seed in selected areas, but this distribution should increasingly be made on an exchange or cash sale basis.

4. "Farm Family First" Extension Network and Farmer Organization

- An extension network of leader farmers that has been started in a number of districts can now be consolidated and strengthened.
- An ARP Extension/Training coordinator is needed to provide leadership for this activity in the three provinces.
- Present extension staff (ARP and government) require continued training and monitoring, selected incentives and a means of transportation.
- The extension focus should be on the family, with the participation of women at all levels encouraged, monitored and documented carefully.
- Extension efforts should focus on practical activities such as new variety seed multiplication or other high priority concerns of local farmers.
- Assess existing experience with farmer organization (eg. at ARP irrigation projects sites, other development projects) before expanding this activity.

5. Training

- Present ARP training requires further systematization, including monitoring, evaluation and documentation (eg participation by gender).
- Farmer training can be put within a framework of information exchange, using

farmers as trainers.

6. Other Development Initiatives

- ARP should maintain a sharp focus on a limited set of key initiatives (for which it can develop expertise) and expand only after careful planning.
- Issues of credit and marketing are too large for ARP to resolve, but there may be a catalytic role the programme can play.
- Selected rehabilitation (eg research infrastructure) is a necessary and appropriate activity, but should be based on clear criteria and priorities.
- The proposed anthropologist/farming systems research consultant can be very helpful in the design of the studies/surveys suggested in Item 4.6.3.
- Concerns regarding environmental impact will increasingly be built into ARP planning, monitoring and evaluation.

7. Programme Management

- Decentralization and strengthening of provincial level decision-making will expand as development activities grow relative to emergency response.
- ARP must continue developing innovative approaches to government staff counterpart arrangements in order to strengthen government.
- The development of annual ARP provincial plans and budgets, in which the government contribution is specified, will become necessary.

5.2. Recommendations

The Team makes the following recommendations:

1. Increase the participation of women as ARP staff and as community participants in the programme and systematically document progress in this respect.

2. A formal agreement with INIA is necessary before further expansion of the ARP variety trial network.

3. Plan no additional irrigation projects before making existing projects fully operational and before assessing all aspects carefully.

4. Limit recovery/development activities to three provinces until more trained staff become available; within each province follow through on the plan to identify and focus on four priority districts in each.

5. Establish observation areas to measure the cross-pollination impact of introduced maize and sorghum varieties on local seed stock.

6. Contract an Extension/Training Coordinator for the programme, ideally a Mozambican but, if an expatriate, someone with extensive experience in family sector African rural extension.

7. Avoid creating new farmer organizations unless the community has identified a clear need for them.

8. Develop an environmental impact checklist for use in the case of release of new planting materials and specific projects such as irrigation, and report systematically on progress in monitoring environmental impact in the programme area.

9. Contract a social anthropologist/farming systems specialist, on a consultant basis, to assist direct proposed studies and conduct focused farming systems research.

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Table 3.2 Replicated Variety Trial Sites, 1992/93, 1993/94.

Location	Rice	Maize	Sorghum	Cowpea	Peanut	P.Bean	Cassava	Millet	S.Potato
Zambezia									
Quel./Nicoadala	*	*	*	*	*		*	*	*
Chinde	*								*
(Mocuba)		*	*	*	*	*	*		*
Gurue	*	*	*	*	*	*	*		*
Ruasse		*		*		*			*
Nampula									
(Agronomic Post)		*	*	*	*		*	*	*
Murrupula	*	*		*	*		*		*
(Mutuali)		*		*		*	*		*
Namapa		*		*	*		*		*
Tete									
Field Station		*	*	*	*		*	*	*
Changara		*	*	*	*			*	*
(Chidzolomondo)		*		*	*	*			*
(Tsangano)		*				*			
Niassa									
(Lichinga)		*				*			*
Total Sites	4	13	6	11	9	7	8	4	12

