

Research priorities in the animal traction sector of Cuba

by

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Summary

Research priorities for animal traction were deliberated by the network members at the Ciego de Avila workshop in 2000. The four main problem areas identified were: 1) The lack of training and services; 2) Socio-economic and environmental factors; 3) Work animals; and 4) Implements and harnesses. Within each of these four groups of areas for concern, the workshop delegates identified a large number (25) of specific points that require attention in different regions of the country. The key researchable topics and training needs were assigned to the different network institutions, although it is emphasised that no institution is restricted from undertaking work in any technical area. The spirit of the network is that, whatever action is undertaken, there should be a free flow of information to other members. The Logical Framework concept was discussed in relation to the preparation of project proposals and one theme, the improvement of management of working animals, was used to exemplify the construction of the Framework. However, it is the case that any particular donor is likely to have its own guidelines on project preparation.

Background

Representatives of many of the Cuban institutions who have contributed chapters to this book, met at the University of Ciego de Avila to debate the needs and priorities for research and development initiatives in the Cuban animal traction sector (Sims and Starkey, 2000). Each participating institution contributed ideas on the problems most relevant to their region, and, not surprisingly, there was considerable overlap and agreement. The purpose of this chapter is to summarise the findings of the debate and to present a partial Logical Framework that could be used by all the collaborating institutions in the detailed development of research proposals for presentation to potential donors.

Animal traction problem areas identified

The problem areas identified fell into four principal classes:

- The lack of training and services
- Socio-economic and environmental factors
- Work animals
- Implements and harnesses

The main points raised for further research and/or training effort under each class are summarised in the following sections.

Lack of training and services

Design of implements

The focus on tractor mechanisation in the last few decades in Cuba has probably resulted in insufficient resources and effort being devoted to producing innovative designs of implements for animal traction. In the interim, advances have been made in other countries (especially in Central and South America) and these could be transferred through training programs.

Fabrication techniques

Cuba's infrastructure for manufacturing animal-drawn equipment has not been a priority for modernisation in recent years. Production techniques, especially to promote more local manufacture, could be improved by offering training in production engineering.

Blacksmiths

Repair and modification of animal-drawn implements is frequently the job of metal working artisans within cooperatives or local workshops. Training on the importance of the correct angles and curvatures of soil-acting parts, range of adjustments, and the techniques to ensure that there is uniformity and quality control in the repair and modification process, are all identified as current needs.

Linking institutions (networking)

The various institutions conducting research in animal traction in Cuba should be linked by the formation of a network. As the worldwide scientific community draws ever closer thanks to the inclusion furnished by the Internet, expertise on forming networks, networked research programmes and exchange of information via email and websites is required.

Use of horses, mules and donkeys

Worldwide there is growing interest in using hitherto under-utilised equids (horses, mules and donkeys) for draft work in the field. Their traditional use as transport animals has ensured their wide dispersal within Cuba, but harnesses and lightweight implements are needed if they are to be used for agricultural operations. To a large extent the knowledge exists in other countries (for example Bolivia, Brazil and the countries of Central America). Dissemination of the required knowledge is needed via training courses and technical visits.

Socio-economic and environmental factors

Preference for tractors

Unsurprisingly after several decades of increasing tractorisation in Cuban agriculture, the speed and convenience of this type of mechanisation are widely appreciated. The preference is detectable at all levels, from the Ministry of Agriculture to the farm worker. But on the other hand the technical and economic realities of the situation are also undeniable. Animal traction will always (in the foreseeable future) be a fundamentally important source of farm power and it is in the interests of all to make sure that its use is acceptable, profitable and sustainable.

The age of ox-handlers

Ox-handlers (or *boyeros*) are an aging group and their skills are retiring with them. Younger people are less attracted to animal traction and there is a strong need to change the somewhat negative perception held by this generation. Popularisation through shows, competitions and peer pressure will help to reinforce the attractiveness of animal work as an important and valid energy source, complementary to tractor mechanisation.

Soil compaction and erosion

Excessive use of tractors and tillage implements has led to a rapid decline in the structure of many agricultural soils in Cuba. Tractor wheels have compacted the sub-soil which can impede water infiltration, drainage and crop root development. These are problems that can be effectively reduced by using less violent draft animal power.

