Animal traction in Ciego de Avila, Camagüey and Las Tunas Provinces of Cuba

by

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Summary

A team of academic staff and students of the University of Ciego de Avila undertook a survey of animal traction in the Cuban Provinces of Ciego de Avila, Camagüey and Las Tunas in 2000. The aim was to describe and understand the current systems of using animal traction in the region, and to identify the limitations and potential for additional productive and social benefits.

Animal power is extremely important for farming and transport in all three provinces. Its use increased greatly at the beginning of the special economic period of the 1990s, but is now stable, or declining very gradually. Oxen are employed for a wide variety of farm operations, while horses are particularly important for rural and urban transport. Animal health and veterinary services are generally good, but theft of animals is a problem.

Farmers and transporters use a wide range of animal-pulled implements and transport devices. Many implements are unique, being locally made modifications of existing equipment. Seeders are seldom used. Access to new implements is poor, with the high cost of imported materials being a constraint. These issues should be studied further. Participatory studies are required to address the key concerns of farmers and identify ways of improving the efficiency of animal power in these provinces.

Introduction and methodology

The work reported here was carried out in the Provinces of Ciego de Avila, Camagüey and Las Tunas, in 2000. The majority of the survey was done on the basis of personal interviews and also by means of group discussions. Farmers of different genders, ages and production systems have been questioned. Visits were made to UBPCs, private farms, Credit and Service Cooperatives (CCSs), Agricultural Production Cooperatives (CPAs) and State farms. Transporters and representatives of relevant organisations (ANAP) and government ministries (MINAG, MINAZ) were also interviewed. From these sources, both quantitative and qualitative information was obtained on animal traction in the area.

Context

Although the three provinces represent a very large area, with different ecological zones and farming systems, the three provinces do not appear to differ significantly from each other. Data collected from the Ministry of Agriculture in Camagüey appeared to be the most comprehensive and accurate, and most of the data presented here refer to this province, but they are considered representative of the entire zone. These data do not include the sugar-cane plantations (the responsibility of the Ministry of Sugar) or small, private farms. Table 1 summarises the provinces and regions within them that were surveyed.

Table 1. Provinces and regions surveyed and their topography

Province	*North*	*Central*	*South*
Ciego de Ávila	Morón *(flat area),* Florencia *(hilly and mountainous area)* Ciro Redondo *(flat area)*	Ciego de Ávila and Ceballos *(flat area)*	Venezuela and Orlando González
Camagüey	Nuevitas and Minas *(hilly and mountainous area)*	Altagracia *(flat area)*	*Not surveyed*
Las Tunas	Jobabo and Amancio *(plains)*		

State of animal traction

The main work animals are oxen (bulls and castrated bulls) used for agricultural operations and on-farm and local transport. Horses are extremely important for rural transport, being used for riding and for pulling carts and wagons. Horses are also used for public transport in many towns, with Camagüey having a long reputation of this. Some mules are used for pulling carts and for pack transport in the mountainous areas. The use of animals provides significant savings in the diesel that would be needed for motorised operations. This is illustrated in Table 2.

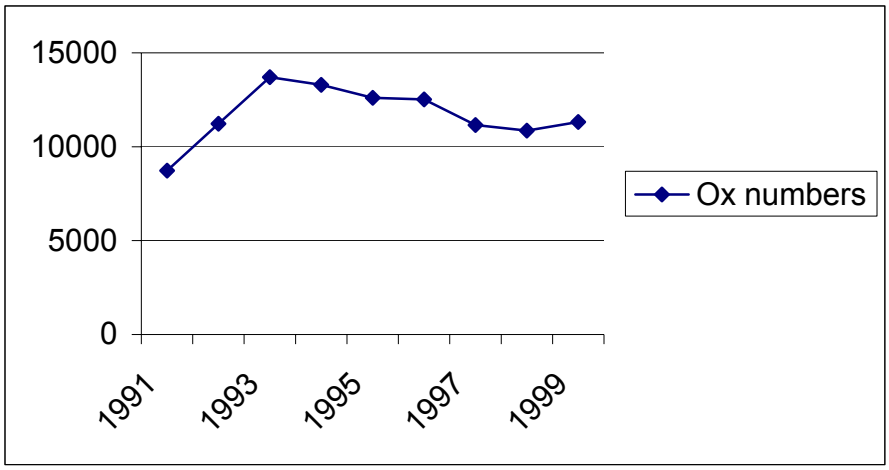
Table 2. Work oxen and their outputs in Camagüey. 1991-2000

Years	*Numbers of oxen*	*Soil preparation (000 ha)*	*Weeding (000 ha)*	*Transport (000 tonne)*	*Diverse work (000 h)*	*Diesel substitution (tonne)*
1991	8 726					
1992	11 226	15				721
1993	13 707	28	135	342		1940
1994	13 299	25	116	28		1560
1995	12 607	21	74	197	624	1280
1996	12 522	24	112	264	189	1950
1997	11 155	38	135	319	2 054	2410
1998	10 861	40	157	412	2 353	2850
1999	11 318	36	202	381	3 910	3260
2000	10 824	25	182	311	2 770	2170

Areas are in thousand hectares.
Land is often measured in caballerías (1 ha = 0.0745 caballería; 13.42 ha = 1 caballería)
Diesel substitution is calculated as an approximate equivalent to the fuel used by a tractor to perform a comparable operation. It can be used in monetary estimates of fuel savings resulting from animal traction.
Source: Estadisticas del Ministerio de Agricultura de Camagüey

The number of working oxen in Camagüey rose in the early 1990s but there has been a gradual reduction since that time (Table 2 and Figure 1). Ciego de Avila Province showed the same tendency in this respect, but in this province the numbers of working animals was lower (8954 oxen in 2000).

