

# Improving animal traction technology

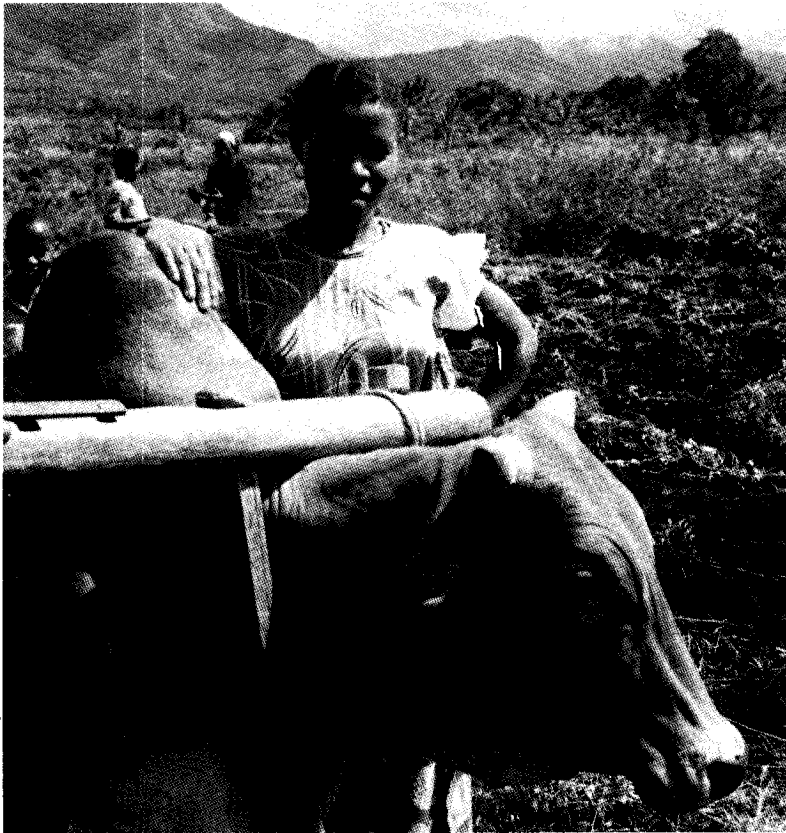
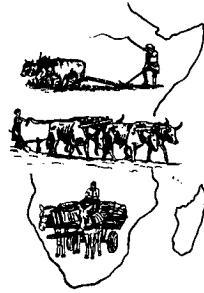


Photo: Paul Starkey

# Women and animal traction technology

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by

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## Abstract

*This paper gives a broad introduction to the most important issues and experiences concerning women and animal traction technology in eastern and southern Africa.*

*Animal traction should be gender-neutral: it should be accessible and adaptable to both men and women. However, experiences from the region show that women are generally not users of animal traction and that they do not have access to this technology. Women are mainly cultivating by hoe to produce subsistence food crops for the family. Men, on the other hand, are engaged more in cash crop production and often have access to improved technology like animal traction.*

*There is a need to increase agricultural production in Africa. This can only be done if the majority of farmers (ie, women) are provided with an opportunity to use improved technologies that enhance agricultural production. Women can clearly benefit from animal traction. Their tasks in agricultural production and their domestic workload (including transport of fuel and water) can be considerably reduced using animal power.*

*It is argued that the commonly held belief that women cannot use animal draft power is only a cultural notion based on certain gender roles and division of work within communities. Given proper access to cash/credit, extension services, information, training, land, animals and implements, there is no reason why women cannot use animal traction technology effectively.*

## Introduction

In the best of worlds it would not be necessary to write specifically about women and animal traction. Unfortunately, women and animal traction technology has become a *problem* that needs special attention. This paper gives the background to the present day situation and the causes of the problem. It also points to possible solutions for further discussion.

A user perspective is generally lacking among organisations working with animal traction. A gender-neutral user perspective is especially uncommon, as is one that gives special attention to the needs, options and constraints for women in relation to animal traction. Animal traction as a technology should be gender-neutral in the sense that it should be accessible and adaptable to both

men and women. However, animal traction is not presently a *neutral technology* because it is not accessible to and used by both sexes.

Women and men have different gender roles and needs which have led to a differentiation in the use and adoption of animal traction technology. There are historical, socio-cultural, economic, structural, institutional and other reasons for this which are touched upon in this paper.

