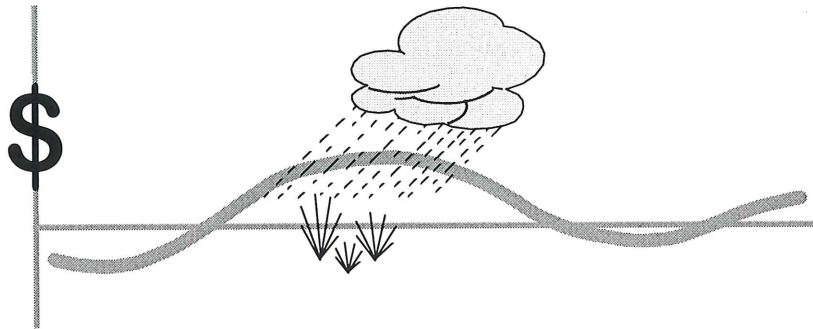


DroughtPlan

*Developing, with graziers, profitable and sustainable
strategies to manage for rainfall variability*



Regional Report: South West Queensland

Rosemary Buxton, with Andrew Drysdale, Pastoralists from the
region,
and Mark Stafford Smith

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DroughtPlan Contacts.

For more information about this report, please contact Rosemary Buxton or Mark Stafford Smith (at CSIRO National Rangelands Program, PO Box 2111, Alice Springs, NT 0871, Tel: 089-500111, Fax: 089-529587) or Andrew Drysdale (Dept. of Primary Industries, Charleville).

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NO. 1 - Is Resilience to Drought Improved by the Presence of Mulga ?	
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Acknowledgments

I am most grateful to those pastoralists in the Quilpie, Charleville and Cunnamulla regions who participated in this project. Many thanks for your valuable time and cheerful hospitality - I sincerely hope that your involvement in DroughtPlan has been rewarded with some information which you can put to good use. Thanks to Andrew Drysdale at the Charleville office of the QDPI for providing much assistance during the project.

SUMMARY

During September and October 1994, I spoke with pastoralists in the Quilpie, Charleville and Cunnamulla areas as part of the DroughtPlan project. The aim was to obtain detailed information about the range of management practices used in the region, and how the economics and animal biology of these practices cope with long term seasonal variability. As the project progresses, this same information is being collected from other parts of arid and semi-arid Australia.

No single aspect of management of an agricultural enterprise can be considered in isolation, so in conducting this project I attempted to come to understand what drives pastoralists to do what they are doing. Hopefully this is reflected in the following pages, in that more than just responses to unreliable seasons have been captured.

Reports were prepared for each pastoralist, illustrating how their operation handles long term climatic variability. This report is a summary of the many different management approaches which were found to exist in the region, while still attempting to recognise the differences between individuals. In addition to providing statements of what pastoralists do, it includes a series of case studies (on the coloured pages) generalised from the specific studies completed for pastoralists. These case studies compare, in financial terms, the implications of choosing one course of action over another, and are intended to stimulate both pastoralists' and their advisers to look more closely at the various alternatives available to them.

The report commences with a summary of the DroughtPlan project and of the study region. Since sheep are the main livestock enterprise in this region, the majority of this report is devoted to examining management practices

used in running sheep operations. Less attention is given to cattle management.

Drought is examined by looking at how individual pastoralists describe drought, and at how normal management practices change in times of drought. Many of the actions that are normally associated with drought are used in the region, including selling, supplementary feeding and so on. Recovery from drought is as important as the actions taken in drought, with many approaches used, including purchasing stock and double lambing.

Perhaps the one management option that is commonly used in SW Queensland that is not possible in most other regions is drought-feeding of scrub. It would be very easy to assume that the presence of such a drought reserve would provide a degree of resilience to drought; however, the results of **Case Study No. 1** would suggest otherwise.

There are many obvious factors causing the large variations in cash flow which are synonymous with primary production. However, there are also some less obvious factors involved, which vary between regions. Three such factors noted in SW Queensland were stocking pressure, financial pressure, and the ability of the manager. **Case Study No. 2** examines the degree to which stocking rates causes variability in cash flow.

