

Feeding strategies for production and survival

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Overview:

Should you feed in a drought? This is a question that is often asked. Feeding stock for *survival* during a drought is certain to be a financial loss. Feeding might not be the best strategy. However, if feeding is used, it needs to be planned and concentrate on increasing *production*.

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What is different in this article?

No one should plan a feeding strategy that is only aimed to guarantee the survival for stock. Drought feeding strategies should be an extension of production feeding strategies.

The main feature of this workshop on drought management, which distinguishes it from other workshops of this nature, is the fact that most of the strategies focus on feeding systems which offer the flexibility of targeting survival or production. These systems are suited to managing fluctuations in the availability of pasture feed which occur in normal years as well as providing options for coping with the extremes of drought. The ability to increase production in normal years and also maintain production, or limit losses, during drought can be simply based on resources available throughout Australia using information which we currently have. The essential component of all successful strategies is to recognise that drought is an integral part of Australian grazing systems. It is imperative that forward planning provides a range of options which are available at all times in order to cope with any extended dry period which can turn into a drought. By making long term plans adequate stockpiles can be conserved so that we can make use of the suitable feeds such as silage, cereals, cotton seed, lupins and molasses which we have in abundance in Australia.

The more traditional approach to drought management has been to turn to marginal feeds such as cotton trash, imported copra meal and sugar cane tops in an attempt to find short term solutions once the emergency has developed. Most publications on drought feeding have been written during droughts and these concentrate on least cost options for survival feeding. Making plans for drought feeding once the drought has started is a certain recipe for losing money (see the paper by Thompson in the proceedings). Under these conditions the producer

has no control over any activity which can generate vital cash flow or alleviate the grazing pressure on scarce pasture resources. Money is spent on feeding which is not linked to productivity or the ability to generate income in the short or medium term. This management strategy has been supported by transport subsidies to bring in feed for survival feeding and has led to severe financial losses. Feeding grazing animals for survival also often means overgrazing large areas of land and the long term costs of overgrazing, hidden in the short term, will probably turn out to be the major cost of the drought. We believe that this is a totally inappropriate way to cope with the variability of the Australian climate.

Maintaining the pastures

Feeding strategies should be seen as a supplementary or supportive element to basic pasture and shrub production and not as a replacement.

The best return on planning and investment is likely to come from first optimising the management and use of pasture and shrub production. This is fundamental to the economic and biological sustainability of the grazing operation. Management of pastures for sustainable production and the introduction of deep rooted perennial forage shrubs offer long term strategies. The establishment of drought resistant shrubs and the regeneration of pastures requires adequate rainfall, and the appropriate time for implementation of these strategies is at the end of the drought. The papers by Scott and by Norton *et al.* In the proceedings cover these strategies. The variability in the climate will inevitably mean that at some times even good pastures and reserves of forage shrubs will not be able to supply adequate feed for optimal economic production. Under these conditions it is essential to preserve the key asset, good pastures, and avoid

short-term overgrazing as an absolute priority. A rigorous stocking rate policy in combination with the use of conserved feeds provide effective tools to ensure the long term productivity of pastures and/or shrubs.

Knowing the weather patterns and long range forecasts

There is a gap between what the weatherman now knows and the information that currently filters down to most graziers. The odds are shortening but drought can still not yet be predicted with certainty.

In planning for and managing during droughts it is essential to have a clear and objective understanding of weather patterns and to make use of recent developments in long term weather forecasting. Computer programs are available which provide accurate unbiased information on the probability of rainfall during different times of the year for almost every region of Australia. This analysis of historical information, modified by long range forecasting, provides better data than we have ever had with respect to one of the most important aspects of decision making for all producers. This information on the weather is not yet widely used or well understood. The paper by Sparks in the proceedings will help producers who are not yet using the latest weather information properly to become more familiar with its importance and its potential application in planning for and managing drought.

What assistance can you expect from the government?

Except for social welfare payments for those really up against the wall, and some assistance for long-term planning, do not expect much else from government.

It is clear that government policy on drought is directed towards self sufficiency and planning for periods of lower than average rainfall. The current policy includes a combination of incentives and welfare/support measures. These are summarised by Munro and Lembit in the proceedings. Further analysis of the issues in the area of drought policy development are discussed by Simmons. The use of welfare payments was considered to be an unsatisfactory option by many producers but there were no specific suggestions of alternatives which were generally accepted by the workshop. Simmons pointed out that while there may be some scope to lobby for changes, it is most unlikely that the basic policy of greater self sufficiency will change significantly in the future.

What is a drought?

Any fool can create a drought, but sometimes even the most sensible stocking policies can be defeated.

