

## Improving the productivity of donkeys in Ethiopia

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**Introduction** In Ethiopia, animal traction contributes significantly in supporting both rural and urban livelihoods. Draught animals provide smallholder farmers and transport operators with vital power for agricultural and transport work, and is a major player in peri-urban economies. According to FAO (1995), 85 % of the Ethiopian population is engaged in agriculture and 90 percent of rural population use draught animals for various purposes. Production systems vary in which 19.6 % grow pure crops, 2 % keep livestock and 78 % are involved in mixed livestock production. Ethiopia has the largest livestock population in Africa, accounting for over 40 % of the GDP. Whether as pack animals or in pulling carts, animals are preferred and dominate the transport services sector. The choice of animals and systems of use in particular areas for transport is mainly based on socio-economic and environmental factors. In Ethiopia, there are over 5.2 million donkeys (FAOSTAT 2002) and they are increasingly becoming a means of livelihood, playing a crucial role in transport services in peri-urban households. Unfortunately, ownership, utilization and management of donkeys are at a very low level in most resource-poor areas.

In aiding peri-urban societies to take charge of transport and marketing services provision, a study was commissioned by the Centre for Tropical Veterinary Medicine, University of Edinburgh (CTVM) in collaboration with the Ethiopian Agricultural Research Organization (EARO). The objective of the survey was to reduce incidence of sores in donkeys by modification of harness and saddle designs. The survey focused on three regions and assessed how best donkeys can be utilized to optimize their work potential. The research examined study area-specific harnessing characteristics and assets that may constrain or offer opportunities for better donkey management, aimed at sustained peri-urban transport provision.

**Material and methods** A preliminary research guideline for fieldwork was developed for gathering information, and data collection. The livelihoods approach was adopted in the questionnaire in order to study how donkey use affects the lives of people. However, the focus was on harnessing, around which systems and factors impacting and affecting the lives of farmers, transporters and blacksmiths (cart and harness manufacturers) were examined. Three regions (Holetta, Debra Zeit and Adami Tulu) were studied using formal surveys and semi-structured conversations, including a free exchange of ideas and information. Information was gathered through interviews and observations. Focus group discussions and interviews were conducted with different stakeholders to draw out their experiences and knowledge of issues under study. A vital factor was the donkey owners/ users' ideas of what improvements were necessary in harness and pannier design. The absorption parameters were ranked in order of the importance that the community attaches to each of them, and weighed against criteria requirements for harness and saddles (dependability, affordability, availability, adaptability and accessibility). As a result, analysis of measures of adoption potential for different harness designs provided a basis for evaluating feasibility of the transfer process.

**Results** There are a total of 143,147 bulls, 55,375 donkeys, 6,546 horses and 1,704 mules in use in the three areas studied. Bulls are mainly used for ploughing while equines are for transport. In agriculture on-farm transport (within the farm and/or home) and off-farm transport (from farm to collection centres and to market) is carried out using pack donkeys, hand and donkey carts. Milk is often transported to an outlet point by donkeys. The same donkeys transport farm inputs from market centres to farms. Collection of firewood and water by women absorbs much of the work output of donkeys. Similarly, marketing of farm produce by women at roadside often depends on donkeys to transport produce. With donkeys they are able to carry up to 200 kg. All communities have their own survival tactics. In Adami Tulu, people cope with dry season feed deficiencies by selling their animals and moving from place to place. In Holetta, where male donkeys are preferred, many donkeys are bought from outside the district. Rugged terrain in some regions of Holetta and Adami Tulu makes it impossible to use carts. Where available, carts also serve as ambulances particularly in getting women in labour to hospitals.

Many of the donkeys in use are overloaded and the discomfort caused in their movements includes raising the neck to lower the backbone against the weight. In Holetta, most donkeys exhibit *lordosis*, or bent spine as a result of the continuous excessive load on the back. Harnessing is inefficient and results in most donkeys having wounds. Heavy and poorly designed carts and saddles are common in Adami Tulu, where as in Debra Zeit most donkey users claim that their animals are highly infested with parasites. In Holetta and Debra Zeit, the water containers, sacks of grains and firewood are tied directly onto the padding fitted on the body, using straps cut from tyres. The padding is generally a sack or pieces of rags put on the donkey's back. There are cases, however where wooden panniers are used to transport water. Often there are wounds where the load rubs against the skin, particularly on the back, and cuts along strap contacts. The sacks used for padding are fertilizer packs because they are cheap. Some of the bags are stuffed with teff. Wooden saddles are made to sit on some padding. Panniers in the three areas are generally made by the users and are very simple, taking the form of