Most pastoralists believe that reducing the effect of climatic variability on cash flow is very important; a large amount of on and off farm diversification is aimed at this. However, diversification is not the only way of producing a more even cash flow - **Case Study No. 3** examines how this can be achieved through more efficient use of existing resources.

The report concludes with some impressions of my own.

DROUGHTPLAN

The project - “*Grazier-based profitable and sustainable strategies for managing for climatic variability*”, or **DroughtPlan** for short - came about as a result of the National Drought Policy. Some of the objectives of the National Drought Policy were to encourage primary producers to:

- adopt self-reliant approaches in managing for climatic variability;
- manage within the constraints of seasonal conditions;
- improve the knowledge, expertise and information base from which such management might evolve.

Funding was made available for research work on management practices to minimise the effects of our unreliable and variable weather patterns. DroughtPlan is part of this work.

DroughtPlan has five linked and overlapping parts or ‘streams’.

Stream 1 involves talking with producers in regions of Queensland to determine what information they need to assist them in making decisions and how this information may best be provided. It is developing benchmark performance indicators.

Stream 2 is the stream with which you are involved. It is attempting to obtain detailed information about the range of management options used in various rangeland and temperate regions, and how the economics and animal biology of these options cope with long term seasonal variation. This information is to help producers identify management practices which will result in more stable production and hence more consistent cash flows, and to tell us what information and decision support tools would help them implement these practices (these information requirements will form the basis for Streams 4 and 5).

Stream 3 will use data from producers and researchers to analyse the relationships between animal condition and reproduction and mortality rates.

Stream 4 will develop products to help deliver the information requirements determined in Streams 1 and 2. These activities and tools will be appropriate for use by individuals and also within Property Management Planning, Farm Business Management and Farming for the Future programs.

Stream 5 is taking the products of Stream 4 and trialing them with producers to ensure they are both appropriate and useable.

The outcomes of the project will be:

- improved decision support tools and risk management procedures for producers and extension agencies;
- a series of case studies of management practices for many Australian regions;
- improved knowledge of the effect of seasonal conditions on animal production, mortality and reproduction;
- policy makers who are better informed as to the different problems and opportunities producers in various regions face in attempting to run profitable and sustainable operations given an unreliable climate.

The DroughtPlan project is being conducted by the Queensland Department of Primary Industries, CSIRO Division of Wildlife and Ecology, CSIRO Division of Plant Industry in conjunction with graziers and extension agencies across Australia. It is funded by the Land and Water Resources Research & Development Corporation, the Meat Research Corporation and the International Wool Secretariat.

A BRIEF DESCRIPTION OF THE REGION

Pastoralists surveyed in this region live in the area from 45 km south-west of Quilpie (as the 'roo hops), to 100 km south-west of Cunnamulla, 70 km north-east of Cunnamulla, and 70 km north of Charleville.

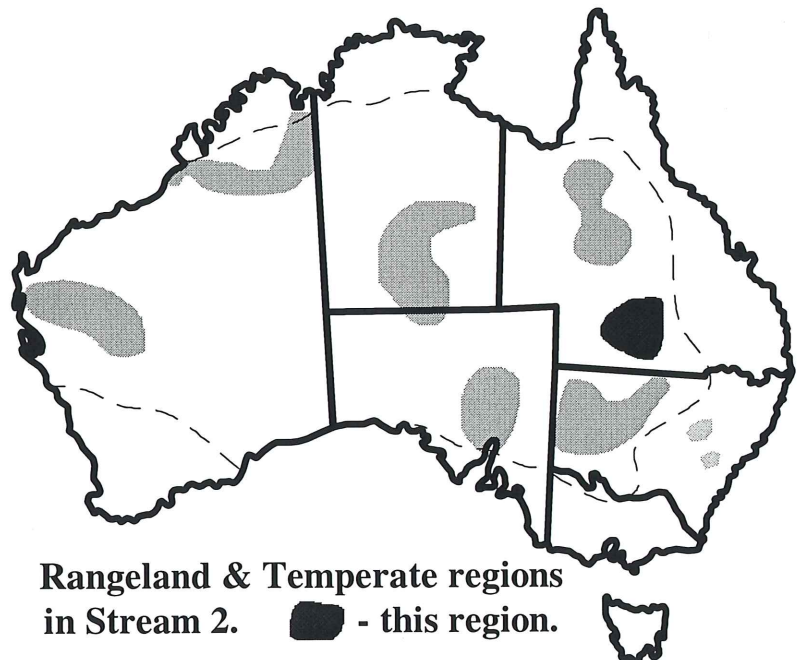
Average rainfall ranges from 330 mm (13 inches) at Quilpie and west of Cunnamulla to 500 mm (20 inches) to the north of Charleville. It is increasingly summer dominant to the north, with 51% of Charleville's rainfall being received in the December to March period, and 47% in the corresponding period at Cunnamulla. Summer rain produces a dominance of grasses, and the winter rains a dominance of herbage. Both summer and winter rain are considered to be useful.

