

H. FERTILIZER FOR WORK PROGRAM

1. Funding Levels and Project Goal, Purpose, and Objectives

The Machinga and Balaka Fertilizer and Seed for Work Program no. 690-G-00-01-00141-00 was funded by USAID at \$744,900. The Evangelical Baptist Church of Malawi (EBCM) has managed the project, since its inception in May 17, 2001; it is scheduled to end on May 16, 2003.

Project Goal: To reduce acute food insecurity among the vulnerable families in Machinga and Balaka District.

Project Purpose: To assist program beneficiaries in achieving better food security for their families, to improve the understanding of the efficient farming practices, and to improve access to development services and markets for participating communities.

Objectives:

- ▶ To assist vulnerable households to increase food production without creating dependency or sacrificing dignity;
- ▶ To train committee members on the management of a self-help project, i.e. correct methods of road construction and maintenance, record-keeping, etc.;
- ▶ To increase knowledge related to the proper application of fertilizers, alternative fertilization, agro-forestry, nutrition, gender sensitization, and AIDS education;
- ▶ To improve access to health facilities resulting in improved services provided to and by the center; and,
- ▶ To reduce in part, the time energy, and expense of transporting local products to trade centers, as a direct result of up-graded road conditions.

2. Findings

a. Program Implementer

The program implementer is the Evangelical Baptist Church of Malawi (EBCM) in conjunction with its Canadian partner Emmanuel International. This NGO has been involved in relief and development projects in the Machinga and Balaka districts since 1988. As a result of the rapport it has developed with the communities in the district, and as a result of its past success in rehabilitating 63 kilometers of roads under a food-for-work modality (with CIDA funding), the EBCM was awarded \$744,900 in funding in May 2001, nine months after the start of negotiations with USAID, including the contracting office in Gaborone. As a result of these extended discussions, the project which had been agreed to be a one-year project, had to be done in two years instead.

Additional external funding was received to replicate the program. Tearfund, a British NGO, provided a further expansion of this year's program (2002), using funds collected by the Disasters Emergency Committee (DEC) consortium of UK NGOs. This funding made it possible to reach an additional 8,000 direct beneficiaries during the 2002 season and made possible the rehabilitation of 100 km of road. Thus, because of USAID's support of this

innovative approach, external funding has been found to expand the program in the 2002 season by about 50 percent.

b. Pre-Program Situation in the Targeted Area

The two districts are dominated by subsistence farming, as farm size is falling in the face of rapid population growth, with 40 percent of the farmers in Balaka owning less than two hectares each. With little land available, few assets, and little income with which to buy inputs, harvests are scant. Unlike many other parts of southern Africa, Malawi has only one set of rains, and the dry season lasts approximately eight months. Yet the worst hunger comes in the months of January to March after the rains have come, and after the new crop has been planted, but before it has matured and is ready to harvest. In Malawi, this period is called the hungry season. Fully 78 percent of the farmers surveyed in the two targeted communities reported in 1999, prior to program inception, that their crops kept in on-farm storage from the previous year would be completely depleted before the new harvest came in.

The situation is worse for female-headed households, or 27 percent of all households in the targeted communities. The baseline survey showed that their harvest was 22 percent lower than the overall average for the population sampled. For the female-headed households, the hungry season lasted 12 weeks, five weeks longer than the average of seven weeks for the population represented by this survey.

The EBCM has addressed these annual food shortages first by straight relief operations, and from 1998 and 1999, by participating in the Starter Pack initiative. The EBCM was also involved in food-for-work programs during that same period.

Soils in both Machinga and Balaka district are deficient in nitrogen. Extension efforts are going toward encouraging the use of biomass from suitable agro-forestry trees, compost manure techniques, and nitrogen fixing through planting crops like groundnuts. While encouraging, the results are insufficient to dramatically improve the food security of the populace. While the Starter Pack initiative has improved maize yields, it is encouraging a continuation of the hand-out mentality which permeates rural areas of the country, and only provides enough inputs for a 0.1ha plot, which is insufficient to provide the yield increase necessary to achieve food security in any given year.