padding (sacks and rags) and leather straps that are used for tying goods onto the donkey. The padding and straps are replaced when they get worn out. At the same time, farmers use either plastic sacks or canvas as padding, which prevent sweating and collect dirt, causing chaffing. In Adami Tulu, saddles are either made of crooked wooden hooks or poorly bent metallic frames. In all areas, the donkey spine bears the same load as the back muscles. Most donkeys have sagging backs (*lordosis*), a condition resulting from overloading donkeys at an early age.

In Adami Tulu, donkey carts are common and harness varies, but consists mainly of wooden or metallic saddles. For village transporters, wooden saddles are preferred and are made locally. They tend to be rough. However, town transporters get the metallic frame for their harnesses from the local blacksmiths, and consist of tubes that are bent into A-shape. In all cases, the materials are readily available and harnesses can be repaired speedily and easily. Padding is of rags or sacks. The carts are wooden with either solid or pneumatic wheel rims. They are light and simple in design and are locally manufactured and maintained. Single donkeys pull most carts in Adami Tulu and Debra Zeit, but usually other donkeys are tied by the sides.

**Conclusions** Many of the wounds and sores caused by harnesses are not due to defects in the basic design, but by poor finishing, incorrect positioning or adjustment and poor management. Many sores and abrasion are caused by rough edges and surfaces, and dirty padding (old hardened sweat) and ill-fitting materials. In other cases, harnesses are too heavy for their required task. Lack of, or inadequate knowledge and skills among extension workers may have slowed down and sometimes misdirected efforts aimed at promoting dissemination of technology. Learning is most likely to change behaviour substantially when people try to improve situations that are relevant and important to them.

Locally, the capacity to make harnesses exists. Most artisans interviewed showed enthusiasm. Some of them have been able to improvise their own tools and equipment, such as transformers. Farmers also improvise by modifying both harnesses and carts to fit their needs and resources. Examples of well-designed and correctly fitted harnesses, and poorly designed, ill-fitting harnesses were seen. However, the potential for improvements is enormous. The first step is to tackle the inadequacies of the existing pannier and harnessing systems. This may involve only minor modifications to re-orient the harnesses and panniers. Suitable materials need to be used in harness manufacture and should always be kept clean. The design should be simple and fit well, to ensure the best line of pull and, thus, recognize the importance of protecting the spine.

Many workshops and conferences have been organized in Ethiopia on animal traction. However, few recommendations have been adopted because a lot of them require input from other disciplines and stakeholders. Networking at both local, regional and international levels would be an important way of improving delivery of services, thus enhancing peri-urban livelihoods and empowering resource poor communities country-wide. Many organizations in the region have obligingly produced affordable, dependable and adaptable technologies, which could easily be tried in Ethiopia.

In Ethiopia, where women play a vital role in the decision making process, their participation is also needed in producing suitable training materials.

Choosing a harness begins with information. An informed choice demands an understanding of the requirements the harness is intended to serve, knowledge of the options available and of techniques, skills and resources entailed in the user's decision. Dissemination of such information may either be carried out by change agents or through electronics systems, using various extension methodologies. For Ethiopia, it is necessary to use a variety of systems for dissemination, but radio messages may reach the most people in the shortest time, and the effectiveness may be enhanced if pamphlets or magazines are available, especially for the younger members of the society.

Overall, to adequately tap donkey power, an integrated approach is necessary, requiring enhanced donkey utilization and better management, - selection and training (choice, breeding, handling, husbandry, etc.), nutrition (feeding practices, scheduling, quantity, quality, etc.), health (disease prevention and control), equipment and accessories (carts, harnesses, panniers, etc.). The transfer must be participatory at research, development and extension levels.

## References

CSA. 1996. *Volume 1*, Ethiopia

FAOSTAT. 2002

Smith, D., Tesfaye, A. and More, L. 2000. *Alleviating Poverty in Peri-urban Ethiopia by Improving the Health, Welfare and Management of Donkeys*: Proceedings of a workshop held at Debra Zeit, Ethiopia. BHA/ DFID. 169P