The region forms part of the eastern mulga lands or the semi-arid woodlands. It is characterised by Mulga (*Acacia aneura*) and red, sandy to gravelly soils. Much of the area surveyed is in close proximity to the Warrego and Paroo Rivers and their tributaries, so Poplar Box (*Eucalyptus populnea*), Coolibah (*Eucalyptus microtheca*) and River Red Gum (*Eucalyptus camaldulensis*) are also very common. In the southern part of the region and to the east and north-east of Cunnamulla, White Cypress Pine (*Callitris columellaris*) is common on the sandy rise country, while to the west and north-west of Cunnamulla and also in the Quilpie area there are significant areas of Gidgee (*Acacia cambagei*). The Gidgee and Boree communities near Quilpie are associated with ironstone. North of Charleville, there are extensive areas of Brigalow (*Acacia harpophylla*) and Gidgee scrub, large areas of which have been cleared and sown to Buffel grass (*Cenchrus ciliaris*) and other introduced and native grass species.

Perennial pasture species associated with mulga include Wire grasses (*Aristida spp*), Oat grass

and Bottlewashers (*Enneapogon spp*), and Lovegrasses and Woollybutt (*Eragrostis spp*). Properties to the north, east and north-east of Cunnamulla and to the north of Charleville have substantial areas of Mitchell grass (*Astrebla spp*) on grey to red cracking clay soils.

Many *Eremophila* species occur within the mulga communities, and the likes of False Sandalwood (*Eremophila mitchelli*) and Turkey Bush (*Eremophila gilesii*) can become serious woody weeds. Mulga is also considered a



Rangeland & Temperate regions in Stream 2. ■ - this region.

woody weed when in high densities. In the western part of the region, the 'hard mulga' soils suffer from soil erosion problems as much as woody weed encroachment, while on the softer soils in the east the density of Mulga is of greater concern.

Being on the Great Artesian Basin, all properties are watered by free flowing bores (from depths of up to 850 metres) into troughs or along bore drains. Lack of water was never raised as a drought management issue.

Feral and native animals cause considerable problems throughout the region, as discussed later. Goats were mentioned as the biggest

problem, as well as pigs, brumbies, kangaroos | and emus.

MANAGEMENT PRACTICES USED IN THE REGION

Introduction

The aim of Stream 2 of DroughtPlan is to conduct an in-depth analysis of the management practices used by a small number of pastoralists in each region. Thus, please do not take this report to be a complete 'survey' of the region. We are not attempting to obtain any sort of 'district average' from this work, since averages hide the reason for an individual pastoralist's response to a particular situation.

No one aspect of management can be considered in isolation; pastoralism uses an ever-changing interactive biological system that must be treated in an integrated way. Decisions are based on such things as current seasonal conditions, conditions in other parts of the country, the pastoralist's financial position and personal aspirations, markets, condition of livestock, stock on hand, relative costs and prices and so on. I will attempt to portray the interactive nature of management in this report, and identify the factors that it depends on.

No one approach to management is right or wrong. How each person runs their property is dependent upon their own attitudes, aspirations, experience, priorities and pressures. One family indicated that the manner in which they run their operation is dictated entirely by financial pressures, and once they are under control, the operation would undergo major changes. Until we come to understand these factors, we are not in a position to be

REGIONAL SUMMARY OF OPERATIONS SURVEYED

- Properties predominantly sheep (57–90% sheep based on DSEs)
- Average area: 109,000 acres (44,000 ha)
- Long term average no. of stock: 17,570 DSE
- Actual stocking rates: 3.1 to 10.2 acres/DSE
- Lambing rates (all seasons): 10 to 106%
- Lambing: August to October
- Wool cuts (ewes): 3.3 to 7.4 kg
- Shear: mainly first half of year
- Calf branding rates: 28 to 95%
- Calving: mostly all year round

judgemental. Results must be measured against the aims. I simply present the management approaches that I saw being used in the region and leave the judgement to those of you in the drivers' seats.

