GSSA Paper 2005 - Grant Burbidge

Managing Drought

1. Introduction

   Droughts are all about risk.

   There are numerous types of risk. The main areas which need to be addressed are climate, production, price and social.

   How we handle risk is different for every individual. Some people are very uncomfortable with even a small amount of risk, while others love the adrenalin created by any risk.

   There are times when risk in one area can be traded for risks in other areas. During late 2001 a property up the road went to auction. I didn't do an inspection or go to the auction – we could not handle the financial risk associated with purchasing that property at that time. It was passed in at auction. Five months later we negotiated to purchase the same property at a higher price. This was achieved after a rise in wool futures prices allowed us to take the income price risk out of the equation for the next two years. By locking in interest rates one other risk was also taken care of. The only risk remaining was production risk. If you are in the business of primary production you should be able to handle the production risk.

2. Risk of Drought

   Most people are unlikely to have lived long enough to have built up a very good personal data base of drought conditions.

   Forecasts are provided by various people or organisations with various degrees of sophistication or snake oil. Analysis of the reliability of quarterly forecasts (Vizard et al) showed that the chances of accuracy was no better than making random predictions. A very risky way to base business decisions.

   The risk to a business in using long range forecasts is far too high. I take no notice of any forecasts which make predictions greater than 7 to 10 days ahead. There is no point wasting valuable time, energy and money on things we have no control over and cannot predict.

   For any area in Australia there are long term weather records available for a recording station nearby. These can be used to calculate the likelihood of any set of combinations of rainfall events. By using the decision support tools MetAccess or Rainman it is easy to develop a set of probabilities for a certain amount of rain in any month.

   Once the level of rainfall risk is determined, then the production implications relating to that risk can be determined. The amount of feed available, number of stock on hand and condition score of stock will determine if and how long feeding will be necessary for each scenario and the cost calculated.

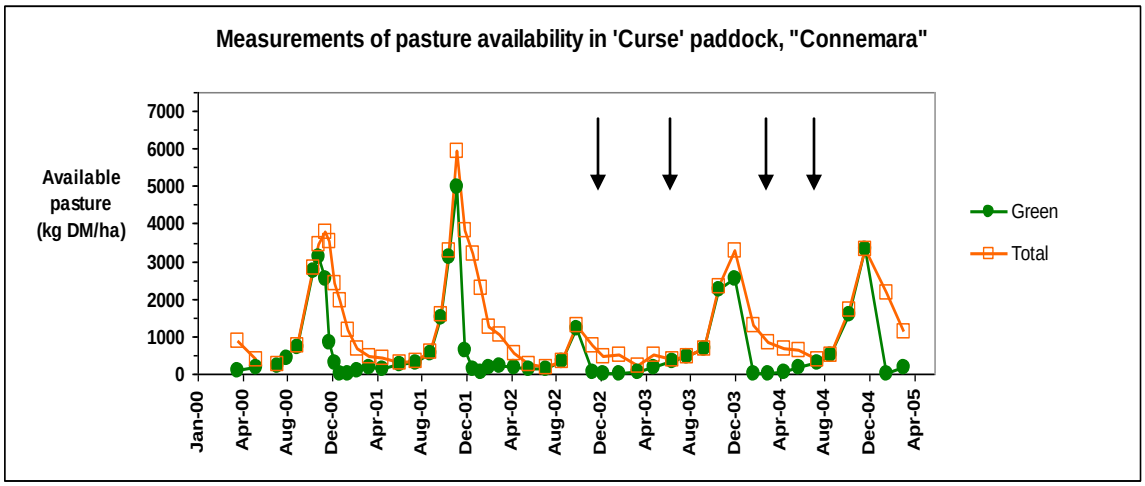
   Another tool which has been extremely useful to us is GrasGro which will do all of the above calculations and give results in a number of useful forms. A GrasGro model of any farm based on soil types, fertility, pasture type, livestock enterprise and stocking rates can be run using historical rainfall data to determine outcomes such as growth rates of weaners, meat and wool production, supplementary feed requirements and gross margins over the period of rainfall data. From this probabilities of almost any outcome can be obtained.

   Changing the mind set from relying on a predictive forecast, to looking at probabilities of an event occurring, allows focus on the consequences much easier. As climatic conditions deteriorate it is just another progression of probabilities rather than worrying because the forecast rain has not eventuated.

3. Severity of drought

   The drought which we have just been through had a probability of less than one percent. However, our situation has been far more fortunate than many other people in NSW.