The question of "what is a drought?" came up throughout the workshop and was largely left unanswered because there is a different answer for each farm. Feeding of livestock can be necessary and/or profitable whenever the amount or quality of pasture feed is below that which supports the desired level of animal production. The severity of a drought is determined by many factors apart from rainfall patterns and particularly by previous and current policies on stocking rate and pasture management. Successful management of drought depends very heavily on early decisions and flexibility which can only come from long term planning. A number of graziers quoted examples of farms in some regions being in drought through continued high stocking rates while their neighbours had adopted more conservative stocking rates or better pasture management and were not "in drought".

Management to minimise the risk of over stocking depends on knowing how much paddock feed is available, its nutritional value and the production it will support. When this information is used with an analysis of rainfall probability, and a prediction of how the available pasture will respond to rainfall at different times of the year, planning can be quantitative and strategic. Management of pasture resources using a quantitative and systematic approach provides the only basis for objective decisions on stocking rates.

To feed or to sell

Emergency feeding programmes generally cost more than they are worth.

If and when to sell livestock is one of the most difficult decisions facing graziers going into dry periods and droughts. The analysis by the Centre for Agricultural and Resource Economics (Thomson's paper in the proceedings) indicates that it is always more profitable (less costly) to sell stock rather than feed them in times of drought. This analysis is based on traditional feeding strategies using hay as the main drought feed and feeding for survival only. This is an analysis and a warning which all graziers should pay close attention to. It highlights the costs and the trap which many producers find themselves in when basing a program of supplementary feeding on the use of hay or "emergency" feeds such as crop residues (e.g. straw and sugar cane tops). At best these feeding systems, based on poor quality roughage, limit weight loss and stock do not finish or become more saleable. There is little

or no flexibility with this system and once there has been a certain level of investment in the feeding of the livestock the decision to sell becomes very much more difficult. It is also likely that a long period of maintenance feeding results in damage to pastures and a reduced capacity for regrowth when it does rain. Both Scott in his paper and Barney Foran in his oral presentation emphasised the long term costs of damaging pastures and soil as a result of overgrazing during times of drought.

Feeding for maintenance or production

Feed for production, sell for survival.

One of the features common to practically all options was the range of benefits associated with feeding for production rather than for maintenance and survival. There is a wide range of feedstuffs which will allow the flexibility of feeding for production as well as for maintenance and this means that there is considerable scope to buy and sell commodities at the right prices.

Whatever supplements are used as the basis for feeding the most important basic principle is to maintain efficient rumen performance. The dominant role of the rumen in breaking down fibrous feeds and in producing protein for the animal has been acknowledged in all papers dealing with feeding strategies. Two major problems that the rumen may be faced with are insufficient nitrogen/sulphur for microbial fermentation and low pH (acidity) resulting from rapid fermentation of starch and sugars present in some supplements. Dramatic improvements in feed conversion and production result from overcoming N/S deficiency and the acidity associated with irregular grain feeding. In addition, problems of acidity associated with the use of cereal supplements, can now be reduced using virginiamycin (Rowe *et al* in the proceedings.).

Provided that efficient rumen function is achieved it appears that most no-roughage supplements including molasses, protein grains and meals, and cereal grains, can be used for production feeding. The papers in the proceedings by Lindsay, Henessey *et al.* and Rowe *et al.* summarise these feeding systems.

The use of roughage based feed supplements have the disadvantages of high costs per unit of nutritive value for handling and transport. Hay, silage and straw do have an important role under some production systems where feeding for production is not necessary. These situations include feeding mature dry sheep to maintain wool growth and to maintain pregnant (non-lactating) cows in sufficiently good condition for reproductive efficiency.

In papers in the proceedings by Dixon and Doyle on straw and crop residues and by Laiser on hay and silage, there are details on the most effective way to use these feeds. Used in conjunction with supplements of grain, molasses or protein meal they can provide the basis for production feeding. The quality of the roughage is very important in determining how to use it on its own as well as the responses to using it with other supplements. Higher quality roughages have numerous advantages but the costs and practical difficulties of treating roughages to improve their digestibility makes this option of questionable value.

Hay and silage

Forget hay and silage unless you produce them yourself

Silage offers many advantages over hay as a drought feed. It can be stored for long periods and can therefore be used more strategically for drought feeding than hay. Its higher nutritional value also makes it a very good basal diet for production feeding when this is desirable. In many countries the use of contractors to make silage is a well established and cost-effective practice. There is scope to further develop the infrastructure to expand this practice in Australia.

We believe that hay and silage should be considered only as on-farm feed resources and a mechanism for transferring surplus feed available during particular times of the year, or during good seasons, to times when supplementary feeding is likely to be profitable. Hay and silage are important tools in managing pastures and can often be used more effectively to utilise surplus pasture than by purchasing additional livestock. The use of hay appears to have little value as a long term drought reserve or as a mechanism of moving nutrients from one part of the country to another. Its current popularity in this regard is mainly preserved by the transport subsidies rather than by its nutritional value or its benefits in drought management. Its popularity is further enhanced by the ease with which it can be fed out and its safety.

