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AGRICULTURAL TECHNOLOGY IMPROVEMENT PROJECT (ATIP)

TESTING AN ACCELERATED EXTENSION APPROACH IN NORTH EAST DISTRICT: THE CASE OF EXTENSION-ORIENTED FARMER TESTING GROUPS

BY

G. HEINRICH, S. MASIKARA, S. MAGALELA AND G. MOREMEDI

ATIP WORKING PAPER

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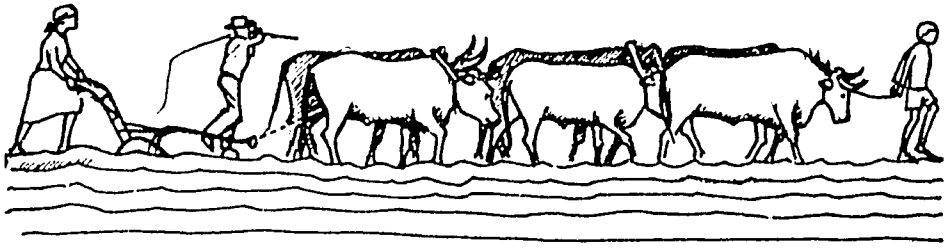

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ATIP WORKING PAPERS CONSIST OF METHODOLOGICAL AND EMPIRICAL MATERIAL WHICH HAS BEEN REVIEWED INTERNALLY BY ATIP BUT DO NOT NECESSARILY REFLECT THE VIEWS OF THE DEPARTMENT OF AGRICULTURAL RESEARCH, MINISTRY OF AGRICULTURE, BOTSWANA

ABSTRACT

For the past two years, DAFS (including ALDEP) and DAR staff in Francistown have been testing an extension system aimed at accelerating the rate of adoption of improved farming practices among small-scale farmers. The work has been done in collaboration with the Communal First Development Area (CFDA) in North-East District.

The approach involved working with a group of volunteer farmers in each of the two extension areas. Within these groups, the farmers selected topics they were interested in, such as row planting methods, fertilizer application, etc. DAFS and DAR staff jointly provided as many options as possible for addressing these topics (e.g., there were four different types of row planters). Individual farmers selected options that suited their own needs and resources, and tested them in their own fields. Then throughout the season, farmers, DAFS and DAR staff met monthly to discuss the tests and to deal with any problems that arose. Field days were held in late April, and an assessment of the performance of each technology option was made by the group at the end of the season. At this time farmers also applied to ALDEP for equipment they wished to purchase.

This was a "group" approach to extension, but it differed from most group actions in that each farmer acted individually to select and test technology items that they, themselves, were interested in. The only "group" activities undertaken were meetings that were held to exhibit technology options or to discuss the separate activities of the various participants.

This approach has proved to be beneficial for all involved. For example, it was popular with farmers and resulted in a greater number of requests for ALDEP equipment and an increased rate of application of improved production methods in the areas where it was operating; it was an excellent forum for bringing together DAFS and DAR staff with farmers in the field to focus on local production problems; and it also provided AD's with a time-saving method for conducting an effective extension programme while still allowing them to continue with the important work of administering government assistance programmes (like ALDEP and ARAP).

Overall, it appears that this was a successful approach to improving the adoption of production practices, and one that could be widely applied across a region. Some ideas for the expanded application of the approach are discussed in this paper.

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ACRONYMS

AD	Agricultural Demonstrator
ALDEP	Arable Land Development Project
ARAP	Accelerated Rainfed Agricultural Programme
ATIP	Agricultural Technology Improvement Project
BAC	Botswana Agricultural College
CFDA	Communal First Development Area
DAFS	Department of Agricultural Field Services
DAO	District Agricultural Office (or Officer)
DAR	Department of Agricultural Research
DAS	District Agricultural Supervisor
DDF	District Demonstration Farm
EOFTG	Extension-Oriented Farmer Testing Groups
NGO	Non-Governmental Ogranisations
RTC	Rural Training Centre

INTRODUCTION

For many years the adoption of improved farming methods has been fairly slow in the Francistown region. In addition, in recent years farmer training by AD's has been hindered by the necessary but difficult burden of administering farmer assistance programmes like ALDEP, ARAP, and other drought relief programmes, etc. To further complicate matters, farmers vary amongst themselves in terms of their interests, abilities and resources. For example, some use donkey draught, some use oxen, others tractors. Thus AD's must provide many different options for the community. Farmer training courses offered at local RTC's are often useful, but generally there has been little backup for farmers once they have left the centre. When trying to apply in the field what they have learned at the RTC, farmers may get discouraged by the apparent lack of encouragement, or may encounter problems that they did not learn about in the course. In either case, this may lead farmers to give up and return to their traditional methods.