Enterprises

Merino breeding with the retention of wethers is the main enterprise in the region. In several cases wethers are sold as weaners. Sheep make up between 57% and 90% (based on DSEs) of the stock numbers, these proportions being reasonably stable. Several pastoralists are aiming to build up cattle numbers, with only one intending to reduce the size of the cattle enterprise. Although not included in this survey, I did come across properties running wether-only operations. The presence of wether operations contrasts with the central NW Queensland study region, but is similar to areas of western NSW. With good lambing percentages being achieved in the area, and the climate being more hospitable in comparison to the mitchell grass plains of the north, pastoralists are able to source good lines of wethers.

The presence of a wether enterprise perhaps gives some added flexibility to the operation. They can be pushed harder, and stock numbers can be reduced in drought without affecting the breeding nucleus. One pastoralist is considering running ewes as dry sheep and only joining them in favourable seasons (perhaps 2 in every 5 years). This would give the flexibility of a wether flock, while retaining the advantages of a self-replacing breeding nucleus.

Cattle are run mainly to introduce a degree of diversification without having to increase the management effort. Some people run them as a valuable resource which can be left to its own devices then converted to cash as the bank manager starts to complain!

Stocking rates

Property size ranged from 30,000–150,000 acres. The larger properties were mainly in the

LAMB MARKING PERCENTAGES ACROSS THE REGION				
Seasonal conditions	Good	Okay	Poor	Bad
Lambings	75 - 106 %	70 - 96 %	50 - 80 %	10 - 45 %

mulga country, and the smaller properties in either mitchell grass or brigalow/gidgee country. The number of stock that pastoralists aim to run in favourable seasons varied from 10,300–37,200 DSE. The number of stock *actually* run, expressed as a long term average given seasonal variability, ranges from 9,660–34,155 DSE.

Stock numbers depend on property size, of course, while stocking *rates* vary with the type of country, personal attitudes and pressures. Actual long term stocking rates vary from 3.1–10.2 acres per DSE. The more heavily stocked properties are those with a reasonable proportion of Mitchell grass and Brigalow/Gidgee country; the lightest stocked are in the Mulga country.

Only sheep and cattle are included in these stocking rate calculations. To gain a more accurate picture of the total grazing pressure, other animals such as kangaroos, goats and horses should be included.

Sheep

Lambing and lamb marking percentages

All properties surveyed lamb in the August to October period. The Table above shows marking percentages (*ie.* lambs marked as a percentage of the ewes present at marking), rather than weaning percentages.

The lowest lamb marking percentages in all seasons occur on properties in the Mitchell grass areas, with the highest on soft mulga and floodout country. This can be partly explained by the lower level of nutrition in Mitchell grass at critical times. These southern Mitchell grass areas are still considerably more productive

than the more northern Downs country (possibly due to the greater number of forbs growing with the Mitchell grass), so lambing percentages are much higher than in central and NW Queensland.

The *sequence* of seasons can be as important in determining lambing percentages as the season itself. For example, lambing percentages can be much less than those shown above for a good season if it follows a drought.

It is interesting to note that the range in lambing percentages across properties remains relatively constant irrespective of season. This is similar to central and NW Queensland, but in contrast to western NSW where differences in lambing percentages become more marked as seasons deteriorate. This trend appears to be related to both management and the reliance on annual pastures. The presence of perennial forage in SW Queensland perhaps helps to explain why the reproductive performance of the breeders does not 'crash' to the same extent in bad seasons.

Time of shearing and wool cuts

There is no hard and fast rule as to when shearing takes place. Most pastoralists shear in the first 6 months of the year. One pastoralist shears in November/December to avoid sandflies which become active once the wet season is under way.