We have been fortunate to have CSIRO Plant Industry personnel collecting data from one of our farms for the last 5 years. The graph below shows pasture growth in a paddock stocked at 19 wethers per Ha. Total pasture availability in three of the five years has been just over 3t DM/Ha at the end of spring. In 2001 the peak was nearly 6t DM/Ha and in 2002 only 1.3 t/Ha.



Source : CSIRO Plant Industry

The periods between arrows in the above graph show when stock were removed to a droughtlot from December 2002 to July 2003 and again from March to July 2004.

4. Protect Pastures

a. Why

We have spent considerable resources on sowing pasture, and adding lime and phosphate based fertilisers. It is necessary to protect that investment. The biggest risk to pastures during abnormally dry periods is from continual overgrazing reducing ground cover which may result in wind and water erosion. These factors remove soil nutrients, annual clover and grass seed and destroy or weaken perennial plants.

To help avoid these problems we have set up drought lots. The first of these was established in 1994/95 during an abnormally dry period and again in 1997/98, 2002/03 and 2003/04.

Once the decision to feed stock is made we calculate how much dry mater is available and anticipate how long that dry feed will last (based on each DSE consuming 1kg DM/day). It is essential to get all stock onto a full grain ration before the dry matter runs out. The golden rule here is to 'start early'. There will always be hold ups which slow the process down. It is much easier to get stock up to full grain rations in the paddock than in the droughtlot. There are guidelines from DPI on introducing stock to grain. The rule here is 'slowly'.

The next step is to drift the shy feeders off. This is most easily done in the paddock over two feeds. A motorbike and a quiet dog are very useful. If we can't get shy feeders off in two feeds we leave the stock in the paddock and try again. Our dogs were also well trained to run in front of the vehicle when feeding in the paddock keeping the sheep away from the front.

Shy feeders were left in the paddocks, some being fed while others fared well grazing at low stocking rates.

b. How

Droughtlot construction by various methods is extremely well documented in 'Managing sheep in droughtlots – A best practice guide' (Holmes Sackett & Associates for Australian Wool Innovation). Case study 3 in this book relates to our properties.

Our main aims in building droughtlots are

- To use existing facilities where possible or build new facilities which can be used at a later date eg as holding pens with water near existing sheep yards
- Have flat or slightly sloping site with slope away from feed troughs
- Provide 5cm trough length per sheep which allows all sheep to feed when fed twice per week. Aggressive feeders feed first then move away to let others in.
- troughs which will hold at least 1.5kg/head per feed – steel 300mm wide x 175mm high
- locate feed trough on outside of droughtlot fences – this reduces contamination by urine and feaces and they do not have to be cleaned out
- feeding from outside of pen so large numbers of sheep can be fed quickly – a side delivery system is necessary on the feed vehicle
- allow 175 mm between top of trough and bottom of fence to allow sheep to stick heads through
- use small water troughs with high replenishment rates from a reliable water supply
- Have access gates to pens on opposite side to feed troughs so shy feeders can be moved out easily
- Feed roughage eg cereal straw
- Allow access to a bucket of lime in each pen
- If possible build where shade is available – if not plant a few trees for next time

5. Logistics
    a. Feed selection

Our feed selection is to use the cheapest form of energy which is likely to be available for the duration of the drought. In 1994, 1997 and 2002 that was wheat while in 2003 it was barley.

Protein content of grain is not usually really important for adult sheep as most feeding occurs after weaning or before late pregnancy. For young sheep the protein content can be an issue and if Feed Tests show low protein then lupins are mixed with cereal. Generally grain available in droughts is higher in protein than normal.

Our standard ration is 3kg of wheat per week for dry sheep with those in droughtlots receiving roughage.

b. Purchase

Sourcing of grain at the right price is always difficult. As we calculated the minimum grain requirements in October 2002 we took out a contract for 500T of wheat at $280/T + freight to be delivered up until February 2003. Wheat reached $350/T through this period. Subsequently we purchased grain wherever we could get a reliable supply at a good price.

It is usually best to FeedTest new batches of grain, however at times we had three semi loads of grain arriving per week and they would be fed out before any sample could get to the FeedTest lab.

c. Storage

We have silo capacity to store approximately 90 T of cereal grain and another 30 T of Lupins. This means the logistics of grain arrival has to be well coordinated. A good relationship with the carrier is very important.

With over 1700 T of grain being fed in 2002/03 it is not possible to store that quantity.

d. Equipment

It is essential to have good grain handling equipment. One of the best decisions we made in spring 2002 was to purchase a small four wheel drive Canter tip truck for feeding out. This enabled over two thousand sheep to be fed per load. With up to 70 Tonne of grain being fed per week on four properties, spread over 28km it was necessary to have equipment that could cover those distances rapidly.

