

Improving on-farm transport using animal draught power in two hilly districts of Western Uganda

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Abstract

Food crops are plagued by various constraints at different stages of the post harvest systems resulting in varying degrees of losses along the food pipeline. Poor on-farm transport methods constitute one of the major post harvest constraints especially in hilly and mountainous terrain of Uganda. The use of animal traction has been identified as an appropriate, affordable and sustainable technology to alleviate the drudgery in farm transport and reduce the associated crop post-harvest losses.

Donkey transport technology has been successfully introduced in two of the mountainous districts of western Uganda. This paper discusses the processes, methodologies and impact of the introduction of the technology on the rural communities in the above area.

Introduction

Poor on-farm transport methods constitute one of the bottlenecks in the crop post-harvest systems. Traditional methods of transport, predominantly used on-farm such as head and back load carrying are slow, cumbersome and limit the quantities of crops carried, thus resulting in crop losses and loss of income and food security to the farm family.

In hilly and mountainous terrain where other mechanical means such as bicycles and wheelbarrows cannot be used, additional strain is placed on the children and women especially at the peak of harvest. This has detrimental maternal health implications, in addition to the increased drudgery in farm operations. The National Post-Harvest Research Programme (NPHRP) identified the use of donkeys as an appropriate, affordable and sustainable technology to address the on-farm transport difficulties.

The NPHRP which is a programme within the National Agricultural Research Organisation (NARO) is mandated to develop, transfer and ensure dissemination of technologies that address the main post-harvest constraints affecting major food crops grown in Uganda.

Objectives of the project

- To lessen the drudgery of head and back load carrying in farm transport especially for women and children, leaving them with more time for other, more productive socio-economic activities.
- To provide an alternative means of farm transport and thereby aid in reducing crop losses that result

from failure to immediately transport harvested crops to storage and or drying facilities.

- To ease the transportation of produce to markets and or processing centres by rural users.

Methodology

In its quest to obtain appropriate technologies to respond to technological needs for constraints along the food pipeline through adaptive research and development, the NPHRP identified the use of donkey draught power technology as an appropriate means to lessen the drudgery in on-farm transport of produce. The activity reported here is therefore a technology transfer process, and the emphasis was concentrated on the modalities of transfer and dissemination. The technology has been used successfully in other parts of the country.

Kasese and Rukungiri districts which are the pilot areas for operation are characterised by hilly and mountainous terrain where the use of simple and mechanical means of transport are not possible.

Activities

Activities to ensure effective technology dissemination therefore involved surveys studying the general post-harvest systems and constraint identification, and specifically those affecting on-farm transport.

Findings

The findings were as follows:

- Load carrying is the role of women and children almost exclusively (with resultant maternal and child health problems in some cases).
- Very small quantities of farm produce are carried per trip of sometimes up to 5-10 km. Increasing human population and the resultant pressure on land has forced many farm families to cultivate in distant places far removed from homesteads where there is relatively abundant free land. This is aggravated by the poor soil and water conservation strategies of the local populations on the hill slopes of the two districts, who now move in search of more productive land in the plains.
- Many trips are undertaken (sometimes taking days) to complete transfer of crops to storage and processing centres and markets.
- Carrying as back or head load is the predominant method of transport.
- Men and big boys in the family are not usually involved in transport of farm produce. This results in children missing school and women having no time for rest and other socio-economic activities such as shopping, petty sales and crafts. There is stress to the family at peak of harvest season especially when the time of harvest coincides with the peak of the rainy season.

The scenario above was found to result in failure to quickly transport harvested crops to places of storage and or markets. Consequently high post-harvest crop losses were experienced through vermin, rain, mouldiness or aflatoxins, theft, termite damage and spillage. It was noted that vehicle hire is only affordable to the wealthy and large scale users owing to cost, poor road infrastructure and unreliability. In light of the above, it became imperative that there was need for an alternative means for rural and farm transport.

Steps taken

The following steps were then taken to ensure good technology adoption:

- Sensitisation seminars (1-2 days each) were carried out in the two pilot districts.
- Critical selection of beneficiaries-to-be was done based on need, ability and willingness to abide by project terms and conditions.
- Intensive training of selected beneficiaries on technology use and care of donkeys.
- Users' tours were organised to areas where the technology is maximally used to promote user to user exchange.