In 1987 the coordinators for the CFDA in the North East District asked the Department of Agricultural Research personnel in Francistown (ATIP) to join them in addressing the problem of slow adoption in the CFDA. After discussions between Regional and District DAFS staff, DAR staff and CFDA coordinators, an accelerated extension approach was designed for testing in one village in the CFDA area (Mapoka village). The test was to be run jointly by all participants, and is described below.

APPROACH

The accelerated extension approach described here was first tested in Mapoka village in 1987-88, and then expanded to a second village (Musojane) in 1988-89. The approach was implemented as follows:

(a). The first step was to attend a ***kgotla*** meeting and announce the beginning of the programme. After a brief description of the programme, any interested farmers were invited to attend the first group meeting.

This first meeting was chaired by the local AD, but a district level DAFS officer and regional research officers also attended. During the meeting, farmers were asked to describe what types of improved farming methods they were interested in learning about. This was considered a very important step because farmers tend to only participate fully in an activity when it is something in which they are interested. The same applies when it comes to adopting improved technologies. Thus understanding farmers' interests was crucial to providing them with improved technology that they might adopt.

In the first meeting in Mapoka (1987) farmers expressed an interest in row planting methods and in correct fertilizer application methods. Additionally, several farmers wanted to grow fodder crops after the uses of these crops had been explained to them by an ALDEP officer.

During this first meeting the participants also discussed in detail how the programme would operate. The purpose was to include farmers' ideas on how the accelerated extension approach could best function.

It was agreed that DAFS and DAR personnel would loan equipment for testing as well as provide small amounts of seeds. Fertilizer was available through the ARAP programme and ALDEP promised to provide seed for fodder crops. After initial

instruction, farmers selected the items they wished to test and did the testing themselves, with their own draught power on their own lands. The fact that farmers selected what they wanted to test ensured that all farmers could work on items that suited their own resources, whether they used tractors, oxen or donkeys for draught power. This also freed the AD from having to assess farmers' problems and resources, and from having to make any recommendations.

In this initial meeting it was also agreed that the farmers, the AD, and regional DAFS and DAR personnel would meet once a month to discuss progress made, problems arising in the tests, and farmers' general observations. This monthly interaction ensured that all participants maintained regular contact with each other without being too time consuming.

(b). Before the second meeting, the DAO and DAR staff collected a range of planting equipment (including the Sebele standard planter, the plough/planter and the rotary injection planter) and other relevant inputs. At the second meeting, early in the rainy season, the DAFS staff presented the equipment to the farmers and demonstrated and discussed, in detail, each technology item (planters, fertilizer application methods, etc.). Farmers then selected the necessary inputs and started their trials. A "field assistant" was hired by DAR to assist the AD in distributing the inputs and equipment to farmers, and to keep records regarding the location of equipment and farmers' activities. The field assistant was hired by DAR because it was a "test" of a new system, and funds for this activity were not available from DAFS.

(c). Throughout the season, monthly group meetings were held. These were very important for several reasons:

i. If any farmers had problems with the items they were testing, they were able to discuss them at the meetings where they got help from other farmers who had addressed the same problems, from the AD, or from more senior experts if necessary. Thus their initial problems were solved in a timely manner.

ii. The meetings also encouraged farmers to be active, since they wanted to show their fellow participants what they had achieved.

iii. The meetings allowed farmers to share opinions on the advantages and disadvantages of various technology options. In these discussions, the farmers learned about all of the technology options, not just the ones they themselves were testing.

iv. They provided an opportunity for farmers, DAFS and DAR personnel to discuss general farm problems, including issues outside of the items being tested.

v. The meetings allowed DAFS and DAR staff to monitor the farmers' progress with the improved technologies, to better understand the types of problems farmers faced in learning to use the new equipment, and to monitor the general farm situation during the cropping season.

