New Zealand Society of Animal Production online archive

This paper is from the New Zealand Society for Animal Production online archive. NZSAP holds a regular annual conference in June or July each year for the presentation of technical and applied topics in animal production. NZSAP plays an important role as a forum fostering research in all areas of animal production including production systems, nutrition, meat science, animal welfare, wool science, animal breeding and genetics.

An invitation is extended to all those involved in the field of animal production to apply for membership of the New Zealand Society of Animal Production at our website www.nzsap.org.nz

[View All Proceedings]   [Next Conference]   [Join NZSAP]

TRAINING SHEEP AS "LEADERS" IN ABATTOIRS AND FARM SHEEP YARDS

K. J. Bremner, J. B. Braggins and R. Kilgour

Ruakura Animal Research Station, Hamilton

SUMMARY

Eighteen potential leaders were selected from 32 sheep after an initial taming period. Training these animals involved four basic stages: (1) taming, (2) learning basic tasks, (3) learning specific skills, (4) adjustments to the final environment. Using operant principles of conditioning, the sheep were taught to walk through yards, push open gates and lead mobs. Further refinements included acceptance of leash restraint and gate unlatching. Guidelines are provided for farmers and stock handlers who wish to train their own leader sheep.

INTRODUCTION

The increasing cost of labour on farms and in abattoirs means that more sheep must be handled by fewer people. An extensive research programme to document how facility design can assist sheep flow has been undertaken in Australia (Beilharz and Hutson, 1977; Hitchcock and Hutson, 1979a, b; Hutson and Hitchcock, 1978), and some guiding principles are emerging.

The simplest method of encouraging slow-moving mobs of sheep in yards is to utilize the allelomimetic or flocking tendency of sheep by providing trained animals which will move over a set route and lead the flock in the desired direction at the required pace. No documented cases or manuals for training "leader" sheep using conditioning techniques are available, and as the use of leader sheep in New Zealand abattoirs has declined in recent times, the chances of viewing such sheep at work are limited.

The reduction in the use of leader sheep or goats means increased reliance on dogs, and with plastic rattles in frequent use in many abattoirs a very noisy environment results. Such tactics are unnerving to both shepherds and stock, and biting by dogs and bruising may occur, while pressure is seldom exerted at the head of the mob where it is needed to stimulate movement.

At the request of a new export freezing works which banned dogs for stock handling, a group of "leader" sheep were trained to facilitate animal movements from the unloading area to the slaughter pens. The yard facilities were specifically designed with

raceways which allowed leader sheep to return for another flock. This study reports on the process of training and the success of the programme to date, and gives some directives to farmers or others who wish to train their own leader sheep.

The aim was to produce sheep which (1) accepted a food reward when offered, (2) were amenable to handling, remained quiet and calm in the presence of strangers with or without dogs present, (3) could be led into and tied up in unfamiliar raceways, yards, woolsheds or trucks, (4) would, on command, walk away from the handler towards a mob and then turn to lead it, and (5) would walk at the head of the mob along a route which had either been learned or was indicated by open gates.

Operant conditioning techniques were used wherever practicable during training; *i.e.*, when the sheep showed the desired behaviour or an approximation of it, it was immediately provided with a reinforcement so that the chances of recurrence of the appropriate behaviour were increased. A consistent daily training routine using set verbal commands was followed until each task was learned, before introducing further refinements. Three reinforcers were used: (1) verbal encouragement; (2) back-scratching, a rubbing movement across the back or shoulders until the animal responded; (3) food, *e.g.*, sheep nuts or grain.

METHODS AND RESULTS

From 30 three-year-old hill country wethers of mixed breed chosen to approximate the sheep available to the average sheep farmer, 16 were selected for leader sheep training using two criteria: (1) they would readily eat barley; (2) they would allow hand contact in a pen while being fed. One hand-reared ewe and one tame wether joined this group for training.

The complete leader training process involved four basic stages.