Woolcuts achieved in the region are shown in the Table below. The higher wool cuts are from the mulga country, with cuts generally being higher on the lighter stocked properties. The more heavily stocked mitchell grass properties have the lowest wool cuts. Lamb wool cuts have not been included in the Table,

WOOL CUTS (KG) ACROSS THE REGION				
Seasonal conditions	Good	Okay	Poor	Bad
Ewe hoggets	4.5 - 7.2	4.0 - 6.5	3.5 - 6.0	3.0 - 5.5
Ewes	5.3 - 7.4	5.0 - 6.5	4.5 - 6.0	3.3 - 5.5
Wether hoggets	5.0 - 8.0	4.7 - 7.2	4.4 - 7.2	4.1 - 6.8
Wethers	5.8 - 8.0	5.5 - 7.2	5.0 - 7.2	4.3 - 6.8

as these are more a function of age at shearing.

Mortality rates

Very few records of mortality rates are kept, so the following rates are those which are calculated to explain the observed sheep numbers. Mortality rates appear to be higher in the mitchell grass areas than in the mulga country. Ewe mortalities range from 3–15% and wethers from 1–8% in mitchell grass country, while in the mulga country ewe mortalities are in the range 3–10% and wethers from 1–7%. One property in the mulga area has mortality rates comparable to those in the mitchell grass areas; however, this can be partly explained by unfenced road frontage, and perhaps by higher stocking rates than other mulga properties.

Rams

A significant number of pastoralists breed their own rams, and use fleece testing data to assist with ram selection. One property operates as a commercial stud. In several instances, ram breeding had commenced in a severe drought as a means of cutting costs, and has continued. Those purchasing rams tend to favour South Australian bloodlines, particularly Collinsville and North Bungaree.

General management

Most pastoralists sell ewes as cast-for-age at 5 or 6 years old; several keep them for one more year. When ewe numbers are lower than desired (*eg.* after a drought), most pastoralists retain ewes for an extra year, although some will retain ewes for up to 3 years past their 'optimal' age. This is in contrast to pastoralists in central and NW Queensland who avoid retaining ewes past 6 years old. The 'softer' country of this region perhaps enables sheep to remain productive for longer than in some of the harsher climates to the north. Several pastoralists cull all age groups of ewes each year based on quality and reproductive performance.

Ewe hoggets tend to be culled on quality rather than numbers, although this may be less strict

when ewe numbers are low. Some stick rigidly to their culling percentages in the belief that any heavier culling is only wasting good sheep, and hence excess numbers are handled by selling older ewes. Culling rates of ewe hoggets are generally around 25–30%; however, one pastoralist aims to maintain a 40% culling percentage.

Of those who retain wethers, only one does not cull the hoggets. Several pastoralists sell wethers as weaners, but will retain some if ewe numbers are low following a drought. Where wethers are retained, they are generally sold between 4–7 years old.

Cattle

On most properties, cattle are very much secondary to the main sheep operation; hence not as much management effort is put into cattle nor into keeping cattle records. Those seeking to increase cattle numbers were doing so due to:

- higher returns from cattle compared to sheep;
- perceived complementarity of cattle and sheep; and,
- lower labour requirements.

There is much difference of opinion over the number of cattle that can be run without reducing the sheep carrying capacity. Some believe that 5–15% of cattle can be run without reducing sheep numbers, particularly in mulga country due to cattle breaking down scrub which the sheep then browse. Others believe that there is little complementarity between the two, and an increase in the cattle enterprise requires a reduction in sheep numbers.

Only one property exercises controlled mating (calving October to January), while only one does not wean calves. Cows are generally retained until 6–7 years old, but they may stay until 10. Anywhere between 0–50% of heifers are culled.

Calf branding rates are reasonably consistent across the region. The one pastoralist using controlled mating was also pregnancy testing

CALF BRANDING PERCENTAGES ACROSS THE REGION				
Seasonal conditions	Good	Okay	Poor	Bad
Calf branding	66 - 95%	62 - 95%	48 - 95%	28 - 95%

and therefore empty cows have already been removed from the herd before branding rates are calculated. (Branding rates are based on the number of cows present at branding, not at joining). There does not appear to be much difference between brandings in the mulga country compared to those on mitchell grass country.

