

Efforts and initiatives for supply of conservation tillage equipment in Zambia

by

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Abstract

Before liberalization of Zambia's agricultural industry in 1991, animal traction equipment supply to the smallholder farmers was through a highly centralized co-operative movement; the Zambia Cooperative Federation (ZCF). After the agro-industry was liberalised, the co-operative movement in Zambia started to collapse. This was due to the removal of government subsidies which had sustained its operations. Many rural retail outlets for animal traction equipment also collapsed and a vacuum was created in the process.

To fill the vacuum was created, the Africare Smallholder Agricultural Mechanization Promotions, (SAMeP) programme has greatly helped the smallholder farmers. The programme aims to increase agricultural productivity and profitability in rural areas. Activities are primarily geared towards making relevant technologies including the necessary spares available and accessible to end users, who are the farmers and rural entrepreneurs. Additional technology development work through applied research and development supports activities and helps to broaden the equipment supply base. This paper focuses mainly on SAMeP's efforts and initiatives in the supply of animal traction, soil conservation and water retention technologies for more sustainable crop production. These efforts include promoting locally proven animal traction technologies for soil and water conservation and problem analysis and identification testing and adapting promising technologies. The limitations and achievements in the efforts to carry out the objectives are highlighted.

1. Introduction

Prior to the liberalization of the agricultural industry in Zambia, equipment supply and distribution to the remote areas was done through a centralised parastatal system. This system had its own effects on the demand and supply of equipment in the remote areas.

From the farmers point of view, constraints such as poor profitability of food crop farming, low farm prices and poor marketing systems, absence of credit and the delayed payment for farmers' produce contributed to the poor demand for agricultural implements and spares.

Poor awareness by farmers of new or existing equipment options and techniques for tillage had its own effects. Overall, the weak position of farmers due to poor representation within supplying co-operative societies led to top-down and arbitrary decisions relating to the type, origin, quality and price of equipment supplied to farmers. These factors contributed negatively to the marketing arrangement for agricultural implements.

On the supply side, within the centralized government and parastatal sectors, there existed a financial crisis and an inefficient top-down distribution system to, and within rural areas. For local development programmes in areas introducing animal traction, there were major problems of costs, risks logistics and infrastructure. The private sector did not have efficient retailer, dealer or agent networks within rural areas and there were problems of costs, risks and logistics of setting up a new system of agents. Assembly workshops did not exist in rural areas and the transport costs of supplying such workshops would have been exorbitant.

There was lack of sustainable credit at realistic rates, therefore, existing small rural workshops faced constraints with capital and supply of raw materials.

Soon after the multiparty elections in 1991, the Government of the Republic of Zambia decided to liberalise the agricultural industry. The centralized and subsidized system of marketing arrangement that was in operation for many years through the Zambia Co-

operative Federation (ZCF) began to collapse. This was due to the removal of Government subsidies which had sustained the system's operations. The collapse brought about a vacuum in the supply and distribution of agricultural equipment especially to the remote areas of Zambia.

Smallholder Agricultural Mechanization Promotions (SAMeP) is a project being implemented by an American non-governmental organization called Africare. Africare is widely involved in rural development work in Zambia and 26 other African countries. In East Africa, Africare works in Tanzania, Uganda, Rwanda and Burundi. In the Southern African region, Africare works in Angola, Malawi, Mozambique, Zimbabwe, Namibia, Republic of South Africa and Zambia. In Zambia, Africare has been involved in Agricultural Programmes targeting the rural population since 1980. These projects include seed multiplication, small-scale cooking oil production, post harvest processing technology, livestock production, re-training of extension workers on production of high value crops and smallholder agricultural mechanization.

1.1 The SAMeP project

SAMeP evolved from the current Palabana Farm Power and Mechanisation Centre, formerly the Palabana Animal Draft Power Development Programme. It is an initiative under the Agricultural Sector Investment Programme of the Government of Zambia. SAMeP is oriented towards strengthening the private sector. This complements its efforts by the public sector, in particular within the Farm Power and Mechanisation Sub-programme under the Ministry of Agricultural Food and Fisheries. The project operates nationwide and has Field Offices in Lusaka, Southern, Central, Northwestern, Northern and Eastern Provinces of Zambia. In Western Province, SAMeP tasks are being undertaken by a partner NGO called Keepers Zambia Foundation (KZF). All the mentioned field offices including KZF are currently engaged in the wholesale tasks in the distribution of agricultural implements.

