PRODUCTION OF FEEDLOT LAMBS IN COLORADO

G.M. BRAGDON*

INTRODUCTION

In Colorado cattle and lambs have been fed for slaughter in farm feedlots for many years, but it has only been in the last 20 years that large feedlot operations have developed. Since the mid 1950's farmers feeding their excess grain and forage to cattle found it increasingly difficult to compete with large feedlots. As a result of this and international trade factors, the profitability of commercial livestock feeding attracted speculative investments and the number of facilities for feeding became excessive by the early 1970's. Competition became keen in the feeder cattle and lamb markets for both the farmer-feeder and the larger feedlot operators and the margin for profit became narrower with the oversupply of lot-fed livestock.

FEEDLOT DEVELOPMENT

Colorado is located in central U.S.A. on the east of the Rocky Mountains and draws its supplies of feeder lambs from Canada to Mexico. Lambs born in Texas in winter begin coming into Colorado feedlots in the spring and continue throughout the summer, whereas Montana and Dakota lambs born in the spring come to Colorado in the spring and winter. The availability of lambs from the South early in the year and the North later in the year, helps avoid variations in seasonal supply and assists in maintaining a stable throughput and quality for meat processors and their customers. Most of the range lambs originate from arid or mountainous areas where feed supplies are scarce. Feedlots have developed in Colorado because feed supplies are close and climatic conditions are favourable for lamb feeding. It is less costly to move the livestock to the feed than to move the feed to the livestock.

PURCHASE OF FEEDER LAMBS

While most lambs are purchased at local auctions scattered throughout the country, up to 40 per cent are sold direct to feedlots by breeders or groups of ranchers with small flocks, who pool their lambs for shipment. There are always some lambs which are already fat and these will be slaughtered directly off the range. These lambs are known as "grass fats" or "milk fats". Feeder lambs are transported to feedlots by road and are usually purchased outright by the feedlot owner although some are fed on contract for the breeder. Purchased lambs are weighed as near as possible to their point of origin and the price is paid on that weight less a standard three per cent for shrinkage.

Lambs are received in feedlots with pen sizes from 0.1 to 0.6 ha accommodating 400-2000 head at a minimum of three m² per lamb. While feedlot operators prefer to purchase lambs of 35-40 kg, lambs may vary from 25 to 45 kg. Lamb groups with a weight range of 7 kg or more are sorted into groups of more uniform size.

RATIONS

Initially, lambs are fed a 15 per cent grain, 85 per cent pasture hay/lucerne ration with an antibiotic and vitamin-mineral supplement. Over the next two weeks the grain component in the ration is increased to 72 per cent and lambs

* Agland Inc., P.O. Box 338, Eaton, Colorado, U.S.A. 80615.

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remain on this high energy diet for the remaining 35 to 65 days of feeding. The
duration of feeding varies according to the original weight of the lambs, their
age and genotype. The most successful rations contain the following: 12-13 per
cent crude protein, >10 per cent digestible protein, >3 per cent crude fat, >10
per cent crude fibre, 0.75-0.85 per cent calcium and 0.30-0.40 per cent phos-
phorus, a calcium-phosphorus ratio of 3:1, and 70-75 per cent total digestible
nutrients.

Protein levels can be reduced for lambs more than seven months of age but
levels above 12 per cent give greater feeding efficiency in lambs five to seven
months of age. Calcium is fed as calcium carbonate to provide a rumen buffer
against the high grain levels. Although the phosphorus levels in grain should
be adequate to meet the lambs’ requirements, feeders have found that the addition
of inorganic phosphate can increase feeding efficiency.

Grains used in feedlots are corn, barley, milo (sorghum), wheat and oats.
Despite the high energy costs in processing, steam cooking and flaking provide
the best economic return. Corn and milo are cooked at 100°C for 30 minutes with
dry steam at a pressure of 30 kg/cm² and then rolled to 0.5 cm thickness which
gelatinises 50-60 per cent of the grain starch. However, feedlot operators still
commonly feed grains simply ground or cracked.

Roughages used include lucerne, sugar beet pump, corn silage, corn stover
(corn cobs after removal of the seeds) and cottonseed hulls. These ingredients,
with the exception of corn silage, are ground and pelleted for ease of handling.
Corn silages are seldom used in lamb rations as the acidity of the silage can
contribute to rumen acidosis.

The protein supplements used depend on availability and cost, and can be
supplied as soybean meal, cottonseed meal, wheat by-products, meat-meal,
dehydrated lucerne, brewers grain, urea, and ammonium sulphate. Urea and
ammonium sulphate are used together to supplement the protein needs to a maximum
of two per cent non-protein nitrogen.