A good fast auger increases efficiency and will keep the carriers happy.

e. Feeding it out.

Due to the scale of feeding we had a very tight schedule to get allocated farms fed on the right day. Organisation of staff and equipment was essential to maintain morale and efficiency.

The gravel roads between farms became very rough and caused a lot of damage to tyres. Thirty four new or repaired tyres in 5 months over summer. Plan for regular maintenance on essential equipment.

6. Social Implications
    a. Stress
        i. Physical

There is always a lot of work to be done apart from feeding stock in droughts; build droughtlots, monitoring stock condition, set up water systems, repairs to machinery, cleaning out dams, etc. It is very easy to become physically exhausted.

We developed a routine where theoretically all the feeding was done on six days of the week and we could have one day off.

ii. Emotional

Once physically exhausted, decision making does become less effective. When things go wrong, such as auger breakdowns, it is essential to be able to sort them out rationally.

We had an outbreak of salmonella in one droughtlot which took about a month to diagnose and resolve. Over this period there were sheep deaths every day. The constant sight of dead sheep and having to take them to the pit can be stressful.

It is essential to have some release from all the stress. Getting off the place once a week for anything not farm related is very good therapy.

b. Isolation

It is easy to feel that you are the only ones suffering from the anxiety and exhaustion that goes with constant feeding and maintenance. Getting together socially with neighbours and friends is a great way to unwind, have a good discussion about things and invariably there will be someone doing it harder than you are.

c. Support

Apart from the social support you receive from neighbours and friends, other support networks are valuable. The regional counsellors may be useful, although we did not use them.

d. Government assistance

Drought assistance is worth the effort. Collecting and collating data for transport subsidies and income support through Centrelink can be a frustrating experience and very degrading for people who have never needed help. At these times of genuine exceptional circumstances it may be necessary to swallow ones pride. Financial assistance and other allowances available through Centrelink eg. Child care rebate, health card etc. might make a difference to your operation.

e. Holidays

If possible take a break. Get away and recharge the batteries. Not easy if you can't leave someone else in charge.

7. Financial
    a. Risk

Most financial institutions are very happy to lend money up to what they consider to be an acceptable limit. Once you need to borrow money above their limit the attitude changes dramatically as they become risk averse. This is where you start to see how good the

relationship with a lender really is. This process can be extremely stressful, therefore, it is essential to have worked out how to finance additional borrowings at an early stage. We mortgaged stock and borrowed from a stock firm for short term finance.

It is essential to be able to make rational decisions on whether to feed or sell livestock and have some sort of review mechanism so that these decisions can be re – evaluated as seasonal and financial situations change. In early winter 2003 we decided to sell some sheep from one property as it was unlikely to grow much feed for another 3 months, and the value of those sheep had increased sufficiently to make a small profit.

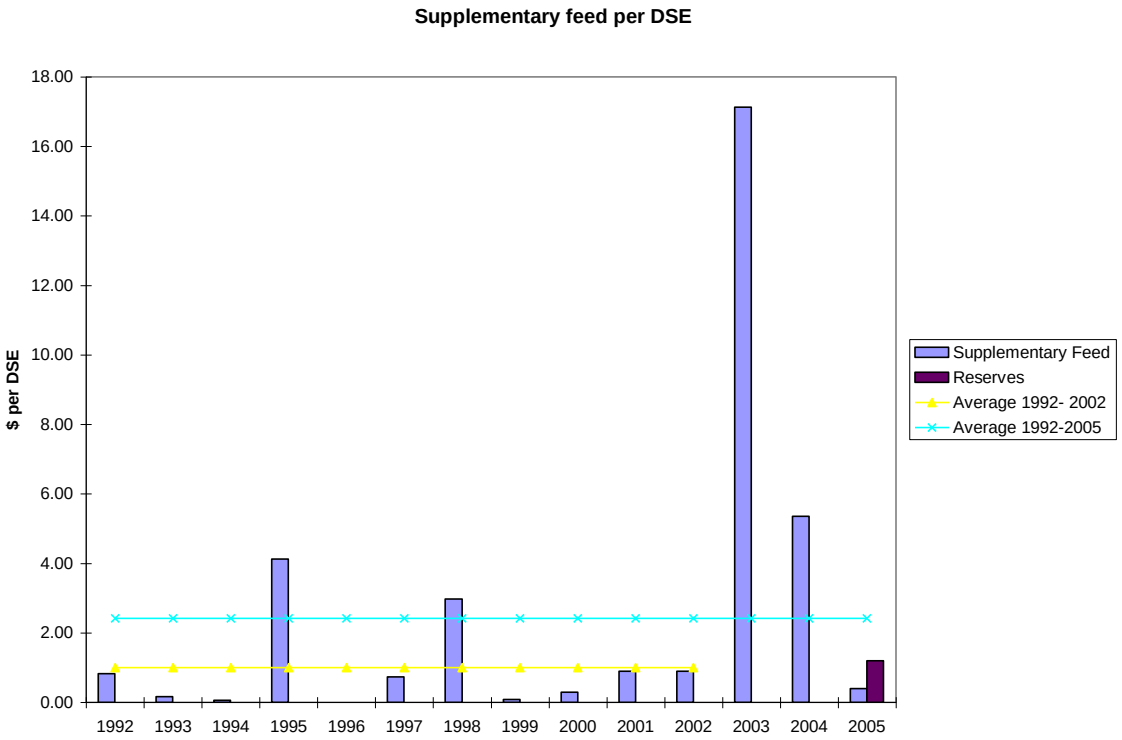
In spring and summer of 2003 we sold more sheep than our normal cast for age and surplus wethers at very good prices. It was far more profitable to hold and feed sheep, then sell afterwards at high prices, than to sell early at low prices and feed less. Of course the cashflow must be considered carefully. Cashflow is king.