In these two districts, many communities suffered from precarious road access, with some of the communities being accessible only by foot and bicycle paths. Trucks were unable to enter many of the areas to buy products after the harvest. Even emergency vehicles were unable to enter many areas. Road construction was planned to a standard allowing year-round access, wide enough for two vehicles to pass (4.5 meters), sloped to allow rain to drain, and ditched to channel run-off away from the road. Low grass was allowed to grow along road-edges to protect berms from erosion.

c. Program Methodology

The EBCM developed its program in accordance with its past experience with the community and in accordance with the community's own understanding of production technologies for the principal food crop (maize), in an innovative program of providing a high-yielding package of

hybrid MH18 seed and fertilizer in exchange for work on community road rehabilitation projects. The program proposed to cover 250 kms of road broken up into 40 subprojects, so that the participants worked on stretches of road within walking distance of their villages. There was no tie-in between the program and church activities, except for the fact that recipients were aware that EBCM was carrying out the program.

Targeted beneficiaries included female-headed households and families with landholdings insufficient in relation to the number of family members. The original estimate was that the program would benefit 20,000 people directly and 100,000 indirectly through improved family nutrition.

The program also included aged and infirm beneficiaries who did not participate in the road construction and rehabilitation activities. Field committees in each village selected the non-participant beneficiaries. Drawn from the community, they were in a better position to identify those in need than was the EBCM. The committees understood not only what the individual's vulnerabilities were (who was really disabled and who was not), but also as to who were the individual's existing support mechanisms - for example, those who had relatively well-off relatives in an urban area who were supporting them, and those who did not. Selected non-participants received the same input voucher in exchange for a fixed number of days' labor as did regular participants. There have been no reports of non-participant beneficiaries being unable to find someone (family member, friend, etc.) to plant and tend the crops for them.

Nevertheless, the program is largely self-targeting, with individuals volunteering to participate. The poorer sections of the community tend to be willing to do this work for inputs. Communities were selected, starting with those where EBCM had already been serving with its long-term development programs. After the first year, traditional authorities and local government officials expressed their communities' interest in being included in the program.

Tools were purchased by the project and were loaned to the communities. Since the road rehabilitation schedule was staggered, tools were taken from a completed site for use on a site where the work started later. This system reduced the number of tools that needed to be purchased. Farmers brought their own hand hoes to supplement tools provided by the program. Before the program started, the rehabilitation of one kilometer of road was expected to take between 22 to 24 person-days.

d. Program Impacts

Participants are given a voucher redeemable with seed and fertilizer that suppliers provided in compensation for their work on the program. The voucher entitles them to 10 kg of hybrid seed and 50 kg of fertilizer, sufficient to plant half a hectare. With the use of urea, an average production of 800 kg of maize (yield 1,600 kg/ha) can be expected; this represents four times the yield obtainable without fertilizer. Initial discussions revealed that a small percentage of the farmers preferred CAN (calcium ammonium nitrate) to urea; with CAN, maize production averaging 600 kg (yield 1,200 kg/ha) could be expected, still double the abysmally low output that farmers obtained without fertilizer 300 kg (yield 600 kg/ha). Since the average family consumed just under 11 kg of maize per week, this addition to the family larder would be enough to see most families through the hungry season, with a small cushion remaining when the new harvest came in.

Based on the value of the input package at retail level, where 10 kg of hybrid seed is worth approximately MK600 and 50 kg of urea is around MK1,350, the value of the voucher is approximately MK 1,950. Participants work for approximately one month -- usually half a day for two months, sometimes a third of a day for three months, depending on the community consensus decision on how to arrange the work. Sundays are not work days, meaning that beneficiaries work approximately 26 days a month, for which they receive a voucher whose equivalent as a daily wage, is approximately MK75 per day. This rate compares very favorably with the daily wage that averages between MK 20 and MK 40 a day. In fact, during the dry season when most of the work is done, agricultural employment is not available at all. Thus, the opportunity to work on road construction is an attractive alternative for the poorer members of program communities, as it allows them to turn their unemployed labor into inputs, whose value they are well aware of. Experience shows that once people become convinced that EBCM will actually provide the vouchers and redeem them for inputs in time to use them for planting, interest on the part of the community is tremendous.

e. Program Organization

Initially scheduled to start in September 2000, the program actually got underway in May 2001, when funds were obligated. The first steps were hiring staff, approaching communities to ascertain interest, conducting the community survey, and training field committees. Work on the first roads began during the first quarter of the program's operation. Work on individual roads was scheduled for completion before the beginning of the rainy season, when planting takes place. Vouchers were issued to participants and to non-participant beneficiaries, once the roadwork was completed. Hybrid maize seed and fertilizer was scheduled for distribution in November. (Project staff has carried out monitoring and evaluation, but further work particularly to assess the impact on traffic is required and is scheduled. See the M&E section below.)

f. Program Management

Individuals were hired based on their qualifications, and were trained not only in direct program-related activities, but also in the overall approach of EBCM and the various messages it wished to transmit with respect to: fertilizer use, alternative fertilizers, agro-forestry, gender, and health. Government officers still on salary from the Banda-era District Road Improvement Program (DRIMP), were brought in for technical aspects of training in road rehabilitation.