SAMeP plays its role in close collaboration with NGOs, the private sector and various other organisations, at field level. At national level it collaborates with the Department of Field Services, Technical Services Branch of

the Ministry of Agricultural Food and Fisheries, NGOs and the private sector.

1.2 Conservation tillage implements promoted by SAMeP

SAMeP focuses on Conservation Tillage Animal traction technologies with the aim of increasing farm labour productivity and food security, through water and soil conservation for more sustainable crop production. These technologies include conservation tillage based on subsoiling, ripping, planting and weeding. The implements promoted are:

- **Palabana Subsoiler attachment:** This implement is used to break the hard plough pan, improving water infiltration and conservation. It can be used both in the dry season on lighter soils and during the rainy season between crop rows. At the moment, this implement is still under intensive promotion. Sales through the established network have been low.
- **Magoye Ripper Attachment:** After on-farm testing, this implement has been widely accepted by farmers. It is used for making planting furrows, either on ploughed or unploughed land. Manual planting follows. The Magoye Ripper Attachment works fairly well on dry soils and dry, early, planting is possible. Currently, there are more than 1500 Ripper attachments operational in Zambia. Promotional work for the equipment is ongoing.
- **Ripper-planter attachment:** This is an attachment to the ripper. The planter attachment eliminates planting manually behind the ripper furrows. It saves on time because ripping and planting become a single pass operation. Dry planting is made fairly easy. The implement eliminates the labour burden on women, whose task it is to plant even after ripping. Different seeds can be planted by fitting different sizes of seed cells depending on the size of seeds. Compared to the conventional planter, the planter attachment is less costly.
- **Ripper-Ridger attachment:** This is a ripper attachment with extended wings and a rudder. It can be used for making ridges prior to planting, either after ploughing or directly, on flat land or by

splitting old ridges. It can also be used for weeding. The rudder gives it more sideways stability and is very useful especially for splitting old ridges. Test results have been positive and the implement is available for sale.

- **SAMeP adjustable cultivator:** This is an entire implement on its own. It is an implement with two front tines to break up the soil before the two tiller blades push the soil into the row. The space in between is weeded with the sweep in the rear. The implement is adjustable whilst working in the field. This implement, among all the above listed is more popular because Zambian farmers have been using a similar Zimbabwe-made unit for a longer time.

2. Efforts and initiatives

Since its inception in 1996, SAMeP has been focusing on the following activities:

2.1 Implementation of pilot activities

SAMeP has been involved in a pilot activity to test the feasibility and create awareness for marketing of broader range of equipment and spares by local traders. Through establishing an equipment fund, SAMeP field offices have acted as the wholesalers in the distribution of equipment and spares. The equipment range is wide and includes other animal traction equipment and spares other than conservation tillage equipment only. Currently SAMeP works with more than seventy (70) sales agents throughout Zambia. Some of these retail outlets are already established retail shops selling agricultural implements. Others are small rural shops selling a wider range of groceries but have decided to take up the initiative to sell agricultural equipment and spares as well.

SAMeP, through its field offices supplies equipment and spares on consignment basis to these rural retail agents. The initiative to take up this challenge of selling agricultural equipment is extended to potential retailers during village demonstrations. Entrepreneurs wishing to take up this challenge sign a legally binding sales agreement.

2.2 Support to rural workshops

The support from SAMeP to rural workshops is mainly in the area of equipment repair, retail

and rehabilitation. Mobile workshops, repairing and rehabilitating old equipment were conducted in 1997 and in early 1998, 10 rural workshop owners in Kapirimposhi District attended a course. This course was planned and conducted together with the District Agricultural Coordinator and a private entrepreneur.

Additional support with training materials and technical advice was provided by Smallholder Agricultural Mechanization Services (SAMS) one of the Manufacturers of Agricultural equipment based in Lusaka. After this training, a follow up on further advice, logistical and financial support will take place, depending on the initiative of the workshop owners themselves.

2.3 Public awareness

SAMeP has been carrying out massive demonstrations of conservation tillage implements through all its field offices and Keepers Zambia Foundation in Western Province. These demonstrations are carried out in conjunction with Ministry of Agricultural Food and Fisheries extension staff and others in collaboration with NGO's.

Every month SAMeP produces radio scripts on different topics, including conservation tillage. These are aired on the Rural Note Book programme or Radio Farm Forum in all the eight major languages of Zambia.

Other promotional activities involve production of leaflets and other extension materials on conservation tillage implements.

2.4 Problem analysis, identification, testing and adapting promising technologies

SAMeP's approach includes client-based needs assessment and evaluation, identification of proven technologies, on-site testing and development of appropriate equipment involving manufactures and working in close co-operation with research institutions and programmes with local extension staff.

