



## ANIMAL HEALTH CONTROL AND FARM MANAGEMENT

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### INTRODUCTION

The challenge for today's farmer is to manipulate all aspects of management into a formula providing for sustained profitability. Stock health is only one area of management that needs to be optimised. Without some knowledge of how animal health is influenced by other management decisions then it may be difficult to achieve sustained profitability. Some important relationships between animal health and farm management are discussed in this paper.

### FARM ECONOMICS

Good stock health is a good starting point for solving many other problems affecting a farm. Better disease control can provide rapid improvements in cash flow and the extra profit can be directed into projects which demand higher capital input but which yield sustained profit (eg soil conservation, pasture improvement). The returns on funds spent controlling some common diseases are high in comparison to returns from many other areas of farm expenditure. For example, young sheep affected by selenium deficiency may have their wool production lifted by 10% following supplementation. The extra two to three dollars per head in wool is obtained for as little as five cents per head in supplementation costs and the profits are available as soon as the next wool cheque is banked.

Of course the gains from improved disease control are not limitless. With all diseases there is a point when it is no longer cost effective to adopt further control measures. In these circumstances managers should look at their existing programs to see if there are ways of using less chemicals and labour. Attention should also be given to keeping out those infectious diseases not already present on the property. For example, it is common for sheep flocks not infested with body lice to be treated each year with backline pyrethroid chemicals. This costs the flock owner about 25 cents per head and provides a very minor benefit in the form of five weeks protection from new infestations. Instead, these funds would be better spent on surveillance of the flock for lice (especially during the months leading up to shearing), a boundary fence improvement program, and greater efforts to ensure purchased sheep are not lice infested.

### STOCKING RATE

Stocking rate is a fundamental determinant of farm profitability. A disease must assume major economic importance if stocking rates are to be reduced in an attempt to control that disease. Animal health problems mainly relate to stocking rates through nutritional effects particularly if these result in high death rates (eg starvation and pregnancy toxemia). The farmer facing a stock health problem where high stocking rate is a contributing factor (eg "E ovis" in lambs, hypocalcaemia of ewes, does not necessarily have to reduce stocking rate. The technologies of grazing management, nutrition, and disease control are available to overcome the problem. These measures are likely to be a far more cost effective disease control measure than reducing stocking rates (for regularly

occurring health problems this should be proved by budgetting the decision alternatives). In other words livestock diseases should not necessarily have a major influence on the whole farm stocking rate, although this does not mean that stocking rates of individual paddocks cannot be varied to help control disease.

One notable exception to the relationship between disease and stocking rates is the problem of internal parasites in goats. Research in the New England region has shown that goats are very sensitive to the effects of parasitism at higher stocking rates. Depressed prices for goat meat and goat fibre discourage owners from spending too much on drench, subdivision and grazing management to control worms. On properties where goats are run exclusively there are few opportunities for preventing worms by grazing on safe pastures and so reduced stocking rates may be the only alternative to solving a persistent parasite problem. The economic consequences of this decision has in many cases forced a change back to a cattle or sheep enterprise.

Manipulation of stocking rates on a paddock basis can have some health benefits for livestock. Heavy grazing of annual grass pastures pre-treated with herbicide can greatly reduce the extent of grass seed injuries experienced by young sheep and improve the quality of feed available in the late spring - early summer period. This not only has direct benefits through greater survival and production of young sheep, but enables the farmer to reap the benefits of a later lambing and perhaps a later shearing.

Beef cow deaths due to grass tetany, which typically occur in autumn and winter calving herds, may in part be prevented by grazing cows on paddocks containing a reasonable quantity of mature pasture during the calving and early lactation periods. The fibre content of paddocks to be used for calving and lactation can be increased by lighter stocking over the late summer autumn period. The higher roughage content of the diet assists in the absorption of calcium and magnesium from the gut, which helps to reduce the deaths from grass tetany, although extra control measures will often be required. If this cannot be achieved without a substantial reduction in the whole farm stocking rate, feeding hay (especially that with a reasonable legume content), magnesium and calcium supplements, and salt licks will need to be more heavily relied upon.

## PROPERTY SUBDIVISION

The key to successful grazing management is adequate property subdivision. Altering the stocking rates on a paddock basis, either for production or health reasons, is impossible without adequate subdivision. Subdivision permits manipulation of both the nutrition of stock and the intake of internal parasites. Both the number of paddocks, and the pasture composition within each paddock are important.

Providing a 'quarantine paddock' is of great importance on properties grazed by sheep or goats. Purchased sheep or goats cannot be presumed to be free of footrot or body lice on the basis of a single examination. Because these diseases have substantial economic effects, purchased sheep and goats need to be isolated from the home bred flock for long enough to permit the expression of symptoms. If purchases are made during summer or autumn this often means waiting until the following spring to confirm the absence of virulent footrot. It is not reasonable to assume freedom from virulent footrot until the sheep or goats in question have passed through a suitable spread period and this must be with minimal or no protection from footbathing or vaccination. Similarly, body lice

infestations are slow to become noticeable and it may be several months before symptoms of infestation are observed. The extent to which introduced stock can be isolated for such long periods is very much dependant on property subdivision.