To facilitate a broad discussion, the paper has been written with a holistic perspective. The position and role of women in the community and in the economy at large, as the main food producers in the region, are analysed with special reference to animal traction technology. Overall improvement of animal traction technology can only be accomplished if gender issues are addressed in the process of development. It should be a development ambition to solve the *problem* of women and animal traction in order to increase agricultural production.

## Historical background

Animal traction is not new in the history of agriculture but has only relatively recently been introduced into eastern and southern Africa. The first attempts to use and transfer animal draft power in agriculture in sub-Saharan Africa were carried out by the white colonialists and their extension apparatus, at the beginning of this century.

Sub-Saharan Africa was, and to a certain extent still is, a sparsely populated continent dominated by shifting cultivation and pastoralism. Shifting cultivation is a very extensive farming system with few external inputs, long fallow periods and simple technology, such as hoes and sticks.

Even in the early stages of agricultural development there is some division of labour, the main criteria being gender and age. In shifting cultivation or hoe cultivation the work is mainly done by women. The European colonialists and extension agents tended to interpret the division of labour among African shifting cultivators as "lazy African farming", where men did little or nothing.

Unintentionally the colonists managed to modify this distribution of labour between the sexes to some extent. This was done through the introduction of a monetary system and cash crops. With these the colonisers tried to induce the underemployed male villagers to cultivate commercial crops for export to Europe. Poll taxes and other colonial measures were used to stimulate more intensive agricultural production. To enhance agricultural intensification and the production of cash crops, male villagers were introduced to new technologies, such as animal draft power for field operations (Boserup, 1970; Kjærby, 1983; Starkey, 1991). Animal draft power was, until then, an unknown technology in sub-Saharan African agriculture, and it only slowly made progress through the continent. The transition from shifting cultivation to plow cultivation was also due to other factors, including population increase, land pressure and informal technology diffusion (Pingali, Bigot and Binswanger, 1987).

### Female and male farming systems

Shifting cultivation or hoe cultivation has been labelled as a "female farming system" (Boserup, 1970). In so-called female farming systems, men are responsible for activities at the fringes of the production system (like clearing land, building and herding) but women do most of the actual agricultural work. As women are the main producers of food, they hold crucial positions in their communities, influencing both production and reproduction.

Due largely to the colonial intervention in agriculture, cash crops and mechanised agriculture were, from an early stage, in the hands of men. This still remains a major feature of agricultural systems worldwide, and in Africa in particular. The general rule appears to be that when agriculture becomes more mechanised, women continue to perform the simple, labour-demanding, manual tasks while men operate more efficient technology operated by animals or mechanical power. Consequently the type of farming system, using animal draft power for cash crop production, has been labelled as a "male farming system". Today, both systems can be found side by side, even in the same family, with specific gender division of labour.

The tremendous population increase in eastern and southern Africa over the past decades has led to an intensification as well as an extensification of agricultural production. Unfortunately there is nothing to suggest that agricultural production per head has increased in sub-Saharan Africa. Animal traction, however, is often associated with increased

production for the particular household, and with a change from traditional, multi-species intercropping to systems where single crops are grown in large areas (Starkey, 1987). In countries like Kenya, Lesotho and Malawi, the pressure on available agricultural land has stimulated intensified production, often using animal power for plowing.

### Majority of farmers are women

Even though women constitute the main agricultural labour force in the region (70%), men cultivate a larger area, and may produce more, due to their access to improved technology. Starkey (1991) suggests that animal traction can increase total production not only by the direct effects of tillage, but also by the improved timeliness of field operations. Women cannot achieve the timeliness necessary for optimal production due to lack of appropriate power and implements, ie, animal traction technology. Consequently, although women spend more time on agricultural production, they cultivate less land and produce less.

It has been argued by many people (eg, Boserup, 1970; Rogers, 1980) that intensification of agriculture through the use of animal draft power can separate women from agricultural life, thereby *domesticating* women (in the sense of making them spend more time in the home or homestead). This does not seem to be the normal case in eastern and southern Africa, where interdependent and complementary female and male farming systems exist alongside each other. Women have active roles to play in the production systems. The simple facts that the majority of farmers in the region are women and that generally 70% of agricultural work in the region is done by women contradict the argument that women are becoming domesticated and isolated from agricultural production through animal traction.