b. Cost

The cost of drought is incurred in many ways

i. Feed

The graph below shows the extremely high cost per DSE of supplementary feed in 2003 compared with the average over the last 14 years.



ii. Infrastructure.

The total cost for Plant, R&M, water systems, droughtlots and fuel was $4.56 per DSE. A considerable cost even though dwarfed by feed costs.

iii. Wool quantity and quality reductions.

Drought reduced wool quantity, micron, yield and staple strength. Reduced micron is the only characteristic of these which usually increases price. However there has at times been little micron price premium in the large quantities of drought affected low staple strength wool available for sale.

The figures on costs of wool quantity and quality decline have been estimated at $11.11 per DSE over the 2003-04 and 2004-05 selling seasons. We still have some wool in store from spring 2003.

iv. Interest

Interest payments on additional borrowings due to drought expenditure are $3.64 per DSE per annum and of course this substantial cost will be ongoing.

c. Value of price fixing

During spring 1997 I learnt a very valuable lesson in risk management. Finewool prices were high and it was very dry. MacQuarie Bank had just started trading 19 micron contracts so we sold contracts to cover a large proportion of the next years production. The drought worsened, finewool prices fell and the value of our futures went up. We had guaranteed our price and could easily justify feeding sheep. In this drought we also had a large portion of our production covered with futures.

d. Opportunity

There are often opportunities during droughts. In January 2003 we had purchased sufficient sheep to stock our newly bought property at very reasonable prices. An opportunity came up in February to buy 1600 ewes of better genetic quality than those which we had already bought. The extra sheep were bought and we kept all of them until we could sell the worst at a profit. This took longer than anticipated because we did not get an autumn break until June. Buying stock also requires greater cashflow. Cashflow is king.

8. Preparations for the next one

The only thing certain with drought is that the one just passed will not be the last one. It is necessary to learn from them and prepare for the next.

The biggest risk of the 2002- 03 drought was the high cost of grain. It was always available at a price equivalent to international prices of the time. With greater requirements for grain coming from intensive livestock industries it is likely that a similar high grain prices could occur again.

There are feed grain futures contracts in Australia and other international grain futures products available. However, these are liquid only in the short term (12 months) and therefore of very limited use.

Storage of grain is another method of reducing price risk. The disadvantages of storing grain are the opportunity cost of capital tied up, the cost of storage facilities and risk of grain deterioration from pests and weather during storage.

We decided in Spring 2004 to buy cheap ($120 /t delivered) feed barley and stored 250 tonne in two underground bunkers. This method was chosen as it is relatively cheap ($20/t), carbon dioxide builds up within the pit and kills any pests and large quantities can be stored. The major potential problem is if water gets into the pits the grain can be destroyed. Getting dry grain into pits on tops of hills, with rock bars, downhill slopes and between thunderstorms can be a challenge. Getting it out will present further challenges.

9. Conclusion

Forget about forecasts, work on probabilities, be prepared to trade risks, develop good relationship with lenders, cashflow is king, support all team members, take holidays, expect the unexpected and look back and enjoy the achievement of having survived it.

Vizard, A., Anderson, G. and Buckley, D.(2004); Seasonal Rainfall forecasts need more skill. *The Mackinnon Newsletter, June 2004.*