Figure 1. Ox numbers in Camagüey



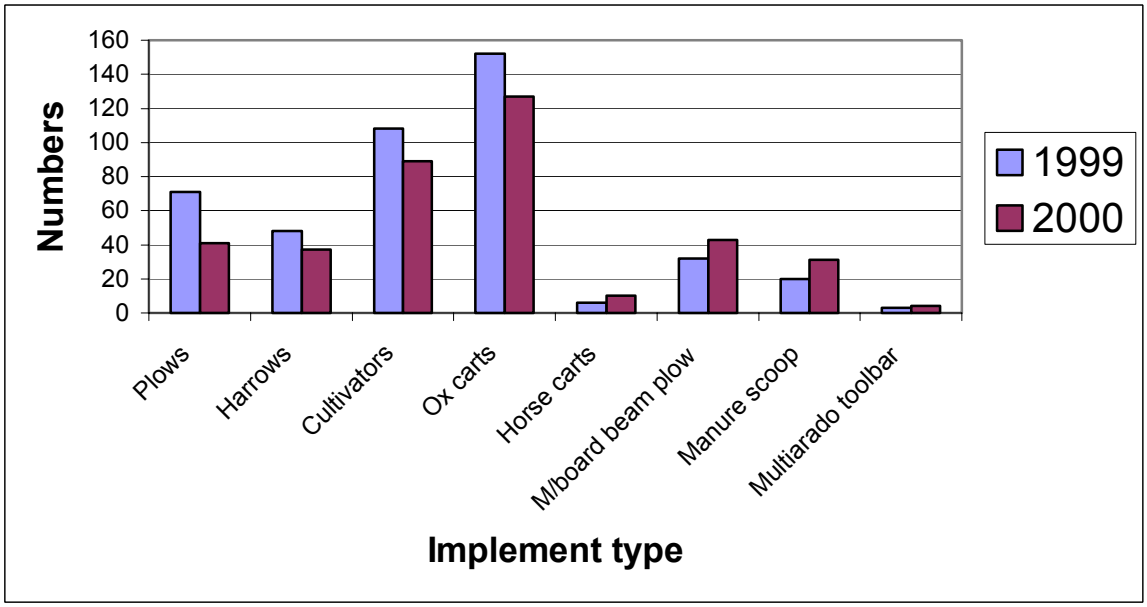
Source: Estadisticas del Ministerio de Agricultura de Camagüey

Observations relating to implements and accessories

In general, farmers buy implements rather than making them. However, a large number of implements in use appear 'original' being local modifications of standard equipment. The different designs, often using scrap metal, are a tribute to the initiative of the farmers.

The most commonly made implement is the simple wooden sledge used mainly for on-farm transport. About 900 of these are made each year in Camagüey. This number has not been decreasing, as the sledges are made mainly of local wood. The numbers of various types of implement manufactured are shown in Figure 2.

