

Role of the Farm Implements and Tools (FIT) project in the transfer of animal traction technology

by

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Abstract

The Farm Implements and Tools (FIT) project—a joint venture by the International Labour Office (ILO) and the Dutch non-governmental organisation TOOL—is concerned with the transfer of animal traction technology, particularly the promotion of small-scale animal-powered farm implements and food processing devices in developing countries. A study was carried out to investigate the feasibility of local manufacturing of animal-drawn implements in northern Tanzania. The study was undertaken jointly with Camartec (Centre for Agricultural Mechanisation and Rural Technology), a Tanzanian organization with testing facilities and experience with product development. The demand for ox-drawn implements in the three regions surveyed is enormous. A local workshop was selected to start up manufacturing, with the support of a Dutch and a Zambian manufacturer. Camartec supports the workshop, assisting the adaptation of the technology to suit local requirements.

The FIT Project

The International Labour Office (ILO) and the Dutch non-governmental organisation TOOL have started a collaborative project with the overall objective of promoting the development, production and use of improved farm implements and tools, and food processing devices. The project, called the Farm Implements and Tools (FIT) project, is funded by the Government of The Netherlands.

The objectives of the FIT project are to:

- strengthen local capacity for the promotion of farm implements and food processing devices
- improve the flow of technological information
- strengthen local capacity for research and development.

In order to fulfil these objectives, the project aims to:

- develop various improved tools and implements, and establish rural manufacturing units producing such items
- set up efficient and appropriate institutional mechanisms, organised through government

agencies, non-governmental organisations or the private sector, to promote the local development, production and marketing of improved tools and implements for the agricultural and food processing sectors.

- develop local documentation centres, capable of collecting, processing and disseminating technological information among small-scale producers of appropriate tools and implements, making use of the experiences of others, rather than developing new technologies themselves
- produce publications about successful technologies, to make experiences available to others (food packaging for the local market has been selected as one of the subjects).

Beneficiaries

The project's direct beneficiaries include artisans (individuals or groups), cottage workers, cooperatives and small-scale producers, involved in the production of tools and implements for the agricultural and food processing sectors. Indirect beneficiaries include users of agricultural tools and implements and food processing devices. Rural women, who are traditionally involved in these types of activity, are an important category of indirect beneficiaries.

South-south exchange

The project tries to avoid duplication of efforts in different areas. This is a waste of funds and energy. Therefore, exchange of technology between southern countries is stimulated wherever feasible. Technological information (research methodologies, questionnaires, technologies, etc) is exchanged between the southern countries, trade between southern countries is promoted, and training is carried out in neighbouring countries wherever practicable.

Country activities

The project started in 1991 and has so far initiated activities in Benin, Burkina Faso, Ghana, Niger,

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Tanzania and Zambia. From September 1992 the project aims to be active in other countries as well.

In Tanzania the project is involved in the several activities, including:

- a survey of the need for technical assistance in the small-scale equipment sector in the Arusha, Moshi, Singida and Shinyanga Regions
- assistance to Camartec (Centre for Agricultural Mechanisation and Rural Technology, based at Arusha) in order to stimulate the local manufacture and development of small-scale implements and tools for the agricultural and food processing sectors (including the development of a documentation centre, strengthening research and development capacity and training staff to carry out consultancies)
- a feasibility study on manufacturing ox-drawn farm implements (plows, ridgers, harrows, planters and weeders) in Mbulu District.

Technology transfer to a local workshop in Tanzania

Mbulu District is part of Arusha Region in the north of Tanzania. Most of the people in the district are involved in rain-dependent mixed farming. Main crops grown by smallholders are maize, beans, cotton, wheat and coffee.

The Mbulu District Rural Development Programme asked the project to investigate the feasibility of establishing the production of ox-drawn farm implements in the district. The study was carried out in collaboration with Camartec, a Tanzanian centre for agricultural mechanisation: two engineers from Camartec were given on-the-job training in the different aspects of introducing animal traction technology.

The study investigated the market size for these implements as well as the feasibility of establishing a production capacity in one of the workshops in the district.

Market survey

Ox plows are common in many areas of Tanzania. Other ox-drawn implements are rarely found.

The total expected sales of ox plows for the 1991/92 season in Arusha, Shinyanga and Singida Regions are almost 13 000 per year. The genuine demand for ox plows exceeds this number considerably, because every major sales outlet indicated that it would have sold more if the supply had been greater.