## GRAZING MANAGEMENT

Grazing management may be broadly defined as planned attempts to maximise profit by allocating stock to pastures that fulfil nutrition and disease control requirements. Thus grazing management requires some understanding of agronomy, animal husbandry, farm economics and veterinary matters. Although grazing management has been widely attempted in the past, few could claim that the objective of maximum profit has been regularly achieved. The main reason for this is the shortage of farmers and advisers who have enough comprehensive knowledge in each of the component disciplines to devise a workable grazing management plan. An added complication is the need for grazing management strategies to vary from one property to the next and this does not suit the traditional means of providing advice to primary producers.

Grazing management programs are being more widely attempted. To achieve results the farmer must be able to estimate pasture availability (in terms of kg of dry matter per hectare) and relate this to the present and future needs of stock. Weight gains and condition scores of stock are monitored so that moves to a new paddock or supplementary feed can be best timed. Live weight, condition score, and grazing history are combined with the monitoring of internal parasite burdens to minimise drench usage without suffering losses in production.

The grazing management approach has provided a number of advantages. It has allowed a "fine tuning" of the stocking rate for each paddock by a more appropriate distribution of the pasture resource as determined by animal performance. As a result stocking rates across the property have often been increased without creating extra risk of disease outbreaks or land degradation. Losses due to common diseases such as internal parasites, weaner ill-thrift and pregnancy toxemia are minimised because problems are recognised and dealt with before the onset of serious symptoms. The hit and miss, and best guess approaches to worm control are replaced with a more appropriate treatment on a needs basis.

Internal parasites can present a problem with rotational grazing systems. Parasite eggs deposited on the pasture eventually give rise to infective larvae and these can live on pastures for well in excess of six months. A system of rotational grazing using stock resistant to the effects of parasites (adult cattle or dry sheep) may not create problems with worms. However, production losses could easily result when lambing ewes, weaner sheep, yearling cattle, or, goats of any age, are forced onto pastures they grazed six weeks previously. In this circumstance there is little alternative but to drench stock more often which is costly and encourages the development of anthelmintic resistance.

On the plus side, rotational grazing does demand of the farmer a high degree of skill in assessing the performance of stock and the availability of feed. These skills are being recognised as an increasingly important asset to those seeking to maximise production in any grazing system.

## HERD AND FLOCK STRUCTURE

The proportion of dry sheep in a flock can have a large effect on the ability to control and prevent disease. On the one hand an all wether flock requires the purchase of replacements and these may introduce footrot, lice or drench resistant worms. However, if one such disease does enter an all wether flock it can be relatively easily dealt with compared to the same disease in a breeding ewe flock. Dry sheep have a major advantage because they are not very susceptible to the effects of internal parasites, and so they can be used to produce safe pastures for the more worm-prone weaners. Dry sheep are certainly less demanding on labour and are less expensive to maintain during a drought. The many advantages of dry sheep must be balanced against a greater dependence on wool as the major source of farm income. One should not overlook the substantial profits available in some years from the sale of surplus sheep.

The structure of beef cattle herds is mainly constrained by the time of marketing of young cattle. In southern Australia autumn calving herds have a greater proportion of grazing units as breeding cows since calves are generally fattened on their mothers and sold before summer. This system sees greater losses due to grass tetany, not only because there are more cows but also because cows are calved in forward condition and often graze short green grass low in magnesium. With spring calving, the number of cows on the property is less than in the autumn calving option, and each cow is far less susceptible to grass tetany because there is much more magnesium available from the pasture, and it is not necessary to calve cows down carrying excess body condition. The spring calving herd generally carries a larger proportion of stock as young cattle and this provides some health disadvantages. Notably, greater care with the control of internal parasites is required since there are more calves kept to an older age.

## ENTERPRISE MIX

The greatest health advantages from running cattle and sheep on the one property are in assisting with worm control. The major roundworm parasites of sheep do not affect cattle and vice-versa. However, goats and sheep do harbour the same species of internal parasites and so they are not good grazing companions. Moreover, goats have less innate resistance to internal parasites than adult sheep and so goats do cause heavier contamination of pastures with worm eggs.

Liver fluke presents a problem with tablelands grazing management programs because all ages of sheep and young cattle are very susceptible to production loss caused by fluke. Fortunately adult cattle have some resistance to liver fluke, and they can graze areas of the farm heavily contaminated with fluke larvae with a lower risk of production loss provided they are vaccinated against Black's disease.

The most efficient way to exploit the parasite control advantages of mixed grazing systems is to have one species of stock follow another. Because young stock of all species are most susceptible to worms, they should be given preferential access to clean pastures. On mixed sheep beef farms it is often possible to wean sheep onto pastures grazed by cattle for the previous six months. The newly weaned sheep must first be drenched since this delays the build up of sheep parasites on the already clean pasture. A similar procedure can be followed with weaner cattle by moving them onto sheep pastures. Opportunities

for this practice will vary from farm to farm and in some cases adult dry stock of the same species will be a more practical means of creating safe pastures.

## CONCLUSION

Management and the health of livestock are integrally entwined. Each farm will vary in its ability to alter management to assist with disease control. Understanding the rewards to be gained from better disease control provides the best basis for a manager to decide if a change in management should be adopted for the benefit of the whole farming system.