There was one committee of six people for each kilometer of road improvement work. Each committee received two days of training covering managerial, technical, and sector issues. There was equal gender representation.

g. Results: Targets Reached and Surpassed

Maize yields that had been targeted to increase by 50 percent, actually increased by 300 percent - in comparing beneficiaries' yields using hybrid seed and urea, to those achieved by non-participating farmers using local seed and no fertilizer. Yields were established from a post-harvest survey of both beneficiaries and non-beneficiaries. Farmers reported the numbers of bags of maize that they harvested and the inputs they used, and the field staff assessed the size of the plots. The yield figures for the 2002 harvest were generally lower than anticipated for both

beneficiaries and non-beneficiaries. Yields were adversely affected by weather and by the severity of last year's hungry season resulting in a lack of energy for farming (especially weeding), in crop theft, and in the consumption of pre-harvest green maize.

During the first year 2001, 12,784 participant beneficiaries were active in roadwork and 816 non-participating direct beneficiaries (aged and infirm) received input vouchers, and road rehabilitation reached the 170 kilometers targeted. In the 2002 season: 100 kilometers of roads were built or rehabilitated through the efforts of 7,466 participant beneficiaries and of 534 non-participant beneficiaries, who received employment opportunities and fertilizer/seed vouchers from the program. The original goal for the second year was 80 kilometers, but an additional 20 kilometers were made possible by cost-savings, including favorable input purchase contracts that EBCM succeeded in negotiating with suppliers. USAID agreed to a no-cost extension for this additional work. By the end of the second year of the program, the number of beneficiaries stood at 20,250, with an additional 1,350 non-participant beneficiaries having been served, and with 270 kilometers of road having been built or rehabilitated.

Eighty-seven percent of the beneficiaries surveyed during the first year used all of the inputs received on their farms. Thus, only 13 percent of beneficiaries sold any of the inputs provided. None the beneficiaries sold all of their inputs. As a result of this finding, the target has been adjusted downwards to 85 percent for the use of all the inputs, from the initial goal of 100 percent, which was unrealistic.

The original estimate was that to construct a kilometer of road would take an average of 23 person-days. In fact, it has been found that it takes closer to 30 person-days per kilometer. In some areas it takes more where rocks are encountered which have to be dealt with using manual methods. The physical weakness of many participants is also a factor; because many of the program activities occur during times when family food reserves are low and their productivity in physically demanding work is reduced.

Over 22,600 people received some training in agro-forestry, agriculture, AIDS education, gender, and health; this was more than the number originally targeted. This sensitization set the groundwork for any future in-depth interventions and promoted greater awareness of the concepts introduced by this program.

In view of the perceived success and popularity of the program with participating communities and in view of the interest in participation by those not already served -- a proposal is to be prepared and submitted to USAID for a two-year extension. The target for such an extension would be to reach 12,000 direct beneficiaries per year (60,000 indirect beneficiaries), with a total budget of just under \$1 million.

h. Monitoring and Evaluation

Baseline focus group surveys were carried out in participating communities at the start of the program. Not all the data collected have been collated, due to the shortage of staff for a good period of time in the monitoring section. EBCM has just recruited a Senior Monitoring and Evaluation Officer to help with the workload, which should improve its monitoring and evaluation of program activities, including the production of an in-house evaluation at the end of the program.

A post-harvest survey of a representative sample of beneficiaries, as well as a control sample of non-beneficiaries, was carried out in May 2002. The survey focused on maize yields, inputs used, sizes of plots, use or sale of the project inputs, and the nature of any particular difficulties encountered due to last year's severe food shortages.

3. Conclusions

Building on the credibility and years of experience that EBCM has had in the area, this program has succeeded in its dual objectives of rehabilitating a significant extension of roads in rural Balaka and Machinga districts and in improving food security dramatically. In all, around 270 kilometers of roads were improved in the USAID project and a further 100 km of roads were improved with Tearfund/DEC funds. In addition to road rehabilitation carried out with hand-tools -- water-crossings, which frequently interrupted road transit during the rainy season, were also addressed. Additionally, more than 220 culvert crossings were built and 15 small bridges were rehabilitated.