The purchasing power of the farmers in the regions concerned is quite high. The profitability for the

farmers of using one or more of the ox-drawn implements is also quite high. Lack of efficient credit schemes is not expected to hamper the purchase of implements.

The plows actually available on the market are very cheap. The plows to be introduced will cost more, but they are of better quality. (This has been confirmed in several places in Tanzania, by farmers as well as testing institutes.) It is expected, however, that not all farmers will be prepared to pay more for higher quality.

Most of the farmers are not aware of the existence of ox-drawn tillage implements other than the plow. Therefore, although it was found that an enormous potential demand exists, the communicated demand is still low and hence the agricultural extension services will have to play a substantial role in the transfer of the technology.

Local manufacture will initially be of plows, ridgers, harrows, planters and weeders. Market trials will indicate to what extent there is a genuine demand for each of these implements.

Rumptstad – Lenco

Lenco is an engineering company in Lusaka, Zambia, manufacturing plows and ridgers of the Rumptstad type, ox carts and hammermills. The FIT project has stimulated collaboration by Lenco and the workshop in Mbulu District for the following reasons:

- Lenco has gathered a lot of experience with development, production and distribution of the Rumptstad implements
- the modifications made to the plow by Lenco and Rumptstad to adapt it to Zambian requirements are probably interesting for Tanzanian farmers as well
- Lenco can supply its implements cheaper than Rumptstad can, and is very interested in exports
- Tanzania and Zambia are promoting trade between themselves through the regional organisations SADCC (Southern African Development Coordination Conference) and PTA (Preferential Trade Area)
- Lenco can supply better training to the staff of the workshop in Mbulu.

Local manufacturing

One of the workshops supported by the Mbulu District Rural Development Programme was found to be very suitable for manufacturing the implements. This workshop will start with the assembly of 200 implements in 1992: these will be used for demonstrations and market trials.

Demonstrations

Mbulu District has 21 wards and in each ward an innovative farmer, involved in the agricultural extension network, will be offered the use of a full set of implements, ie, plow, harrow, ridger, planter and cultivator, on his or her fields (a total of 105 implements). This should make these farmers, as well as their neighbours, aware of the existence and use of such implements. The farmers' judgements and suggestions for improvement of the implements will be monitored.

Market trials

The remaining 95 implements will be used for market trials. In the second year it is planned that 350 implements will be manufactured, and the results of the market trials will be used to determine how many of each type of implement will be made, and the market prices. In the third year 700 implements could be manufactured, the numbers of each implement type being determined by the sales levels in the preceding year.

Step-by-step

A step-by-step process will be used to establish implement manufacture by the workshop. Developing local manufacturing in this way keeps down the initial investments and the financial risks involved, and also guarantees product quality during production start-up.

In the first year the workshop will only assemble (bolt together) implements using parts manufactured by Rumpststad or Lenco. The reason for this is that it is of utmost importance that implements used for demonstrations and market trials are of good quality. An employee of Rumpststad will go to Mbulu to train workshop staff in the assembly of the implements, and also to train workshop staff and extension workers in how to use and operate the

implements. Camartec will also be involved in the training.

In the second year, operations such as cutting, drilling, bending, welding, grinding, painting, etc, will be done by the local workshop. Some of the workshop's employees will go to Lenco in Zambia for training in these skills. (This is much better than sending workshop staff to Rumpststad in The Netherlands, because the manufacturing process in The Netherlands is much more capital intensive. In addition, it is cheaper to send people to Lusaka than to The Netherlands, people in Lusaka speak English and Zambia does not differ greatly from Tanzania.) The jigs needed for production will be supplied by Lenco or Rumpststad. Machinery can be ordered from Rumpststad, Lenco or a local supplier.

In the succeeding years, the local workshop will gradually take over all the manufacturing processes. Local subcontractors will have to be found for hardening the soil-touching parts and for casting some iron parts for the planter. Camartec will use its testing facilities and experience in product development to help the workshop to locate suitable subcontractors, able to deliver good quality for a reasonable price. Also, quality control of these parts will be done in collaboration with Camartec.

Following an evaluation by the Dutch Government, the FIT project will concentrate its future activities in just two countries, Kenya and Ghana, in order that its resources are not spread too thinly. More information about the FIT project can be obtained from:

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Photograph opposite
Members of a women's group using a two-shaft cart designed for a single donkey, Tanga, Tanzania