

Mid-year report on AHEAD-funded project

‘Alternative Sustainable Futures for Post-Resettlement in the Limpopo National Park’

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Agriculture provides an important source of livelihoods for local people in and around the Limpopo National Park. In an area of scarce and erratic rainfall, agricultural production is based on risk mitigation strategies, many of which are based on extensive land use. Population resettlement and agro-industrial expansion are placing pressure on land, making current risk mitigation strategies unfeasible, and negatively affecting already tenuous food security. Access to natural resources such as grazing resources, wild foods, construction materials or firewood is also threatened. The objectives of this project are to improve understanding of the changes in livelihoods and subsequent impacts on natural resources of population resettlement, and to explore the opportunity for increasing *food security* through improved *seed security*. These objectives translate into four activities: 1) ongoing research on livelihoods, 2) local seed collection and description, 3) participatory varietal selection, and 4) training of local agricultural extension agents.

Six months into the project, preliminary results have begun to shed some light on the options for improving agricultural production in the district of Massingir, despite difficulties encountered during implementation. This report describes the progress of project activities, challenges encountered and some preliminary results.

PROJECT ACTIVITIES

Ongoing research on livelihoods

The village of Nanguene (inside the park) was resettled in November 2008 to the village of Chinhangane (outside the park). This ongoing research follows up on two years of documentation based on participatory observation of the livelihoods of the villagers of Nanguene in their pre-resettlement location. The aim of the ongoing research under the AHEAD-funded project is to understand the impacts of resettlement on livelihoods and subsequently on the local natural resource base. Specifically this activity monitors changes in dependence on natural resources and livestock dynamics.

Progress and challenges

Data have been collected on details of the actual resettlement event as well as the initial impressions and problems encountered by the resettled village and any immediate changes in use of human or financial resources. Methods for data collection included in-depth interviews, photo-visioning and observation. With a special focus on access to natural resources for farming, grazing and collecting, I accompanied villagers in their new daily routine as they went to work in their fields and collected fruits. Data were also collected on the new grazing routes and grazing resource quantity.

No major challenges were encountered. This research will continue throughout the year, but major research activities will take place in November marking one year after resettlement.

Preliminary findings

Residents of the newly resettled village, in general, were pleased with the resettlement, especially young people because of new social arrangements, opportunities for engaging in market activities and access to transport. Older and less well-off residents felt like second-rate citizens and were concerned about the access they would have to key resources, particularly wild fruits, firewood and land for grazing and cropping. The rainy season of 2008-2009 was good for cropping, but the fields designated for the resettled villagers were not ready and they were only able to crop on borrowed land. The use of borrowed land often implies relying on an insufficient amount of land and/or considerable labor requirements for cleaning and preparing the land before cropping, therefore delaying planting, and risking crop loss due to insecure land tenure. The project region is characterized by an average of one good cropping season in five, therefore families that were not able to produce well in the 2008-2009 rains are likely to suffer food shortages for the next three to four years. Their own fields are now ready, but they are very small, 1 ha per family (average land holding per family before resettlement was 5 ha), and the pump promised to them for irrigation has yet to materialize.



Filimão Zhita, resident of Nanguene. The picture on the left was taken in 2007 in front of his house in Nanguene before resettlement. The picture on the right is of him on the porch of his new house in Chinhangane. He is blind.

Local seed collection and description

Collection of local seed was built into this project for several reasons: 1) to document local agro-biodiversity and the corresponding socio-cultural context, 2) to identify and preserve local varieties for later reintroduction, or for use in national breeding efforts, and 3) to compare local varieties with modern varieties in our variety trials.

Progress and challenges

In March of 2009, at the end of the cropping season, one of the two planned seed collection trips was made to three villages inside the Limpopo National Park. The team involved in this collection trip included the project manager, field technician, and a seed specialist from the National Institute for Agronomic Research (IIAM). Information collected on each variety included: the name of the variety, its properties and uses

(medicinal, nutritional, etc), and agronomic aspects (pest and diseases sensitivity, kind of soil where it is best cultivated, adaptation to drought, etc). Geographical coordinates were also recorded by GPS at the site of each collection. Seed samples were processed and prepared for characterization by the staff at the national germplasm bank at IIAM.

The main challenge encountered was that we found many crops were still maturing in the field and not ready for collection. Despite this fact, farmers were willing to give us seed they still had stored or to go to the field with us to show us the plant and collect seeds for us. The second seed collection trip will be taken before the first rains when farmers plant their seed, to avoid this problem.

Preliminary findings

Seeds from 27 different locally defined varieties of nine crops were collected. These crops included maize (six types), sorghum (six types), watermelon (four types), cowpea (three types), squash (three types), melon (one type), groundnut (two types), millet (one type), and common bean (one type). It is still unclear whether or not these locally differentiated varieties are agronomically different or not.



While collecting seeds, information was gathered about the characteristics of the variety (left). Whenever possible, we went to the field to see the crop and record our observations. On some occasions we collected the seeds directly from the fields (right).

Participatory varietal selection

The main goal of this activity is to explore, together with farmers, possibilities for appropriate and sustainable agricultural production improvement in the district. Selection of crops and varieties is the first step towards developing a local seed multiplication and conservation system that can help farmers have access to seed despite consecutive years of drought. This activity, the introduction of new crops and new varieties of common crops, has constituted the majority of the project time allocation and effort so far.