It can be legitimately argued, though, that women become isolated from production of *cash crops* with the introduction of draft animals (Boserup, 1970; Zweier, 1986). Male farmers are more involved in producing cash crops such as tobacco and hybrid maize using animal traction. Family food consumption is still largely dependent on female (hoe-based) farming systems.

### Women and animal traction use

In regions of Africa where women are engaged in cash crop production, such as The Gambia, there is some evidence that when (male-owned) draft animals are introduced to assist women-managed cash crops, the women may lose the right to grow the cash crop on their own behalf (Jones, 1988).

There is also evidence from Cameroon that women can be reduced to “helpers” with the introduction of animal traction (Zweier, 1986).

In most communities in eastern and southern Africa, women do not themselves use draft animals for field operations. Nevertheless, women are still very much involved in the production cycle and, for example, they will manually weed fields that have been plowed by animals (Rwelamira, 1990; Hocking, 1991; 1994; Marshall and Sizya, 1994).

Although the regional pattern is that women do not use animal draft power, there are exceptions to the rule. In communal areas in Zimbabwe, such as Lower Gweru, women are well accustomed to plowing and weeding with draft animals. They have been receiving special attention from the extension service in terms of training and advice. Women can also be seen plowing in Kenya, Tanzania and Zambia, but it is more of an exception to the general (male) rule.

In some parts of the region women use donkeys as pack animals. Donkeys are often identified as “female” animals, while cattle tend to be “male” animals.

Some development projects have successfully introduced women to the use of oxen for plowing in Zambia (Hocking, 1994), Cameroon (Walker, 1990) and in the Mbeya Oxenization Project of Tanzania (Marshall and Sizya, 1994). Special project methodologies have been tried and developed in order to address gender issues. These success stories are still few but there are some important and useful lessons to be learned from them.

## Benefits and uses

The use of animal traction often leads to larger total areas being cultivated, but an increase in (male-dominated) cash crop production does not imply any reduced production of food crops. Women can therefore face even heavier workloads when animal traction is introduced as their food production is kept to the same level, but they are also expected to assist with manual operations relating to the cash crop. Although animal traction can actually increase the workload for women, there are conspicuously few references in the literature to this subject and the topic should be elaborated further (Kjærby, 1983).

Animal traction is usually only used for purposes and tasks that are identified as male tasks and men sometimes do not even see the possibility of using animal traction for women’s tasks (Marshall and Sizya, 1994).

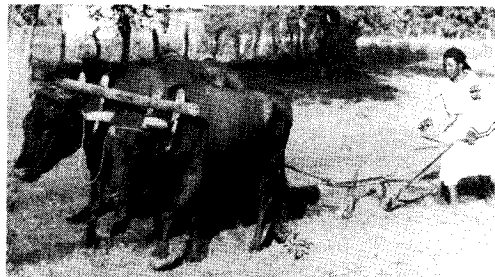


Photo: Lotta Sylwander

*Women plowing, Lower Gweru, Zimbabwe*

Women, as has been stressed, have a key role in crop production, notably hoeing, planting, weeding and harvesting (activities often described as women’s “productive” tasks). Women’s work in eastern and southern Africa typically also includes fetching water, collecting firewood and different types of food processing (activities known as “reproductive” tasks). Women suffer from drudgery in all these tasks and have few advanced technical solutions at their service.

Most of the female tasks mentioned could be done with the help of animal power. Water and firewood could be transported using pack donkeys or donkey carts, although this is still relatively rare. Transporting crops to a mill using work animals could save women much time and effort: more grain could be processed at one time and women would be relieved from the drudgery of head-load portorage. In small communities with limited access to infrastructure, animal-powered mills might be a viable solution (Nelson-Fyle and Sandhu, 1990). Weeding is often considered the most labour-consuming and dreaded task by women, but rarely do women use animal-drawn cultivators. Hand weeding is preferred.

## Socio-cultural environment

In many communities in eastern and southern Africa there are strong socio-cultural objections to women using draft animals. Cattle are, by tradition, owned by men, kept by men and handled by men. Cattle are used for the acquisition of wives, lobola or bridewealth and the exchange of cattle has a social value sometimes beyond economic reason.