The most common age for selling steers is 15 months to 2 years. One property sells all steers as weaners, while another retains steers until 3.5 years old. In several cases, feedlotting is used - one property uses contract feedlotting, while another has an on-property feedlot. Feedlotting is viewed as a means of producing a consistent, top quality article that will attract both high and consistent prices irrespective of the season.

Markets

Returns from the sale of surplus sheep are higher than in the more northern parts of Queensland. This is due to a number of factors:

- closer proximity to markets and hence lower freight costs;
- access to a greater range of markets;
- good reproductive performance resulting in larger lines which are more attractive to buyers;
- less reliance on the more traditional selling methods such as the local sale yards.

Many of those visited were selling sheep on the property or via electronic selling, while cattle sales were often direct to abattoirs or end users. Wool was still mainly being sold through the auction system.

Feral and native animals

The impact of feral and native animals is very high in the region. Goats are considered the biggest problem in the district, closely followed by kangaroos. Both increase pressure on feed and water supplies, and in many cases their presence more than doubles the perceived stocking pressure on the property. The consequences of this are far reaching, with 'drought' occurring more frequently and earlier than it should, pastures are not able to be spelled and so on. Many pastoralists indicated that they would implement some sort of

rotational spelling of paddocks if the feral and native animals could be reduced to more acceptable numbers. A few believe the only real answer is to construct a vermin proof fence around the perimeter of the property and reduce the numbers on the inside. Goats are credited with causing major land degradation problems, while emus are viewed mainly as a problem to fencing.

For those on river systems, pigs are also a major problem, with one pastoralist indicating that lamb marking percentages increased by 50% once a baiting program was implemented.

Drought

You often hear the criticism that pastoralists fail to plan for drought. While this may be the case in some situations, I suspect that when people respond to questions on drought management by saying "*I'm not sure*" or "*it depends*", they are misinterpreted. To have plans like "*I sell all the cattle, then all the wethers*" set in concrete could be disastrous. No two droughts are ever the same and circumstances are continually changing. Working with such an ever-changing system requires a large degree of flexibility. In this case, it is still important to have plans, but they may more appropriately be like "*I need to reduce the number of stock by one-third if we haven't had a decent rain by the end of April, and which stock go will depend on x, y and z*"; or "*I keep my stocking rates low enough so that I shouldn't have to do anything except in extreme circumstances.*"

The aims of actions taken in drought

- Reduce the number of mouths to feed
- Maintain the flock nucleus
- Keep the remaining animals in good condition
- Maintain a cash flow during and after the drought
- Get the house in order in preparation for the recovery

What is drought?

Because a drought represents a different set of circumstances for all people, and causes different reactions, I do not try to give any general definition of the term 'drought' here. What is considered drought by one pastoralist may be merely a 'dryish spell' to his neighbour.

Information on stock reproduction, mortalities, wool cuts, sale prices etc was collected based on 4 different production levels - good, okay, poor and bad. I then asked the pastoralist to describe years in which these biological rates could be achieved. Good biological rates do not necessarily result from the highest rainfall, nor poor biological rates from droughts; more often than not, it is the pattern of rainfall rather than the absolute amount which is critical. For those on river systems, high rainfall years can result in large losses from floods, while bogging can be a problem in the clay soils. One pastoralist gave an example of losing 7,000 sheep in one flood - and they were a matter of days away from shearing. Extreme maybe, but it does happen.

Timing of decisions made due to drought

Most pastoralists believe that it is important to make and implement decisions early - even if these actions turn out to be unnecessary. Where rainfall is summer dominant, the timing of decisions is relatively straightforward. Consequently, decision points become more clearly defined the further north one goes - to the point where pastoralists give an actual date by which stock numbers must be reduced if a certain amount of rain has not been received. To the south, the "wait and see" approach is more common, because there is a reasonable chance of receiving useful rains at any time of the year. This can have negative effects on stock and land condition and stock sale prices.

Changes in management due to drought

The term 'drought management' conjures up images of activities which are only trotted out in a drought. It fails to recognise the fact that in an interactive biological system no aspect of management can be treated in isolation. We need to talk about overall management which includes drought, rather than a specific piece of management aimed at drought times only. As one pastoralist stated "management must be *for* drought, not *of* drought."

