

Overcoming some animal health constraints to work oxen in Sierra Leone through a revolving fund

by

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Abstract

*Good animal health is vital for the efficient use of draft animals. In Sierra Leone the biting fly *Stomoxys* is perceived as a major constraint to animal traction as it can lead to the loss of oxen. In an effort to control the flies, farmers purchased unsuitable organo-phosphate insecticides and applied them to the skin of oxen. Trials with synthetic pyrethroids demonstrated their greater effectiveness. To provide farmers with an adequate supply of animal health requisites the Sierra Leone Work Oxen Programme established a revolving fund. This is designed to allow the purchase and resale of basic drugs such as worm tablets, healing oil and insecticides. An incentive scheme for field officers has aided the successful running of the scheme. Commercial prices can be charged as farmers became increasingly aware of the value of keeping their animals healthy and productive.*

Introduction

The number of draft oxen in Sierra Leone is presently estimated at around 800-1000 pairs. This represents a substantial financial commitment on the part of the farming community. Farmers recognise the high value of their animals in terms of work output and income from hiring them to other farmers. The proceeds from the sale of oxen after 6-7 years of work is normally sufficient to buy two pairs of younger animals. Thus there is a growing awareness of the necessity to maintain the health of oxen at the highest possible level.

* Position at the time of the 1988 workshop.
A subsequent address may be found in the workshop participant address list.

In 1986, it became apparent from discussions with farmers that they were facing serious constraints in maintaining the health of their draft animals. The main health problems were flies, ticks, worms and wounds (Corbel, 1988). The principal requirements were identified as worm tablets, insecticide or fly repellent, wound healing oil and salt. The vaccines required were those against anthrax, rinderpest, contagious bovine pleuropneumonia (CBPP) and blackquarter.

In the course of conversations with farmers, it transpired that many of them were travelling considerable distances in attempts to find such items and were buying them at inflated prices. In a number of cases they were obtaining totally unsuitable medications.

During a visit by a Veterinary Adviser from the British Overseas Development Administration (ODA), the issue was examined in more detail and particular attention was paid to the fly problem.

The fly problem

The peak period of the fly attack on cattle is normally towards the end of the rainy season, during the months of August, September and October. The flies, which appeared to be stable flies, were identified by the British Natural History Museum as *Stomoxys* (Muscidae), probably *Stomoxys omega* Newstead. These flies, which have a sharp proboscis, bite cattle and feed upon the blood they draw. This causes considerable irritation and consequent debility. It may also be a mode of trans-

mission of certain infections. It is noticeable that this problem is not reported as a major one with the traditional cattle herds. This is probably due to the fact that *Stomoxys* lay their eggs in dung or decaying vegetable matter, and both of these are found in great profusion in and around villages.

The presence of *Stomoxys* considerably disrupts the grazing of oxen, reducing nutrient intake at a time when oxen are still being fully utilized for cultivation work. As a result, the health of oxen rapidly deteriorates and eventually an animal may collapse. At this stage, owners usually slaughter the animal to recoup some of the value. A replacement individual or new set has to be selected and trained, which requires both time and money. During the training period the owner gets little or no benefit from the set. During 1986, a survey of 82 pairs of oxen, revealed that during the previous 12 months 45 animals had died (28%), and of these deaths, 31 (69%) were attributed by farmers to flies (Schwartz, 1986).

One obvious solution to the problem would be to reduce fly breeding sites by removing the dung to a pit or midden (dungheap) and by clearing away decaying vegetable matter. Although the paddocks can be kept clear of dung, it is more difficult to eliminate matter which is found in areas adjoining the paddocks over which the owner has no control. Under these circumstances, some form of control of the flies is the only practical solution. In an attempt to reduce the fly problem farmers looked for chemicals which they hoped would help them. An organo-phosphate insecticide, *Supona*, has been used at a cost of around Le110 per litre (approx US\$4) but it is not suitable. It seems that the farmers used it simply because it was available and they were willing to try almost anything. The chemical companies were not happy about the use of an organo-phosphate insecticide for this purpose because of toxicity problems and the very short residual activity: around 3-4 days depending upon the conditions. As an alterna-

tive it was decided to try using synthetic pyrethroids on the animals' skin.

The trials

The trials were set up in a very short space of time to look at a specific problem being experienced by oxen-using farmers. They were not planned as a scientific experiment, but rather as an attempt to reduce a very serious problem. Two chemical companies supplied two chemicals; cyhalothrin and cypermethrin, both of which had been recently developed and were not on general release.

Cypermethrin (Shell Chemical Company). The spray version was a 150 g l⁻¹ emulsifiable concentrate to be diluted in water at a 1:500 ratio, and sprayed on the animals at the rate of 2 litres per animal. The pour-on version was a 50 g l⁻¹ miscible fluid applied directly along the animal's back bone.

Cyhalothrin (Coopers Animal Health). The spray version was a 20% w/v concentrate, diluted at the rate of 50 ml to 20 litres of water and an application rate of 500 ml per animal. The pour-on was a 2% concentrate applied at 10 ml per animal.