Minerals (including sodium, iron, magnesium, manganese, copper, molybdenum,
cobalt and zinc), antibiotics and vitamins are combined with the protein supple-
ment and pelleted to ensure that these are consumed by the lambs. Salt (sodium
chloride) is added to a maximum of 0.4 per cent to increase water consumption and
control urinary calculi.

Colorado feedlot operators aim for gains of 250 g/day for lambs five to six
months old, and gains of up to 330 g/day for lambs seven to nine months of age
have been recorded. Feed conversion ratios vary from six to eight kg of feed
per kg of liveweight gain, but younger lambs should gain more efficiently at six
kg feed per kg of liveweight gain. Feed consumption should range of 1.3-2.0 kg/
head/day.

VETERINARY PRACTICES AND PROBLEMS

Routine veterinary preventive measures include vaccination against entero-
toxaemia on arrival at the feedlot, with a booster vaccination two weeks later.
The immune status of the lambs on arrival varies between groups and the cost of
the vaccination is small in relation to the high risk of precipitating entero-
toxaemia with diets high in grain. The booster vaccination is given to ensure
adequate immunity for the duration of the feeding programme. All lambs are
treated with anthelmintics on arrival as the effects of internal parasites are
exacerbated by the stress of transport. Faecal egg counts are not considered
good indicators of worm burdens and are not used by feedlot operators to diagnose
The most common problem in Colorado feedlots is pneumonia associated with transport stress and pulmonary irritation from stockyard and feed dust. This problem can be controlled by medication of the feed and water with tetracycline antibiotics and sulphonamides. Clinically-affected animals are treated with either penicillin-streptomycin or tetracycline antibiotics.

Lambs transported long distances to the feedlot in the summer can become affected with "transport tetany" but these lambs respond immediately to intraperitoneal treatment with a mixture of calcium borogluconate, magnesium sulphate and dextrose. Groups of lambs at risk to this problem have electrolytes added to their water.

Urolithiasis (urinary calculi, "water belly") appears to be a problem only when water supplies are high in magnesium salts, if water consumption is restricted (e.g. because of shearing, cold weather) or if the dietary calcium:phosphorus ratio is imbalanced. Surgery is required for acute cases, while the addition of 0.5 per cent ammonium chloride or ammonium sulphate to the ration can control chronic problems. The routine addition of common salt is commonly used to prevent calculi formation as mentioned previously.

Polyarthritis is sometimes seen after shearing, especially during cold weather, but this condition can be treated successfully with intramuscular injections of 400 mg of tylosin once daily for two to three days.

Salmonellosis can cause high death rates and appears to be precipitated by severe transport stress, harsh environmental conditions and poor nutrition on arrival in the feedlot. Preventive measures are required as treatment of affected animals is often unsuccessful. Antibiotic medication with nitrofurazone and furazolidone has only met with limited success in the experience of feedlot operators. The most successful preventive measure is the provision of a ration that keeps the rumen pH either below 4.6 or above 4.9.

Coccidiosis is sometimes seen during cold, damp weather but is easily controlled with sulphonamides or amproleum medication in the drinking water. External parasites are controlled by shearing and spraying with parasiticides. Fly-strike is seldom a problem because of the dry climate in Colorado.

ECONOMICS

A Colorado feedlot operator may invest US$250,000 in facilities to feed 20,000 lambs in five groups each year. The low margins which are typical of the lamb and cattle feeding industry in the U.S.A. and the large market fluctuations which can occur means that the feedlot operator must assume an almost equal risk for loss as he does for profit. These losses and gains have been as high as US$15.00 per head. Therefore the feedlot operator needs to have a capital reserve to withstand the extreme market downturns that frequently occur.

CONCLUSION

Most problems in feeding lambs can be minimised by sound management and nutritional practices. The profitability of feedlotting, a competitive low margin enterprise, comes from continual observance of the lambs' performance, maintenance of a clean environment, large throughput and expedient handling. Economies of scale, while creating efficiency, have also brought problems in the selection of personnel to work in the feedlot, and the experience of operators is that the farmer-feeder is more proficient in feeding lambs than is employed labour.
The recent increases in fuel costs for transportation of feedstuffs may result in the farmer-feeder being in a stronger position in the market place in the future.

The lamb feeder acts as a shock absorber for erratic changes in the market supply and demand. His market prowess is as important as his managerial and technical proficiency.