Lack of knowledge

There is insufficient understanding of the issues relating to animal traction at policy-making levels within the relevant ministries. The problem is particularly acute within the Ministry of Transport, as

animal-based transport systems have not been part of professional training in recent years. Raising awareness of the contribution that working animals can make to Cuba's economy, and especially in the transport sector, is a priority action for people wishing to promote animal traction in the country.

Lack of managerial motivation

This is similar to the previous problem and needs to be dealt with in the same way. Raising awareness of the value of animal traction from an environmental, financial and social perspective will help to establish working animals as a major contributing factor to Cuba's economy. There is a feeling currently that decision makers are not taking animal traction as seriously as they might and may not its potential as part in the long-term solution.

Gender issues

The number of women who work directly with oxen and transport animals is very limited. There is great potential to increase the involvement of women in all aspects of the technology, including (especially) research and development studies.

Work animals

Security against theft

A general complaint, encountered in all Provinces, was the danger of theft of working animals. Farmers were afraid to let their animals out of their sight for fear of having them stolen. This situation also makes farmers more reluctant to adopt and diversify the technology as they strive to keep numbers to a manageable minimum.

Animal feeding

Providing the correct feed in the right amounts and at the right times can be difficult, especially in the drier regions of the country. There is little scientific knowledge on the nutritive values of the diverse fodder sources available, and feeding seems to be a somewhat hit and miss affair. The time required for working, and waiting, restricts the hours available for grazing, particularly for transport animals.

Poor management

In some areas animals may be managed incorrectly. This could relate to excessive draft loads, insufficient rest periods and overlong working days. Fitting the animal to the task and requiring sustainable work outputs within a regime of reasonable feeding and health care is the route to future scaling up of the technology.

Access to veterinary medicines

Although veterinary care has been praised in all provinces, many owners or handlers of working animals said access to proprietary veterinary medicines was often difficult. Often resort is made to indigenous cures which may, or may not, be as efficacious as commercial drugs. Evaluation of indigenous ethno-veterinary remedies would be a rich area for future research, with widespread potential benefits for the animals and the local economy.

Insufficient mules and donkeys

While horses are quite widely available, it is more difficult to obtain mules and donkeys. At the moment there are pockets of donkey reproduction and mule production (chiefly in the mountainous regions) and there is some effort to produce a supply for the market. However, it appears that demand is outstripping supply and so greater and more systematic efforts need to be made to produce the donkeys and mules that people need.

Standard regulations for transport animal use.

The use of animals for public transport is regulated but in some instances it appears that there may be disparities between the wording of the regulations and the requirements of the working animals. Even where good regulations do exist, they are not always applied and policed to the required extent. There is need for good and sensitive regulation and enforcement, for the benefit of the animals, the passengers, the owners and other road users.

Diversification of draft animal use

There is great potential for using all the classes of working animals in Cuba in more diverse ways. Equids have been mentioned, but buffaloes, cows and single animals can all be used to a greater extent than is currently the case.

Implements and harnesses

Availability in the market

Although proven and promising designs of harnessing and yoking are known to exist, there is a dearth of availability in the market. In all provinces, the supply of implements was poor, and new designs of equipment were generally unavailable. There are problems with the supply of raw materials and also finished products. This applies to tillage implements and also to harnesses for horses, donkeys and mules. While farmers can generally obtain yokes, the quality and availability of forehead pads (*frontiles*) and the ropes is often difficult.

Quality of manufacture

Implements for draft animals are not usually subjected to rigorous quality control and sometimes give rise to complaints about the quality of materials and their durability. This is especially true of the parts contacting the soil, as these have to keep their shape and sharpness in order to endow the implement with the potential to perform correctly in the field.

Diversity and volume of production

Implements are not only the subject of quality related criticisms, but also of complaints about their numbers in the market place (too low) and the diversity of implements being manufactured (insufficient). In short, what is needed are more implements available from a greater diversity of models.

Implement cost

Even if there were to be an abundance of implements on the market, there is a general concern about their high cost. This is especially true of implements that have a foreign exchange component to their price. Unless these are destined for farms where foreign exchange earning crops are grown, it is most unlikely that they will be within the reach of the majority of draft animal using farmers.

Harnesses and implements for equids

It has already been pointed out that there is a dearth of knowledge on this subject. It follows, therefore, that the availability of harnesses and lightweight implements for equids is practically non-existent in the marketplace.

Brakes for carts

Braking systems for animal-drawn carts are poorly developed in the Cuban market. Effective brakes, especially in hilly terrain, are essential for safe operation both on and off the road.