The options used to get through a drought are many and varied, and one option is rarely used to the total exclusion of all others. Nobody is fixed in what they do because "it depends" - on the geographical extent of the drought, markets at the time, stock on hand, current financial pressures, the relative price of feed, freight and

Changes in management due to drought

- Sell
- Push/pull scrub
- Supplementary feed
- Feedlot
- Cut costs

agistment, and (perhaps most importantly) on past experiences.

At the time of my visit, SW Queensland was in its fourth year of drought, so people tended to focus on what was being done now. When asked if they would have done things differently with the benefit of hindsight, the answer was generally "no" or "it depends". One person indicated that supplementary feeding would have commenced earlier, another that stock would have been sold earlier, and yet another that if they had known that the drought was to last so long they would have sold all the stock and taken a four year holiday on the coast!

For those in mulga country, there is at times a reluctance to sell stock; in some cases, sales are only made in a particularly severe or extended drought. If a generalised statement could be made about selling, the sequence would be:

- make normal sales earlier in the year, often selling cull and cast-for-age sheep in the wool;
- sell one extra age group of ewes and wethers, starting from the oldest;
- sell some or all steers; and,
- reduce cow numbers.

In many cases, the maiden ewes are not joined, and it is common for all ewes to be left unjoined in an extended drought. Wethers do not appear to be sold in preference to ewes - perhaps due to the fact that wethers are viewed as being just as valuable.

The use of supplementary feeding was more popular than in some other regions, perhaps due to the closer proximity to markets and hence lower freight costs, as well as the need to make the mulga more palatable. Normally molasses and urea are used to supplement the mulga. On several properties, calves are weaned early and put into an on-property feedlot.

No one indicated that they would shoot stock as a means of reducing stock numbers in a drought. This is possibly a reflection of the closer proximity to markets than in the far north of Queensland, and hence the higher value of the stock.

Of the pastoralists visited, no-one uses agistment during a drought, although several "may consider it". The reluctance to use agistment is due to two main reasons:

- past experiences with agistment which were not favourable;
- the ability to retain stock at home due to the availability of topfeed.

In contrast to central and NW Queensland in particular, I did not come across anyone with additional land in a climatically different region to which they could send stock in drought. Everyone I visited had expanded their operation at some stage, but this expansion tended to be by purchasing more land very near the home block. This has obvious advantages for management. In contrast to more northern regions in Queensland, it would seem that a good balance of country can be obtained locally. [Case Study No.4 in the Longreach regional report examines the effect on cash flow of having additional property in an area which is climatically different to the home block.]

The methods used to feed scrub were many and varied - from pushers mounted on tractors, pushing with one dozer, to pulling with a chain between two dozers. The frequency of scrub feeding varies with resources available; most feed on a daily basis to avoid wastage, while one pastoralist is only able to pull mulga on a weekly basis due to labour constraints. Another pastoralist prefers not to push mulga, and leaves stock to "fend for themselves" unless the drought becomes prolonged or particularly severe. Case Study No. 1 examines whether or not the availability of topfeed increases the resilience to drought.

Changes in management following drought

Circumstances dictate what pastoralists do *after* a drought to increase stock numbers and get the cash flowing. Many said that the country should be left to recuperate for a period of time before the stocking rate is increased to its pre-drought level. However, those with pressures

Options during recovery from drought

- Purchase stock
- Reduce culling rate of replacement females and older females
- Retain breeders for up to 2 extra years
- Retain wethers longer until ewe numbers recover
- Double join ewes
- Bring stock in on agistment

from the bank are often unable to afford this 'luxury'.

Ewes are often retained for one extra year, sometimes two years. This contrasts with western NSW where it is common for ewes to be retained for an additional 3 years after a drought. By maintaining the age structure of the breeding flock, productivity and genetic improvement is less compromised. Several pastoralists also indicated that ewes can not be maintained past about 6 years old in the hard mulga country, while it was possible to retain them for 1-2 years longer on softer country such as gidgee.

If stock are purchased after a drought, the preference is to purchase wethers. Purchasers dislike introducing unknown genetics, and do not wish to compromise years of effort that have been put into a breeding flock. On one property, the need to purchase wethers is due to an imbalance between country that is suitable for running breeding stock compared to wethers and dry ewes. No one that I visited purchased cattle after a drought.