Even if there are direct economic benefits of allowing women to use draft animals, most men seem reluctant to let them do so. All communities are unique and have their own reasons why this is so. Although it is not possible to review the diverse explanations here, it seems reasonable to generalise and say that communities in eastern and southern Africa have the common socio-cultural notion that

cattle are male property. Cattle, it is felt, should be handled by males and their use for traction purposes is a male responsibility and task. Thus, it seems that the use of animal traction is an inherently male activity, and most communities would identify animal traction as male work according to the gender division of work.

In countries such as Lesotho such cultural obstacles are stopping women from plowing even when the economic necessity is there (Rwelamira, 1990). Men are absent most of the time and many households are female-headed. Although land is scarce and timeliness of field operations is crucial, women are culturally inhibited from taking on the responsibility of animal traction.

The Lesotho example shows that socio-cultural reasons can sometimes be stronger than economic rationale. This is particularly true for activities that are not purely productive but rather reproductive (eg, food preparation and water and fuel collection). These activities seldom have an attached measured value, although they can be a heavy work burden for women.

It is important to note here that the absence of women users of animal traction is a clear gender issue and has nothing to do with women's capacity or capability to handle draft animals (Zweier, 1986; Marshall and Sizya, 1994). Given proper training and opportunities, women are perfectly able to use draft animals. The cultural notion of animal traction as something strictly for men is therefore just that—a culturally determined idea as part of the system of concepts and rules that underlie, and are expressed in, the way communities live and organise their lives.

Trying to modify and change an organised system of gender roles can be difficult as communities feel that such a change is too radical and a threat to their cultural identity (Marshall and Sizya, 1994). A sensitive and participatory approach in project and programme design and implementation is therefore crucial.

## Resource access

Animal traction use involves access to such resources as land, cash, credit and implements. By traditional law, land is often allocated to, or owned by, men. Women often till land controlled by their husbands, and generally the man has the deciding power over production, consumption and marketing. In most eastern and southern African countries women have the legal right to own land, but they rarely do so. In strict legal terms, women generally have equal status to men, but in rural areas

customary laws prevail, and women are often only acknowledged as minors. The right to own land is often determined by traditional community leaders, such as tribal chiefs, and land is allocated to male family members even if the household is, in practice, female-headed (Rwelamira, 1990).

In a few cultures women can inherit and own their own cattle, but in most cases women have to acquire cattle and draft animals on the open market. This is quite difficult for female-headed households, with little cash income. Credit is normally needed in order to finance the buying of implements, draft animals and other inputs such as fertiliser. As women rarely have any collateral, such as land, it is difficult for them to obtain institutional credit and hence is difficult, or even impossible, to obtain draft animals and implements (Rwelamira, 1990; Marshall and Sizya, 1994). In places where a woman can get credit it is common that her husband has to sign any loan papers before credit is granted to the woman. Alas, no husband, no loan.

In some development projects, such as the Mbeya Oxenization Project, this problem has been addressed by creating credit facilities to allow women's groups to purchase oxen (Marshall and Sizya, 1994).

At present, most female-headed farm households that do make use of animal draft power in the region have to hire labour, implements and animals. Such households may receive remittances from one or more family members earning wages, and in this way they may obtain enough cash to hire (or even purchase) draft animals. If reliable access through hiring is possible, this may be most appropriate to the limited resources of women. Unfortunately, women (and men) hiring animals have to wait until they have finished working for their owners (usually men), and so timeliness, and production, are seldom ideal.

Many female-headed households in the region do not receive cash remittances and are dependent on the income they can generate from their own production. Since such households generally do not own draft animals, and cannot afford to hire them, they have difficulty in achieving surplus production. Thus their incomes remain low, and they remain unable to afford animal draft power. This vicious circle needs to be addressed in development and technology transfer programmes.

In the prevailing socioeconomic conditions, where women's resources are limited and hard to obtain, animal traction may sometimes appear too risky in economic terms. Ownership of small numbers of work animals (which can become sick, injured or

stolen) can be a major risk. A crucial issue is therefore whether women want, or need, complete ownership and *control* over animal traction or whether *access* to the technology through hiring of oxen is acceptable.