1. Taming or Reduction of Flight Distance

Each day for 21 days, the 30 wethers were driven into a pen from which led a short race. Each of the five or six sheep in the race was rubbed around the head, neck and shoulders for 2 minutes. The sheep exhibited a "pleasurable" reaction (*e.g.*, raising head high, tonguing) after 10.7 days on average (ranging from 9 to 15 days). They were then taught to nose the trainer's hand for each 5-second period of back-scratching, and 24 of

the 30 sheep learned this in an average of 15.3 days (ranging from day 12 to day 28). Barley, introduced on day 22, was eaten by 22 sheep after 7 days. Paddock handling was given after day 21 for a further 8 days. The sheep were then left idle for 3¼ months.

2. Basic Familiarization with the Training Environment

(1) *Return race*: A return race 0.7 m in width was built into an existing 3.5 m wide raceway to form a training circuit 50 m long. The 18 sheep selected for training were allowed to run freely in this race for several hours to accustom them to it. They were then run around the circuit as a group, with each sheep being fed in the return race as it completed the circuit. Individual sheep were then driven or led around and fed. This was repeated until each sheep was running around the circuit. The complete task was run on a verbal command after an average of 13.3 trials (Table 1). Throughout training each sheep was given one to three trials per day.

TABLE 1: AVERAGE LEARNING RATES OF 18 LEADER SHEEP

Task	No. of Trials to Learn Task	No. of Days to Learn Task	Total Duration of Training (days)
Running basic circuit	13.3	4.5	8
Opening flap-gate	14.4	6.1	7
Leading mob	4.1	2.7	12
Tying-up	3.5	3.5	6
Leash	2.2	2.2	10
Running L-shaped race	4.3	4.2	14
Waiting at gate	5.6	4.6	14
Unlatching gate	13.5	8.9	30

(2) *Flap-gate*: A flap-gate at the start of the return race was gradually closed over the next 6 days of training, with the rate of closure dictated by the slowest-learning sheep in the group. All sheep learned to push open the flap-gate within 15 trials, over an average of 6.1 days.

(3) *Leading a mob*: A mob of 15 sheep was introduced into the race at the beginning of the circuit and the leader sheep was encouraged to draw this flock along the main race before returning via the flap-gate to be fed. The mob was driven back to await the next trial. On average, 4.1 trials were required for the leader

sheep to learn the rudiments of leading a flock, although three sheep proved difficult because they were too timid or indulged in fighting or courtship behaviour with members of the mob. Some sheep moved too fast to keep contact with the mob, but this was not considered detrimental as a heavier work routine in the freezing works environment could be expected to regulate their pace. A mob was changed before it became accustomed to following.

3. SPECIFIC SKILLS

(1) *Tying up*: All sheep were collared, and within 6 days had become accustomed to leash restraint for up to 10 minutes. This took an average of 3.5 trials.

(2) *Leading*: Once the sheep accepted the restraint imposed by tying up they were taught to lead on a leash. Following was encouraged by offering food rewards. Sheep learned to lead in an average of 2.2 trials and 2.2 days (range 1 to 7).

(3) *Fetching from a truck*: Each sheep was given one or two lessons in fetching sheep from a truck by running up a loading ramp on to a vehicle and then returning to the handler.

(4) *Waiting at closed gates*: The sheep were taught to wait for up to 30 seconds by a gate across the main race until the trainer opened it to allow access to the return race. An average of 5.6 trials was required for all sheep to learn this task.

(5) *Opening a lever-latched gate*: In an average of 13.5 trials (range 12 to 16), all sheep learned to open a gate by lifting a lever-latch. This gate had been progressively shut over a period of 8 days (12 trials).

With the exception of fetching a mob from a truck, the average number of days spent on each task (Table 1) should approximately indicate the amount of basic training necessary before the animal could be of practical use if trained in its intended working environment.