Thus the monthly meetings were very useful, and very important for the success of the approach.

(d). Field days were held when crops were nearing harvest. These were attended by people from the village, farmers from other villages in the Francistown region, AD's

from the Tati district, DAFS district and regional staff, and DAR staff. During the field days, participating farmers had a chance to show the visitors their fields, describe what they had done and answer queries on the improved technologies they had been testing. This activity was very rewarding for the farmers involved in the testing. It should be emphasized that it was the farmer, who had carried out the trial, who described the trial at each field visited. This greatly encouraged visiting farmers because the technology was being applied by farmers like themselves, and they could see the results. This method of farmers teaching other farmers is an effective way to spread improved farming practices. During the visits there was a great deal of discussion among farmers about the pros and cons of various technology options. This was clear evidence of the strong interest that was generated by the field trials.

(e). At the end of the season, after harvest, a final group meeting was held to assess farmers' overall opinions on the improved technologies, and to plan for the coming year. Many farmers, who were pleased with the equipment they had tested, decided to apply to purchase the equipment through the ALDEP scheme. They were assisted in this by the AD and district level DAFS staff. It was agreed that these applicants should be given priority in obtaining equipment because it was clear that they knew how to use the equipment and were intending to use it extensively in the future. It was also believed that farmers who learned to use improved methods through the extension groups could act as advisors for farmers operating near to their fields, and so help to reduce the work of the AD.

(f). It should be noted that there was a difference between the way these "tests" were conducted by farmers and the way tests have been conducted in researcher-oriented farmer testing groups. In these Extension-Oriented Farmer Testing Groups (EOFTG's) the tests were not conducted according to any standard design. Each farmer decided for himself/herself on what size of area to plant, what seed to use, etc. Records were kept regarding which technology each farmer tested, but there were no records of dates of field operations or grain yields. The tests also did not include control plots for making comparisons. Although it was originally recommended that farmers plant control plots beside the test areas, this suggestion was largely ignored. The only additional data collected were from an End-Of-Season Survey, used to quantify farmers' opinions regarding the technology they had been testing, and records on the equipment purchased by farmers. The lack of structure and data from the testing programme were not major concerns because the main purpose of these groups was for the extension of improved technologies. The monthly meetings and End-Of-Season Surveys provided sufficient feedback for the extension process.

In addition, it is important to realize that while this was indeed a "group" approach to extension, it was not typical of the type of group that is usually formed for a joint activity. Instead, each farmer participating in the group acted as an individual. Each one selected an item based on their own individual interests and resources, and tested it on their own field. The farmers only came together as a group to hear about the various technology options they might be interested in testing, and to share their observations, problems and opinions on the technology options being tested. Thus each individual was working on his or her own problem, but sharing the knowledge gained with the other members of the group.

(g). A final point regarding the frequently raised question about the recruitment of group participants. The initial participants were simply people who responded to the public announcement made at an open village meeting (***kgotla*** meeting). After that, a few

more people joined after talking about the activities with participating friends. It was felt that if more participants would be desirable, further invitations could be made at future villages meetings. This recruiting approach was used to ensure that participants were self-motivated and had a genuine interest in learning, and to avoid the issue of people seeking handouts. It also avoided the issue of bias and favouritism. However, it was felt that participation by key farmers was important, and if those key farmers were not already participating, there is no reason why they could not be specifically contacted and invited to attend.

OBSERVATIONS ON THE EFFECTIVENESS OF THE APPROACH

The system of using EOFTG's appeared to be very useful for the AD's because it was a time-saving approach and allowed them to operate a successful extension programme while still giving them sufficient time to administer government assistance schemes. Also, for AD's with less experience, it was very helpful for them to have backup from more senior DAFS staff and researchers.

The approach was much appreciated by farmers because it allowed them to learn to use improved practices before deciding whether or not to purchase new equipment; it allowed them to learn about a number of different options at the same time; and throughout the season it provided them with a continuous source of encouragement and assistance, whenever problems arose.