### Information, extension and training

As stated earlier, the extension service of the colonial powers in sub-Saharan Africa was directed towards men. Sadly, little has changed since that time, and men are still the main targets for modern extension services. Few agricultural extension officers are women, and even fewer are aware that women or gender issues have to be addressed specifically. Very few female extension workers are trained in animal traction technology, and consequently have little knowledge of the subject to communicate to women farmers.

If one takes even a quick look at extension materials, it is apparent that farmers are considered to be men. Drawings depict men conducting different farm operations, particularly when it comes to animal traction and implements. Women can sometimes be seen doing manual weeding.

Extension services, in general, do not address the farmers as farming families. They tend to direct their information towards individual male farmers. This misdirection has been noted by some countries in the region and female farmers have now (officially) been given special attention in national plans. In practice, at the grassroots level, things remain the same. It has been noted by several researchers concerned with women and animal traction that unless training and extension programmes include a well-planned, active women's component, information and technology transfer is unlikely to reach female farmers (Zweier, 1986; Walker, 1990; Hocking, 1994; Marshall and Sizya, 1994).

### Research

A great deal of agricultural engineering research and development relating to animal draft power technology has been undertaken in eastern and southern Africa. This work appears to have been entirely directed towards male users. The available literature and reports give no indication as to whether research relating specifically to women's needs in this area has been undertaken, or even whether such research is needed.

While much of the research in animal traction technologies has come from agricultural engineers and technology-oriented persons, there is a clear need for increased research in animal traction by



Photo: Lotta Sylwander

*Girl and women plowing in Zimbabwe using an ox and a cow*

social scientists. This should identify possibilities, constraints and methodologies for the possible introduction of animal traction use to women. Kjærby (1983) suggested that research into the actual benefits to women of animal traction (for example, reduced workload) should be seriously considered.

In short, it is clear that much more research into women and animal traction needs to be conducted in eastern and southern Africa and elsewhere.

### Conclusion

Animal traction technology offers Africa's growing population a means of increasing labour productivity and agricultural production while simultaneously reducing human drudgery. Full benefits can only be achieved from the technology if women, who are the majority of farmers in the region, are able to make use of draft animals. With the prevailing regional trend of male labour migration to the urban centres, women are likely to constitute the main agricultural labour force for the foreseeable future. Animal traction should allow women to produce more. The technology appears to have particular potential to reduce the drudgery and labour bottleneck of weeding. Animal transport should also lead to considerable savings for women in work time and drudgery. Since women normally have an excessive workload, these direct benefits will also indirectly benefit many other aspects of family and community life.

Animal traction has historically been used only within male farming systems. Women themselves ought to have direct access to animal traction: it should be available and affordable to them, through ownership or hire, and technical skills should be imparted if necessary.

Information, transfer of technology, extension services and credit facilities have been aimed at men, but should be available to both female and male farmers. At present men control most of the resources associated with animal traction, including land, animals and income from farm sales. To

comprehensively involve women in animal traction diffusion, the support of men has to be gained. Animal traction programmes clearly need to involve all concerned in farming, that is, the whole farming family.

Research in animal traction has almost completely neglected its use by women. Agricultural engineers should ensure that the available technology is optimised for use by women. All animal traction researchers should become aware of gender issues in animal traction, and ensure that research relating to animals, management systems and cropping systems addresses the needs of the women farmers.

## Questions for consideration

Many questions remain to be answered on the subject of women and animal traction technology. The following questions have been touched upon in this paper, but need further elaboration.

- How can women best benefit from developments and improvements in animal traction technology?
- Do women want or need *access to or control of* animal traction technology?
- Is it more crucial to introduce animal traction for women for *productive activities* or *reproductive activities* (including domestic work and household transport)?
- How can women's access to training and information dissemination on animal traction be improved?
- Can cultural and social constraints against women's use of draft animals be used to advantage or overcome?
- How can the possible disadvantages of animal traction for women, such as increased manual weeding, be avoided?
- How do we formulate innovative extension programming to reach women farmers?
- Can any methodologies be identified in animal traction project and programme implementation that will ensure women's participation?
- How can women be assured access to credit and the availability of financial facilities for investment in animal traction technology?
- Is there a need for specific research in animal traction technology for women?
- Is there a need for specific animal traction equipment and implements for women?
- How can governments increase training of female extension workers in animal traction?
- How can national technology and mechanisation programmes address gender issues?

## Acknowledgement

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