Shrubs and trees

It is time to give more thought to trees and shrubs in planning for the future.

The potential of using shrubs and trees to complement pasture production and as an alternative in some situations was presented by Norton *et al.* in the proceedings. As with pasture production shrubs appear to offer a stable, low-cost production system well suited to conditions of variable rainfall.

Shrubs and trees have particular advantages in that their deep root systems make them more resistant to short term moisture shortage. The major problems with shrubs and trees are their utilisation in grazing management and/or harvesting, their establishment and the length of time before they can be used for production. Considering the relatively minor amount of research work done in this area in Australia, it is likely that there is still significant potential to develop the use of plants such as leucaena and tagasaste and to find other shrubs and trees suited to local conditions.

Welfare considerations

Land and animal starvation are linked and need not happen.

There are a number of strategies covered in this workshop which present benefits of feeding for production rather than survival. Excessively thin animals are invariably in the process of overgrazing land and endangering the long term productivity and sustainability of the country. Animals in very poor condition are also unlikely to be productive or profitable. The issues of animal welfare, sustainable land management and profitable livestock production are therefore closely linked. We believe that there are sufficient options and strategies available to producers for them not to have to operate under conditions where the welfare of animals or the sustainability of the land are compromised.

Opportunities for alliances and service industries

The single most important challenge for the immediate future is to develop integrated supplementary feeding systems which can be used to enhance profitability in good rainfall years and to support productivity in years of drought.

There are a number of feed resources which can be traded or used in a flexible and profitable way. We believe that every year should be treated as a potential drought year in securing feed resources through forward contracts and purchasing feeds at the most appropriate time when they are readily available. This only applies to those feeds which can be used profitably even in the absence of a drought or traded again if this emerges as a more desirable option. Although there may be costs associated with this approach it provides the opportunity to spread the risks across more than one industry.

Few producers can cope with additional activities such as monitoring a wide range of commodity prices, forward contracting, and selecting the appropriate feeds on the basis of nutritive value and

price while, at the same time, managing complex grazing systems and other on-farm activities. Further development of the feed service industry has the potential to improve drought planning and management through sharing risks and expertise. An advantage for any livestock producer would be guaranteed access to feeds at prices which allow a profit margin when fed during normal dry periods and/or droughts. This can only happen if forward planning is combined with professional skill in purchase and use of feedstuffs. Skills and facilities are needed in the following areas: purchase and trading of feedstuffs; storage and insect control; least cost supplement formulation; feed preparation and mixing; and feeding equipment. This range of skills and infrastructure can be provided by the feed industry. Alternatives to the feed industry taking an initiative in this area would include alliances between grain growers and livestock producers, forward contracts (as currently exist for molasses), or producer groups developing combined facilities and shared expertise.

There is currently limited development of complete feed services. A molasses-based feeding service is available in Queensland where livestock producers pay a single fee for a complete service including the provision of troughs and delivery of product. There are clearly opportunities to extend this type of service to other feed stuffs. It should also be possible to go further than a flat fee in terms of a price per tonne of feed and aim for charging on the basis of liveweight change. In fact payment on the basis of weight change would introduce the practice of weighing animals at regular intervals during the process of supplementary feeding and this, in itself, would improve management considerably. Buying feeds on the basis of the liveweight gain of grazing animals would place the onus of designing cost-effective feeding systems on the professional nutritionists and commodity traders. The producer would then be in a position to evaluate the supplementary feeding or drought feeding options in an objective way and have more time for the planning process which is so important. We often expect producers to make decisions on supplementary feeding which are extremely complex without appropriate information and infrastructure. There is a need and an opportunity for the feed industries to provide a more comprehensive service to help counter the adverse effects of climate variability.

Conclusions

If we continue to treat drought as an emergency, then grazing animals will remain as a cash drain during each drought and the land resources will take another step in the process of degradation.

The results of this workshop suggest that then drought occurs there are only two sensible strategies for most graziers - to either feed for production or to sell. In this way, cash flow is generated and pastures are preserved. Any other prescription will only result in losses across the board. Some may read this book and end up by saying, "Well, what is new?". This will have some validity, although there are some new ideas presented, most of the papers deal with alternatives that have been with us for years. However, the key aspects presented in this book involve using the same ingredients but in ways which produce a different outcome. The challenge for the future is to treat drought as just one of the many components of any grazing operation.

For this to be successful we must develop systems where the management of pastures and the supporting strategies for supplementary feeding can be easily adapted to ensure productivity during drought or to achieve enhanced profitability in more normal years.

References

All papers referred to are found in:

Rowe, J. and Cossins, N. (eds.) (1995) "A Users Guide to Drought Feeding Alternatives" - the proceedings of a workshop hosted by the Department of Animal Science at the University of New England.