As evidence of the effectiveness of the approach, 13 out of 22 farmer participants in the Mapoka group have either ordered or received planter units (Sebele Standard Planters), and 11 units have been purchased by the group members in Musojane. Since some of the participants had planters originally, most of the group members now have planters. Additionally, a new light weight cultivator was presented to the group in 1988 and became available for sale in September 1989. In that same season, 16 farmers purchased cultivator units.

Originally there was some concern that the EOFTG's might be dominated by more well-to-do members of the community, since participation was open to all. This was not the case. At the meetings, each participant was given a chance to speak thus all had an opportunity to express themselves. This could perhaps become a problem if the groups became too large and then not all members could speak. The fact that the farmers were working with a range of technology options also contributed to the lack of dominance by anyone in particular. Farmers with more resources tended to use different options from farmers with fewer resources. Since all the options were discussed at each meeting, farmers with more resources talked about the options they were using while farmers with less resources did likewise. Thus the issue of having the meetings dominated by a particular group did not arise.

Participation in EOFTG's was very useful for research personnel. It improved the linkage between research and extension personnel at the district level. In future it should also assist with the smooth extension of new technology options coming out of the research process.

The group meetings provided an excellent forum to bring DAFS and DAR staff and farmers together, in the field, to focus on production problems. Additionally, non-governmental organisations (NGO's) such as the Brigades are beginning to participate in these activities. Such participation can lead to improvements at the district level. For example, because of farmers steady complaints about the difficulty of transporting fertilizer from Francistown, the Zwenshambe Brigade is now planning to stock and sell fertilizer to farmers in their area.

In general then, using EOFTG's to accelerate extension efforts has been seen by the participants as a successful approach, that is, it is effective yet simple to operate. Problems sometimes occurred because senior DAFS staff did not have time to attend monthly meetings (due to heavy administrative loads), and sometimes there was a lack of equipment when farmers were ready to buy. But the problems were not insurmountable, and generally the approach seemed practical. The DAR and DAFS staff who participated in testing the system believe that if the system were widely applied it could impact many farmers and greatly accelerate the rate of adoption of improved production practices in rural areas.

In summary, the EOFTG approach, has been popular and effective with farmers for several reasons:

(a). Each farmer was ***free to chose*** the particular option or options they wished to test. This meant that the farmers were working with something they felt might be useful to them, and which suited their resources.

(b). The regular group meetings provided the farmers with ***backup*** throughout the cropping season. Consequently whenever they encountered a problem with a new technology option there were people immediately available to help solve it. In this way farmers learned to overcome the early problems involved with adopting a technology, instead of becoming frustrated and giving up.

(c). At the same time, the EOFTG approach was a far ***more efficient*** extension method than individual farmer visits, because of the amount of time it saved extension personnel in going from farm to farm, and repeating an extension message to each farmer, one by one.

IDEAS ON THE EXPANSION OF THE EXTENSION-ORIENTED FARMER TESTING GROUPS APPROACH

Work to date has involved "testing" a potentially useful approach. To take advantage of the information gained from the test, and to spread the impact of the system, the EOFTG approach would need to be applied on a much wider scale. This type of approach is fairly flexible, and could be useful either on its own (within a region) or in conjunction with other programmes. Applied on its own, the system would require a district or regional coordinator, on the level of a DAS (District Agricultural Supervisor). This coordinator would oversee the groups activities generally; coordinate and arrange training courses for AD's (locally) where necessary; ensure that the groups were provided with the necessary equipment for demonstrations and farmer tests; generally provide backup support for AD's; and facilitate interaction between the groups and subject matter specialists, ALDEP and research personnel, as necessary. A single officer in this position could greatly strengthen the effectiveness of extension within a district or region, for a relatively small cost in terms of the allocation of personnel. Such personnel may be available. Within DAFS there are experienced and capable AD's who may be frustrated by the lack of opportunities for advancement. At the same time, new AD's are graduating from BAC every year. Creating a new "groups coordinator" post in each district, at the level of DAS, would allow for the promotion of promising personnel while strengthening the effectiveness of the department.

Within extension areas, AD's might also require one field assistant to help administer the programme. Again this would be relatively low cost. Such a programme could start out with only a few groups within a district, and spread to more extension areas as the appropriate systems developed, and AD's became more conversant with the programme.