Lack of seeders for many crops

Research into tillage implements is fairly well advanced in Cuba. However the availability of farmer-proven seeders is woefully scarce. A programme to initiate on-farm trials of good, farmer-proven

designs from other countries would be a good step towards selecting the best designs for Cuban needs, prior to commercial manufacture.

Technical areas of possible animal traction related projects

Having identified key topics in need of research or training, the various subject areas were assigned to the different participating institutions according to their interests and capabilities. These initial ‘areas of concentration’ within an animal traction network are, of course, voluntary, and there is nothing to stop individual institutions from investigating any areas that they wish, even if has become a ‘primary concern’ of another organisation. However it is to be hoped that at all times there will be an active flow of information on all research and development and dissemination activities so that the group as a whole will cooperate and be well-informed concerning all relevant activities.

Within the networked research groups, these key topics are likely to be developed further by the following ‘lead institutions’.

<i>Topic to be developed</i>	<i>Lead institutions</i>
The design, evaluation, manufacture and promotion of farmer-demanded draft animal powered implements	IIMA, UNICA
The health, management nutrition and diversification of use of working animals	University of Granma, IIMA
Employment of horses, mules and donkeys for agricultural operations	IIMA
Research, development and promotion to improve the use of animals in public transport systems	Grupo IT
Use of draft animal in hill agriculture and mountains	University of Pinar del Río (Faculty of Mountain Agronomy)
Training in all areas of animal power (from farmer level to post-graduate level)	UNAH

It will be the responsibility of each institution to produce their own proposals in consultation with their colleagues. However it has been suggested that a common design, based on the Logical Framework concept, should be adopted. In the example below, developed by the participants of the Ciego de Avila workshop, the basis of a project design is presented for work on the improvement of the management of working animals in Cuba. IIMA and the University of Granma could further develop such a proposal.

Improvement of the management of working animals in Cuba

A project proposal would have some or all of the following contents. However it is very important to bear in mind that each donor agency will have its own set of (more or less) strict rules, preferred formats and target groups (beneficiaries). These must be adhered to. Donors often supply detailed instructions on the required sections in a proposal, and the length of each. In general, the following elements are likely to be required.

- Summary
- Key words
- Logical framework
- Aim of the Project
- Arrangements for disseminating the outputs
- Background (literature review)
- Outputs
- Activities
- Calendar of activities
- Financial details

Logical Framework

The Logical Framework will normally consist of four columns which are headed as follows:

Narrative summary of the item	Indicators of achievement	Means of verification	Important assumptions and risks
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Often, for an initial application in the form of a Concept Note, only the first column will be required. This will include the following information:

Goal

Sustainable development of animal traction in Cuba as a route to improving farm family livelihoods.

Specific purposes which will contribute to achieving the Goal

1. Improve the nutrition of working animals.
2. Diversify the use of different classes of work animals (cows, equids, etc).
3. Improve the health and management of the various classes of working animals.

Outputs required to achieve the purposes

1. Recommendations on alternative sources of feed for working animals.
2. Recommendations on alternative uses as work animals for horses, donkeys, mules, buffaloes and oxen.
3. Recommendations on the health care and best management practices for each type of working animal.

Activities needed to produce the Outputs

- Worldwide literature review of recent advances in the areas of the three specific purposes.
- Identification of the priority geographical regions for each major theme. For example, better feeding is a crucial concern in the eastern provinces.
- Working groups comprising critical stakeholders convened to discuss and define the systems in use and requirements for improvement. For example, additional sources of forage and its conservation in the case of nutrition.
- Programs of participatory research and technology development devised including scientists, farm families and transport workers. These programs will be the result of deliberations during the stakeholder meetings.
- At the conclusion of the participatory research and development phase, further stakeholder meetings will be convened to define workable recommendations.
- Scaling up and information dissemination are crucial to ensuring adoption of the outputs. Representations will be made at high level in the Ministries of Agriculture, Sugar and Transport at the outset of the Project and throughout its life. The most appropriate forms of dissemination material will be discussed and used for wide transmission of the information produced.

Reference

Sims B G and Starkey P H, 2000. Visita a Cuba para el taller nacional 30 de noviembre al 20 de diciembre de 2000. Proyecto para evaluar el empleo de tracción animal en Cuba: identificando limitaciones actuales desarrollando propuestas para mejorar la eficiencia y los beneficios de la tracción animal. Report IDG/01/05. Silsoe Research Institute, Silsoe, UK. 43p.