Progress and challenges

Farmer-managed variety trials were established in two farmers' associations. Seed was obtained from International Center for Research in the Semi-Arid Tropics (ICRISAT) and IIAM. Crops include four maize varieties, three improved varieties (Changalane, Djanza and EV8430SR) provided by IIAM and one local maize, three improved cowpea varieties (IT16, IT18 and INIA 36) provided by IIAM, two pigeonpea varieties (0040 and

0020) provided by ICRISAT, one chickpea variety provided by IIAM and two sorghum varieties (Macia and MLT2) provided by ICRISAT . All varieties were chosen by lead researchers as the most appropriate for the local dry conditions of northern Gaza. The maize and cowpea were introduced to test cultural acceptance and the performance of improved varieties under local environmental conditions and management practices in comparison to the local varieties. Chickpea and pigeonpea are crops that are not commonly grown in the area and were introduced as potentially productive alternatives to the cowpea that is more commonly grown, but in theory not as well adapted to drought, and more prone to pests and diseases. Pigeonpea was also grown as a useful resource for fodder for livestock in the dry season. Sorghum was planted to test drought resistance next to the more commonly grown maize. Previous research indicated that local farmers have stopped growing sorghum for reasons associated with labor demands, bartering power and changing taste preferences, but that sorghum has the potential to perform better than maize in drought conditions.

Trials were managed by the farmers from each association, including irrigation, weeding, pest and disease control and harvest. Daily rainfall data were also recorded at the site of each trial. Variety evaluation was carried out before harvesting with the interested farmers from each association (14 and 30 respectively). A second evaluation will be carried out after harvest to assess post-harvest qualities such as storage potential, taste and cooking time.

Challenges encountered included an administrative misunderstanding with the Limpopo National Park that delayed the start of the project until the end of the rainy season. This had important consequences for our variety testing because planting on-farm or without irrigation was no longer possible. Therefore all varieties were tested under irrigation. Although the varieties were chosen for their adaptation to dry conditions, testing them under irrigation was useful as an experience for farmers to learn how varietal selection is done, and to guide crop and varietal selection for trials in the next rainy season. Farmers with access to irrigation or plots with residual water do plant in the cold season, therefore testing the performance of varieties during this season does in fact provide an additional, useful outcome. The next round of variety selection will be carried out on-farm and under rainfall conditions, if the season permits.

Other challenges included an elephant attack on maize in one farmer association, bird attack on maize in both associations and a very serious mouse attack on cowpea in both associations. These last two pests have severely reduced harvestable yield and therefore we cannot evaluate the varieties on total production, however, farmers have observed the plants throughout the season and have gained an impression of production.

Variety trials have not yet been established in the technical school in Massingir because of lack of organization on the part of the school. The school is new and is in the process of establishing their field practical set-up which was supposed to be in place in February. There was no irrigation system or fields plowed until June, and there is a lack of fencing that is necessary due to high numbers of cattle in the surrounding area. We already designed and are currently starting to plant a field trial for the school so that they can also have an experience with varietal testing before the rainy season, and join in with the other two associations for the second round. The objective of including the school in the project was not as a third replication for trials, but to expose students and staff to new varieties, and get familiarized with the variety selection process with the hope of

increasing sustainability and improving the chances for continuation of project activities/impact after the termination of the current project.

Preliminary Findings

The first round of varietal selection has not yet finalized, but preliminary results indicate that there is considerable farmer interest in obtaining seed from some of the new varieties, and interest on the part of the researchers at IIAM and ICRISAT to continue testing their varieties in the field (a researcher workshop will take place in July 2009 to discuss future activities). Some unexpected results were that farmers are especially interested in obtaining and preserving sorghum seed because of having lost access to the seed of the crop of their ancestors. Other results include farmers' impressions of extreme precocity of the improved maize varieties and the high yields of the cowpea varieties. Pigeonpea had not yet produced grain, but farmers were impressed by its prolific flowering and tall stature and hope that its stature can prove to be a barrier to mouse attack.



Before establishing the trials, we met with the main members of the two associations to explain the idea of the project and gather information about the crops farmers were most interested in.



The trials were established and managed by the members of the associations.



Local partners and researchers provided input for the design of the trials.



Men and women participated separately in the variety evaluations. In the picture on the left women are discussing chickpea and in the picture on the right the men are discussing cowpea.

Training of local agricultural extension agents

The aim of this activity was to incorporate elements into the project to improve the sustainability and potential for future continuation of project activities to build upon the achievements and lessons learned in this initial phase. This activity will be carried out in the second half of the year and reported on in the final project report.

FUTURE ACTIVITIES

In the second half of the year we expect to complete the proposed activities. Key activities include: 1) interviews and field data collection to assess livelihood changes, natural resource use and livestock dynamics in the resettled village one year after resettlement, 2) a second seed collection trip, 3) a second round of variety trials, this time also including trials on farmers' fields, and 4) the training sessions for local agriculture extension agents.

**Mid-year Financial report
June 30, 2009**

FINANCIAL NOTES

We had difficulty finding an appropriate candidate for the field technician job. Therefore, during the first two months of the project we used the field technician's salary to pay for extra visits from the local partners to help with the establishment of the trials. The most costly activities have not yet been carried out (the training and the final workshop).

Type of Expense	Total Amount	Amount spent	Amount remaining
Salaries/field staff & assistants	14,400	6,320	8,080
Purchased services	1,200	0	1,200
Equipment \$250-\$5,000 (please list)	4,000	1,680	2,320
Equipment over \$5,000 (please list)	0	0	0
Expendable supplies & materials	12,200	4,810	7,390
Repairs & maintenance	500	0	500
Food/per diems (# of people at daily rate)	9,180	489	8,691
Communications	360	134	226
Postage & freight	0	0	0
Travel	0	0	0
Miscellaneous (please list)	0	0	0
Total amount	41,840	13,433	28,407