Food security increased dramatically, as increased production of maize was sufficient to cover more than three months of additional family needs for food. For many families, this meant the difference between covering their food needs year-round or depending on handouts of food aid. Indeed some of the participants working on the project were so short of food that they were barely able to do the roadwork that required considerable physical exertion.

The use of urea (rather than Calcium Ammonium Nitrate fertilizer (CAN) minimizes the leakage of fertilizer to cash crops, since CAN is commonly used on tobacco while urea generally is not.

This program provides a model for resolving Malawi's chronic and recurrent food security crises. Most of the country's population is rural and must provide for the bulk of its food requirements for the main staple, by producing the maize itself. To produce an adequate supply of maize in order to cover family food requirements on the limited land which people have in this densely populated country, and with the limited area that they can care for with hand-labor alone -- farm families have to increase yield by using a package composed of improved seed and fertilizer. Farmers understand the value of this package through the extension efforts and experience of the past, but have been unable to purchase these inputs in recent years. Credit is not the solution, because hardly any of the increased production will be sold (being used for family consumption in most years) and therefore, funds will not be available for the repayment of loans. The model of seed-and-fertilizer-for-work pioneered by EBCM with the help of USAID, is valid. This model will work nationwide to meet chronic maize deficits for poor families willing to participate in the program -- if supported by USAID's lead and with the collaboration of the World Bank and other donors. Unlike the Starter-Pack program that is inadequate in amount and wasteful of resources, the seed-and-fertilizer-for-work program is self-targeting for the poor and directly addresses and resolves their chronic food security problem.

4. Recommendations

Such programs break the hand-out mentality, contribute to farmers' dignity by allowing them to satisfy their food needs out of their own production, reinforce the message that appropriate technology works, and build infrastructure which in its own right contributes to higher farmer incomes, through increased competition in marketing and improved access to services.

Recommendation 1

The Seed-and-Fertilizer-for-Work model has been validated by EBCM's experience, and should be expanded on a massive scale in collaboration with other donors, to replace the untargeted Starter Pack program and its monumental waste of resources on people who could afford to buy these inputs commercially. USAID should include a program of this type in their planning for future years and begin work, in conjunction with other donors, on putting it into place nationwide, in time for the next planting season (November 2003).

Recommendation 2

USAID should market this approach to road rehabilitation programs that it is implementing in other parts of Malawi and in the region. Other donors should also be made aware of the successes of this approach (in addition to the one British NGO which has already adopted the approach with EBCM).

Recommendation 3

The input package approach is a major improvement over straight food-for-work programs. Its use should be expanded in other road-building programs.

Recommendation 4

The approach has broader application and can be used on projects other than road building. Its use should be tested with financing by USAID, as part of its contribution to introducing innovations in the development process.

Recommendation 5

Future projects should include as participants some of the infirm and aged who are physically not able to participate in road building activities; they might be used to do traffic counts sitting by the road which are being improved by the project. The work is important and dignifies the work of those who do it, without requiring the physical effort called for in road building. Careful counting should be an improvement over focus group estimates and will provide better estimates of the benefits of such programs.

Recommendation 6

Although soil acidification does not appear to be a problem, the EBCM should carry out a number of soil tests to rule out this possible problem.

5. *Lessons Learned*

- ▶ The seed-and-fertilizer-for-work program is without doubt one of the most innovative projects upon which USAID has embarked in recent years. It points the way to address Malawi's chronic food deficits, in a way that accurately targets the rural poor and empowers them to take charge of providing for their families' food security. At the same time, the program improves access by their communities to the commercial trading

network and to the social and developmental services which have been denied to them by non-existent or impassable roads and, this program, thereby, further contributes to increasing family incomes and hence food security.

- ▶ Given the value of the vouchers which are based on the number of days worked to obtain the input package, and where the value of a day's work is significantly higher than the agricultural daily wage -- seed-and-fertilizer-for-work programs may be more attractive than food-for-work programs and may convey a greater sense of pride, dignity and ownership to people who then go on to use them to produce their own food.
- ▶ A well-established NGO with a long history of experience in similar projects involving Food For Work road rehabilitation, is well suited to run such a project..
- ▶ Successful pilot project such as this one can be expanded by the same implementing agency able to obtain additional funding, as a result of initial success with the project. Copycat projects of other donors and other implementers are also likely. In both cases, USAID's resources might be used to leverage funding from other donors.