- Active involvement of local agencies and people at all stages of technology identification, transfer and dissemination. Client-oriented approach with participatory planning, implementation and monitoring was used.
- Socio-economic impact assessment and monitoring of technology adoption and use.

Donkeys were introduced for use initially as pack animals only. This was to ensure that users fully appreciated their use with the bare minimum of requirements. A few carts are yet to be introduced as a second step to increase carrying capacity especially in the lower and flatter areas. This phased approach was meant to cut down cost to the users, to allow systematic incorporation of the technology into the farming system and socio-cultural norms of the recipient community. The introduction of donkey use was a completely new innovation to this culture and many myths and misconceptions were associated with their ownership and use. Acquisition of the animals was based on a 60:40 cost sharing arrangement between the programme and users. This was aimed at developing a feeling of ownership among beneficiaries so as to make the technology sustainable. The package included the donkey, a drug kit, initial training materials (harnessing equipment), which the user took home. There was continuous follow up by project personnel or programme support staff.

Users are required to pay 10-20% of their share of the cost upon receipt of the "animal package" and the balance over a period of 6-12 months. The measures above were adopted against a background of failed previous attempts to introduce the technology to the area in complete disregard of participatory methodologies and user training and sensitisation. Previously the donkeys had been dumped on groups of erratically chosen users without any training or follow-up. The results were disastrous and stigmatised the community against the technology.

Results and impact of technology

- Increased loads carried per trip.
- Reduced drudgery.
- Farmers have reported greater savings of up to 30,000/= to 50,000/= (US\$ 30 – 50) per month for farm labour load carrying and transportation of harvested crops, water and fire wood collection; transportation of water and fodder for zero-grazing cattle as well as aggregates and tiles for building.
- There is increased income through hire of donkeys by neighbours and also reduced crop losses to farmers owing to timely transport of harvested crops.

Table 1. On-farm transport with and without donkeys compared

Activity	Without donkey	With donkey
Load carried per trip	20-30 kg	60-100 kg depending on size of donkey (as pack only); up to 400-450 kg with cart.
Time of continuous transportation	1-2 hours	up to 6 hours
Distance traveled when loaded	5-10 km (30 kg load)	20 km (up to 100 kg load)
Family involvement in transportation of produce	Women and children almost exclusively	Whole family including men/father.

- Improved living conditions for the elderly (water, firewood, harvests from fields, no more load carrying, reduced loss of the little crops grown).
- Community benefits have been seen in construction of protected wells; during funeral functions for transportation of water, firewood and food harvests - potatoes and plantain etc.
- Predisposition to head or back loading transport associated health problems especially in hilly terrain minimised.
- Better gender distribution of family labour. The men folk are now more willing to participate in transportation of farm produce using donkeys whether as pack or with carts. In many Ugandan societies transportation of farm produce is traditionally viewed as woman's job.

Experiences gained

The following experiences can be reported:

- There had been misconceptions within the recipient community, e.g. it is a curse to own and use donkeys, donkey faeces cause elephantiasis, donkey braying causes fever in man.
- Poor loan repayment in some cases.
- Development of the "dependency syndrome" amongst farmers and other members of the community. Although farmers were supported only in the first year of the project, many

expected and continued to request continuous support e.g. of drugs, acaricides and materials.

- The long breeding interval of the donkey made it difficult to enforce a workable breeding programme within the project life-span.
- A very high total cost per donkey (including transport, personnel and overheads) made it difficult for the local community to procure the animals on their own since they were only brought in from very far away.
- Demand for the technology has continued to rise within the pilot districts and the neighbourhood.
- The involvement of local development agencies and workers in planning implementation and monitoring of the project was very instrumental in technology transfer, dissemination and adoption.

Conclusion

Donkey transport and technology is an effective way of improving on-farm rural transport. Multiple benefits accrue from donkey transport in addition to reduction in crop losses. Adoption of the technology is good with adequate sensitisation and training of farmers. Availability of credit for purchase of animals and equipment is an important support service especially in areas where the technology has never been used before.