4. ADJUSTMENTS TO NEW ENVIRONMENTS/HANDLERS

(1) *Strangers*: Early in training most of the sheep exhibited wariness in the close presence of strangers or when the regular handlers wore unfamiliar clothes. However, over the months the sheep became used to working in the presence of 1 to 30 or more visitors.

(2) *New race*: A longer, L-shaped raceway was built to simulate the freezing works layout. An average of 4.3 trials was taken by the sheep to learn the new circuit.

(3) *Freezing works*: Three sheep were taken to the new works for one day to observe their reactions and decide whether or not their training had been adequate for the tasks on site. They were slightly hesitant but curious, and confident with their trainers. Several weeks later these three and five others were transferred as the permanent working group. The trainers spent 2 days instructing the shepherds, who were then left to complete the settling-in process. As the works were operating at approximately 20% capacity, the stock handlers had plenty of time to work with the leader sheep, and the faster the sheep adapted to their new handlers, the better. To date it has not been possible to make an objective assessment of the value of leader sheep in facilitating stock movements because the works has not been operating at full capacity.

VALIDATION OF PREVIOUS RESULTS

A small group of naive sheep were trained in the L-shaped race. They were run around the circuit eight times as a group and then individually. Five sheep learned the circuit in an average of 3.2 trials (range 2 to 6). They learned to wait until the gate was opened by the trainer in 4.8 trials (range 3 to 9), and six sheep learned to open the lever-latched gate in 14.7 trials (range 12 to 23). The comparatively fast rate of learning shown by this second group of sheep confirmed the rapid learning exhibited by the sheep in the main study.

DISCUSSION AND CONCLUSIONS

The taming of sheep and their subsequent training can be efficiently carried out provided that when the animal shows the required behaviour it is immediately rewarded. The learning of specific skills within 3 to 4 trials, and the more complicated gate-unlatching skills within 14 trials, indicates the ability of sheep to learn. Since sheep have good memories, early training can be retained for many months, even without repetition.

An understanding of operant training principles by the stockyard personnel is essential if the effectiveness of learned commands is to be maximized; *i.e.*, a reinforcer (whether verbal, con-

tact, or food) should only be given when the indicated task has been satisfactorily completed.

With more sophisticated training procedures available, the use of leader sheep, together with carefully designed facilities on the farm and in abattoirs, should play an increasingly important role by encouraging free-flowing stock movement, thus reducing stress in the animals and minimizing human frustration.

On the farm, trained sheep could lead a mob (1) through unfamiliar races and yards; (2) through poorly designed races and yards, *e.g.,* around blind corners; (3) over changes in gradient, up and down ramps; (4) over different ground surfaces, *e.g.,* concrete, gratings; (5) through farm gateways, over creeks, swamps or ditches; (6) on to or off trucks (*e.g.,* truck driver could have own sheep); (7) through changing light conditions, *e.g.,* light to dark areas.

The following tips are offered to trainers:

(1) Select sheep which show an aptitude for leading, *i.e.,* those which head the mob movements when driven (especially through gateways).

(2) Quieten the sheep by restraining them in a race and handling. Teach them to touch your hand for back-scratching.

(3) Teach the sheep to eat the reward food (*e.g.,* sheep nuts, grain) by keeping them hungry and making food easily accessible in a pen or paddock for several days, preferably with another sheep which already eats that food.

(4) Teach them to tie-up and to lead, using food rewards, before training as a leader.

(5) Teach the training tasks in small steps, mastering each one before starting the next.

ACKNOWLEDGEMENTS

REFERENCES

Beilharz, R. G.; Hutson, G. D., 1977. *Proc. 15th Int. Ethol. Conf.,* Bielefeld. Abst. 015.
Hitchcock, D. K.; Hutson, G. D., 1979a. *Aust. J. exp. Agric. anim. Husb..* 19: 170.
——— 1979b. *Aust. J. exp. Agric. anim. Husb.,* 19: 176.
Hutson, G. D.; Hitchcock, D. K., 1978. *Appl. Anim. Ethol.,* 4: 349.