Some recent or current activities include:

- the final design of the ripper-planter attachment for local manufacture in conjunction with SAMS. The possibility of using the small Magoye ripper wings as opposed to side plates is envisaged.

This would simplify the use of the ripper-planter and reduce costs.

- improvements to the ox-drawn cultivator were made and a final prototype has been manufactured by SAMS.
- development of a three-tine Donkey weeder has been developed.

3. Progress made

3.1 Achievements

- SAMEP has proved that it is possible to carry out wholesale tasks in the distribution of conservation tillage implements targeting private entrepreneurs. This could be proved through the more than seventy agents currently carrying out retail tasks in six provinces.
- SAMEP has distributed equipment worth US \$75800 to date and has received US \$56750 as repayments or reimbursements from the sales agents. This represents 75% recovery rate.
- Formation of Smallholder Agricultural Implement Suppliers and Workshops Association of Zambia SASWAZ which will look into the interests of rural workshops and Retailers with one common goal. Eventually, it is hoped that SASWAZ will assume most of the tasks currently being undertaken by SAMEP.
- Through networking with the Ministry of Agricultural other NGOs and the private sector, promotion of the Magoye ripper has been very successful. The Co-operative League of the United States of America in Zambia (CLUSA) has ordered five hundred Magoye Rippers from SAMS for onward lending to smallholder farmers in their catchment areas of Southern and Lusaka Provinces.
- Other achievements include successful on-farm tests of the Magoye ripper-planter, ripper-ridger and the new prototype adjustable cultivator-weeder.

3.1 Setbacks

- Lack of a reliable private sector driven agricultural marketing system has led to poor marketing of agricultural produce

and poor farm prices, thereby reducing farmers' income. This has led to poor demand for minimum tillage implements such as cultivators, whose price is relatively high for smallholder farmers.

- Lack of an extensive sales and distribution network in the rural areas has negatively impacted the adoption of minimum tillage implements.
- Absence of rural credit has contributed to the poor demand for minimum tillage implements. As a result of the demise of credit institutions such as the Co-operative Movement, ZCF in particular, and agricultural lending institutions, such as LIMA Bank, smallholder farmers cannot meet the borrowing criteria used by commercial institutions who require collateral.
- Limited awareness by farmers of existing or new implements for minimum tillage has also contributed to the poor response. This could be attributed to weak and under resourced extension services. This has led to few demonstrations being undertaken annually.
- On the supply side, an extensive wholesale and distribution system is lacking. At the moment, only SAMEP is involved in the wholesale tasks. It is hoped that through the formation of Smallholder Agricultural Implement Suppliers and Workshops Association of Zambia (SASWAZ) these tasks will be undertaken by the private sector through the privatized SAMEP Field offices in coordination with SASWAZ.

3.2 Way Forward

Wholesale tasks carried out by the SAMEP Field Office in the Central province of Zambia are in the process of being privatized. A former Africare employee and SAMEP Field Manager in Central province has formed a limited company called Climbers. It is expected that Climbers Limited will carry out all the wholesale tasks which were carried out by SAMEP covering Lusaka and part of the Copperbelt province. Climbers Limited will get financial and material support from SAMEP.

Other SAMEP Field offices to be privatized include Eastern Province which is expected to benefit from the African Development Bank

credit programme implemented by Africare and the Zambia National Commercial Bank and Southern Province which will be privatized, including Farm Implements Repair Organization (FIRO).

On 1st June, 1998, Rural Metal Workshops and Smallholder Agricultural equipment Suppliers joined forces and formed an association called Smallholder Agricultural Implement Suppliers and Workshops Association of Zambia (SASWAZ). This association aims to promote on a national scale, the interests of its members within the agricultural equipment repair industry. This will provide the members with a channel for market information and a platform for creating business opportunities.

SASWAZ will also promote and demonstrate conservation tillage implements within their smallholder farming communities. The founding meeting at Palabana Farm Power and Mechanization Centre had 11 rural workshops and equipment traders from Eastern, Central, Western, Lusaka and Southern Provinces. SAMEP's support to SASWAZ included financing the costs for their initial meeting at Palabana Centre on 1st June, 1998. SAMEP has initially provided services of a coordinator who is currently SAMEP's Field Manager in Eastern Province to run the secretariat. This includes financial support in the running of the secretariat for the initial year amounting to US \$5000.

Through publicity and effective support to members, SASWAZ plans to increase its membership significantly.

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