( ) = Planned sites for 1993/94

APPENDIX I

ACORDO DE COLABORACAO 1991-93
ENTRE
A DIRECCAO DE AGRICULTURA
NA PROVINCIA DE ZAMBEZIA
E
A VISAO MUNDIAL INTERNACIONAL

Considerando que a Visão Mundial Internacional (VMI) está interessada em prestar apoio à Direcção Provincial de Agricultura na Província de Zambézia (DPAZ) e que a DPAZ deseja receber este apoio da VMI; as duas entidades têm imensa satisfação em entrar num acordo de cooperação e colaboração durante os anos agrícolas 1991/2 e 1992/3 conforme se segue:

Emergência
Em coordenação com o SSIP/PESU a VMI compromete se em apoiar;
-aproximadamente 10,000 famílias deslocadas com instrumentos de produção e sementes de variedades melhoradas de milho, mapira, feijão nhemba, feijão boer e amendoim nos Distritos de maior necessidade da Província,
-aproximadamente 20,000 familias deslocadas com sementes de variedades melhoradas de hortícolas nos distritos de maior necessidade da Província.

Investigação e melhoramento de Culturas e Sistemas de Produção.
Em estreita coordenação com o INIA e os DDA's nos Distritos de Nicoadala, Chinde, Ilé e Guruè (dependendo da cultura), a VMI compromete-se em fornecer apoio da seguinte maneira:

Arroz
Seleccionar e manter novos materiais genéticos na Estação Experimental inclusive as novas variedades de INIA. De acordo com o programa da DPAZ apoiar a condução dos ensaios de campo e áreas demonstrativas envolvendo a participação dos camponeses (conforme a necessidade). Multiplicar variedades adaptadas fazer áreas demonstrativos e distribuir novas variedades para avaliação por camponeses em coordenação com o S.P.A.

Milho, Mapira, F. nhemba e amendoim
Seleccionar e manter novo material genético inclusive as novas variedades do INIA na Estação Experimental Chuabo Dembe.

Conduzir, em coordenação com o S.P.A., ensaios de campo com novas variedades nos Distritos de Nicoadala, Ilé e Guruè.
Multiplicar variedades adaptadas, fazer áreas demonstrativas e distribuir novas variedades para avaliação por camponèses em alguns dos seguintes Distritos; Nicoadala, Chinde, Ilé, Gilé, e Guruè.

Batata doce e Mandioca
Seleccionar, conduzir ensaios e manter novo material genético, inclusive as novas variedades do INIA na Estação Experimental.
Multiplicar variedades adaptadas, fazer áreas demonstrativos e distribuir novas variedades para avaliação por camponeses nos Distritos de Nicoadala, Inhassunge (só B.doce), Chinde, Ilé, Morrumbala, Gilé, e Guruè.

Investigar e promover, em coordenação com o S.P.D.E.R., técnicas de produção capazes de melhorar o rendimento do sistema de produção do camponês, inclusive a selecção das variedades locais.

Extensão Rural
A VMI compromete-se em promover, em coordenação com o S.P.D.E.R., as seguintes actividades:
-Integrar as actividades acima mencionadas com a extensão rural através de dias de campo e mobilisação da população rural.
-Promover sistemas e programas de multiplicação de sementes nos Distritos.
-Apoiar a recuperação da Estação Experimental Chuabo Dembe como centro de treinamento.
-Ampliar a produção e disseminar árvores frutíferas do centro de propogação de Nicoadala.
-Treinamento de aproximadamente 30 técnicos e camponeses líderes utilizando as actividades de ensaio de campo como ponto focal.
-Produzir um manual técnico para uso dos extensionistas.

Em reconhecimento de todos estes apoios a DPAZ compromete-se em trabalhar em estreta colaboração e integração com a VMI inclusive com agrónomos sedeados dentro do DPAZ. Haverá participação da VMI em todas as visitas de carácter oficial à Província. (INIA/FAO/ONU/Min. de Agric.). Os relatórios sobre os trabalhos acima referidos sempre conterão claras referéncias aos apôios no tema deste acordo.

Os objectivos deste acordo serão alcancados através de "contratos de trabalho" envolvendo camponeses líderes, agricultores privados, técnicos locais e com a prévia autorisação do Dir. DPAZ, agrónomos, técnicos e outros funcionários da DPA.

Assinaturas de Acordo: ***Data: .....***

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Director Nacional, Visão Mundial Int.	*Coordenador VMI, Reabilitação Agrícola*	*Director DPAZ*