Should AD's find that there were more farmers in their area who wished to participate than could easily be accommodated in one group, the AD's could presumably start a second group. A second group would probably require the addition of more of the items being tested, and might require an additional field assistant to liaise with farmers in the second group.

With the proper spacing of activities, the coordinator would stay busy all year round. The winter season could be used for training sessions with AD's, and for promoting ALDEP programmes such as the construction of water catchment tanks and fencing.

If the EOFTG approach were applied in conjunction with other programmes, a special coordinator might not be necessary. ALDEP and others are now considering some alternative methods for accelerating adoption of improved practices among ALDEP target groups. These include District Demonstration Farms (DDF's), the use of farmer training programmes, extension videos, Soil Conservation Groups and Farmer Field Days. Some ideas on how the EOFTG approach might usefully be merged with these techniques are described below:

(a). ***District Demonstration Farms:*** Besides being a useful demonstration plot for a district, DDF's might provide the backdrop for an EOFTG, where farmers could get "hands-on" training and practice in the use of various technology options before selecting items for testing in their own fields. The DDF's would also be a place where farmers could observe the effects of putting various technology options together in a package, for example, a combination of early ploughing, row planting, fertilizer application and the use of the Maun cultivator as a package for donkey owners. At the same time, organizing a "group" around the DDF's would greatly strengthen the DDF programme because it would provide an efficient form of backup support and encouragement for farmers trying to adopt technology options they observed in use on the DDF's. The backup would likely result in a much higher success rate among farmers trying to adopt improved practices. Supervision of the group would fall to the AD and the regional ALDEP officer in charge of the DDF, though a field assistant would probably be necessary to help the AD administer the programme.

(b). ***Farmer Training Programmes:*** EOFTG's could also be easily combined with the farmer training programme being developed and practiced by researchers in Mahalapye. EOFTG's could be an excellent vehicle for training programmes (as with the DDF's) and provide the important backup function for farmers trying to adopt the technologies.

(c). ***Extension Videos:*** In areas somewhat removed from DDF's, extension videos could serve as a means for generating farmer interest in new technologies and for teaching farmers how to use the various technologies. Again, this would be very compatible with an extension group approach. For example, the videos would naturally be shown to a group of farmers, not on an individual basis. The videos are sufficient to give farmers the basic idea of how various technologies are used, but farmers will forget some of what they see and hear, and videos cannot deal with specific problems that farmers may encounter later when they try to apply what they have seen on film. Thus, again, using the group forum to provide backup for these farmers, on a regular basis, would be a logical approach. Providing backup support would result in a significantly higher adoption rate than if farmers were simply shown a video message once and left to their own devices when trying to apply the new ideas. In this case, groups would have to be managed by the local AD, with

help from district level staff and possibly regional DAR staff. A district coordinator might also be necessary, depending on the number of groups in the district.

(d). ***Soil Conservation Groups:*** The EOFTG approach is already being applied in this area. Only small modifications would be required to expand it and allow participating farmers the option of testing a wider range of technologies. Expansion of the soil conservation groups would probably require ALDEP to place technical officers in each district.

(e). ***Farmer Field Days:*** Farmer field days are a well tested extension approach. They are often used to expose the farming community to new ideas and to demonstrate that new technologies are practical and productive. The EOFTG's have been used as a basis for field days, and have proved to be very effective. At these field days, the farmers involved in testing specific technologies are given the chance to present their work and their opinions to other visiting farmers, in the field. To have farmers who have actually used the technology teaching other farmers how it works, is probably on of the fastest ways to promote improved production systems.

SUMMARY

Overall, it appears that this was a successful approach to improving the adoption of production practices, and one that could be widely applied across a region. In addition, the EOFTG approach is flexible and compatible with a wide range of other extension techniques and activities. The components of the model which contribute to its success and distinguish it from other approaches are as follows:

(a). Bringing farmers together in a "group" to make more efficient use of extension officers' time, and to enhance the sharing of ideas.

(b). To give to farmers the responsibility of deciding where their interests lie, and which technology options best suit their needs (they are in a better position to decide this than anyone else).

(c). To have regular meetings throughout the growing season to provide backup for farmers working with new and unfamiliar technology, in a time and resource-efficient manner.