Figure 2. Implement manufacture in Camagüey Province in 1999 and 2000

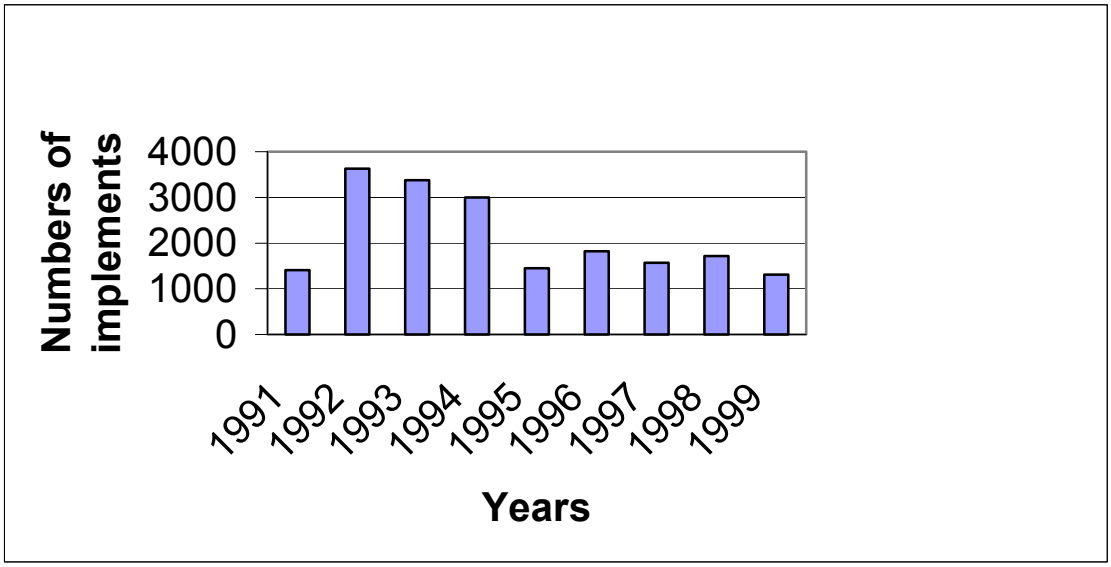


Source: Estadisticas del Ministerio de Agricultura de Camagüey

The total number of implements made in Camagüey is shown in Figure 3. This illustrates the increase in production in the early 1990s and a subsequent decline in numbers of implements manufactured. This decline is largely due to difficult access to imported raw materials which may be unavailable or expensive relative local purchasing power. Similarly, due to a shortage of metal and coal, many

blacksmiths do not work full time. The number of working blacksmiths in the three provinces was 161 in 2000, a reduction of 22% compared to the number in 1998.

Figure 3. Implement manufacture in Camagüey Province 1991 - 1999



Source: Estadisticas del Ministerio de Agricultura de Camagüey

Apart from the impressive on-farm development of 'new' (modified) implements, most equipment in use is of long-standing design. Although animal traction implements developed by the agricultural mechanisation institute (IIMA) have been demonstrated in all provinces, there has been very little adoption. This may be due to lack of local availability (associated with material costs) and lack of sustained promotion. A number of adjustable wide weeders with spade tines or harrows, which are known as PCs (Pelaez Cultivadores), that are made by a workshop in Camagüey are in use in plantations with row spacing of 1.2-1.5 m (eg, bananas, pawpaw). As they are very heavy, two pairs of oxen generally pull them.

Almost all seeding is done by hand, using an animal-drawn implement, such as a long-beamed plow, as a furrow opener. A few cooperatives have modified seeders designed for tractors for use with oxen. The seeding operation is very labour-intensive, and farmers expressed interest in the possibility of obtaining animal-drawn seeders.

Animal traction accessories include yokes, forehead pads (*frontiles*), ropes, rings and horseshoes. In the provinces surveyed, various State farm enterprises have specialised in the manufacture of these accessories. For example, in Ciego de Avila the livestock farm Florencia makes yokes; the State enterprise for input supply makes *frontiles*; and the agricultural workshop enterprise (ETA) makes rings. Due to a shortage of manufactured rope, many State enterprises and cooperatives make their own ropes and reins.

Observations relating to animals

In the surveys, it was widely reported that work animals receive good veterinary attention, although there was often a shortage of veterinary medicines and products. There was little evidence of major problems with animal health and husbandry. It appeared that the private producers and cooperatives provided better management and lighter work regimes than state enterprises.

Security is a serious constraint, with theft of animals contributing to the diminishing numbers of animals in use. The high demand for meat may also be a contributing factor, as it encourages the practice of slaughtering oxen for local consumption.

Observations relating to socio-economic factors

The image of animal traction in the provinces seemed good, with no obvious prejudice against using oxen or horses.

Farmers and cooperatives have relatively easy access to bank credit in local currency for the purchase of animals and some equipment. However foreign exchange is expensive. Workshops find it difficult to manufacture and market implements at an affordable price.

Conclusions and recommendations

Animal traction is clearly indispensable for both agriculture (mainly oxen) and transport (horses and oxen) in the Provinces of Ciego de Avila, Camagüey and Las Tunas. It seems destined to continue to be extremely important in the foreseeable future, providing numerous economic and social benefits. Any decline is likely to be gradual, as economic conditions improve and make alternative motorised options affordable.

The availability of new implements is a major constraint for farmers. This is partly due to the problems that workshops have in obtaining metal, workshop tools and coal for blacksmiths' forges. There is need to improve the accessibility of animal traction implements, though improved, affordable supplies, and associated promotion.

There is a wide range of local implement designs, produced by individual farmers and cooperatives. These should be recorded and tested. Those that appear particularly good should be replicated, and evaluated through participatory, on-farm tests, with the likelihood of subsequent promotion and manufacture of the best implements.

Seeding is a time-consuming manual operation that could easily be mechanised using animal-drawn seeders, such as the simple Fomenta design of seeder that has been tested and modified by IIMA. A participative on-farm programme is required to evaluate existing seeders and promote appropriate model(s).

This survey highlighted the importance of animal power and some of the constraints. More detailed, participatory research is needed to define ways in which animal traction can be made more efficient, and assist more people, in more appropriate ways.

Authors' note and acknowledgements

It is sad to report that the team leader for this survey, Raúl Pérez Companioni, was killed in October 2001 when a lorry hit his bicycle. His coauthors, the whole research team and his many colleagues and friends were devastated by this sudden and untimely loss.

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