Sixteen sites were selected for the trials in the Bombali District where the fly problem was concentrated. Three of the sites were designated as controls, but fly activity increased to such an intensity, that the animals had to be treated. The sites were divided to cover four types of treatment: cyhalothrin spray, cyhalothrin pour-on, cypermethrin spray and cypermethrin pour-on.

Observations

It was very evident that the fly problem in 1987 was not as bad as the previous year, although there were some localised high levels of fly activity. Prior to the start of the trials there were five deaths attributed to flies and a further two animals were slaughtered after collapsing (McKinlay, 1986).

The period of protection from the chemical was 2-3 weeks, on average, although in some villages it was longer. There were no fatalities in treated animals. There was little apparent difference between the two chemicals or the methods of application. Since the spraying method required a spray and a source of clean water, the pour-on method was considered more suitable for local conditions.

Cost

The cost of applying one treatment to a pair of oxen is presently Le115 (about \$US4). During the fly season it is estimated that three to four applications would be sufficient. This would be a total annual cost of Le345-460. This is a small cost to pay to protect an investment in oxen of around Le12,000 per pair.

Follow-up activities

With a satisfactory method of controlling flies identified, the next stage was to prepare a system whereby the veterinary requisites most needed by farmers could be made available. It was decided that a self-sustainable programme should be introduced. Thus it was felt that a revolving fund should be set up to enable farmers to purchase their requirements as, and when, necessary. The scheme was intended for work oxen only. The question of what could, or could not be supplied was the subject of considerable discussion. It was agreed that the items supplied should require little or no preparation, should be easy to administer and should not require storage in a refrigerator.

Using these specifications the following items were to be made available:

- Worm tablets
- Anti-fly chemical
- Wound healing oil
- Salt licks

The question of providing and administering vaccines was left to the government Veterinary Department.

Establishing the scheme

The British ODA agreed to support the scheme by providing items to the value of £5000 per annum for a three-year period. After this, the scheme would continue by using the proceeds of previous sales. In line with government policy, it was agreed not to provide any item at a subsidized price. Indeed price was not regarded as a problem since farmers had previously been purchasing expensive and totally unsuitable chemicals. The pricing policy was to take the British FOB price, mark it up by 100%, and then convert it into local currency at the current rate of exchange. These prices were then widely advertised to all relevant farmers.

Since the scheme started in June 1987, prices have been changed twice. In October 1987, prices were reduced by around 30% to reflect the appreciating value of the Leone. This was followed in July 1988 by an increase reflecting subsequent currency depreciation. In July 1988, prices were some 10% lower than they were at the start of the scheme. It is interesting to note that during this same period, the value of oxen had increased by about 80%.

The distribution system involves field extension officers finding out what items the farmers require. They then obtain these from their supervising officers. Farmers pay the advertised price and get an official receipt. As an incentive, field officers are paid a 10% commission. It has been noted that this has encouraged some field staff to spend more time with farmers. The receipts from all sales are paid into a special Work Oxen Programme savings account where they earn interest at 15% per annum. The revenue will eventually be used to purchase more drugs.

Farmer response

After a slow start, the response from farmers has been encouraging. In the 11-month period to May 1988, revenue from sales amounted to just over Le63,000. Sales to date have been:

Worm tablets	789
Wound healing oil	52 bottles
Fly chemical	124 pair doses
Salt licks	120

It is difficult to determine how many oxen sets are being covered by the scheme. There are undoubtedly some oxen owners in the parts of the country which are not currently covered by the programme at present, and this problem is being looked at.

The farmers see benefits of this scheme as follows:

- Items are available through their local field officer; they do not have to travel to get them.
- The items are readily available at all times; they do not have to hoard.
- They pay a fair price for which they get a receipt.

The future

As animal draft power increases in the country, it is essential that animal health items should be available, particularly for farmers who are new to this technology. The problem of improving still further the availability of animal health items is being examined. The crucial time, in terms of animal needs and drug availability, is the rainy season when roads deteriorate and field staff experience difficulties in getting to some villages. The scheme may be extended by establishing stocks in villages using contact farmers.

Résumé

L'état de santé des animaux de trait conditionne totalement leur efficacité. En Sierra Leone, du fait des pertes de bétail qu'elle peut causer, la mouche Stomoxys est une contrainte importante au développement de la traction animale. Des insecticides inadaptés (organophosphates) ont été appliqués sur la peau des animaux. Des essais utilisant du pyrèthroïde synthétique ont apporté des résultats largement supérieurs. Pour subvenir aux besoins des paysans en fournitures vétérinaires, le Work Oxen Programme (Sierra Leone) a établi un fonds de roulement. Ce fonds sert à approvisionner les fermiers en produits prophylactiques et autres médicaments tels que vermifuges, huiles vétérinaires et insecticides. Les agents de diffusion du programme bénéficient d'une commission sur les ventes effectuées, assurant ainsi un meilleur développement du programme. Comme les paysans sont de plus en plus conscients de l'importance et de la valeur des animaux s'ils sont maintenus en bonne santé et productifs, les prix pratiqués ne sont pas subventionnés.

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