There is an old saying... "A farmer can withstand fire, flood and drought, but he can't stand seeing an excess of grass in the paddock" - referring to the "grass market" created by the rush to buy stock after drought-breaking rains. My observations were that stock are purchased as a means to hasten the recovery and start the cash flowing again, rather than to consume the over-abundant pasture. Where people are prevented from purchasing stock (usually for financial reasons), there is a tendency to take stock (cattle rather than sheep) on agistment. This has the advantage of providing income for no capital outlay, as long as the pasture doesn't suffer any long term damage.

Only one pastoralist uses a double lambing to hasten the recovery time after a drought - a practice that is commonly used further north in central Queensland. [Case Study No.3 in the

Longreach regional report and Case Study No.3 in the Western NSW regional report examine different methods of increasing stock numbers after a drought.]

FACTORS CAUSING VARIATION IN CASH FLOW

The need to maintain cash flow and derive an income dictates most of what we do - and the more stable cash flow is over time, the easier planning is. However, while smaller risks make cash flow more stable and the management of off-farm effects like tax easier, it may also result in lower average income over time. A higher degree of variability in income is usually associated with a higher degree of risk, but a higher average income over time. What trade-off each of us prefers depends on our attitude to risk.

This project is particularly concerned with the way in which the unreliable nature of the seasons causes variability in cash flow, and what might be done to reduce this variation.

The obvious

A large amount of the variation pastoralists have to withstand in their cash flows is caused by things that we are all familiar with - seasons, prices received and paid, interest rates, taxation policy, *etc.* Management must seek to work around these obvious pressures, using measures which are not always so obvious.

The not so obvious

Apart from the items mentioned above, in this region I observed three main factors which appeared to have a strong influence on the degree of variability in cash flow.

Some factors which affect the degree of fluctuation in cash flow

- Stocking pressure
- Financial pressure
- Ability of the manager

Stocking Pressure

Attempting to determine the effect of stocking rate by comparing properties with different stocking rates is quite difficult. Many other variables confuse the comparison. The fluctuations seen in the cash flow of a particular property are affected not only by stocking rate, but also by the size of a property, the balance of land and vegetation types, the ability of the manager, and so on. A conservative stocking rate on one property may

be the equivalent of a relatively high stocking rate on the neighbouring property simply due to different proportions of vegetation types.

Despite this, higher stocking rates do tend to result in greater fluctuations in cash flow, all other things being equal. A higher stocking rate often results in more drastic actions in droughts, decisions need to be made much earlier, and 'droughts' occur more frequently. On those properties with a lower stocking rate, it would appear that the whole production system is more stable. Wool cuts tend to fluctuate very little between seasons; the reproductive performance of females is also more stable, although not as stable as wool cuts. The land also appears to be in much better condition than those employing a higher stocking rate, although this is difficult to assess at one point in time.

If pastoralists wish to take the high stocking rate option, then they must be prepared to accept the risk and the lower level of animal performance associated with it, and to take action when and where appropriate.

Case Study No. 2 examines the fluctuation in income caused by stocking rate by comparing two properties of the same size, same balance of country, but with different stocking rates.

Financial pressure

Just at the time when a stable cash flow is more important than ever, the pressures associated with one's creditors breathing down one's neck appears to make the problem worse. The pressure associated with a precarious financial position caused some managers to become erratic in their decision-making. There is a tendency to sell or shear sheep, or sell cattle, at other than normal times to produce income to satisfy the immediate demands of the creditor. Yet such actions may have serious long-term impacts on the enterprise. This problem requires the education of financiers and creditors.

Managerial ability

As with all occupations, some managers are better at what they do than others. This is difficult to quantify due to the interactions of

the many factors in an agricultural system. However, those who I perceived to be better managers were able to 'weather' the unreliable and variable seasons with little more than a flinch - a drought did not throw them into crisis management and their cash flow tended to be less variable. Through more astute management they are able to realise higher and more consistent prices for stock and produce, restrict expenditure to the productive items, and generally extract higher levels of performance from all sides of the operation.

Reducing the variability

Diversification is often seen as the best way to reduce the variability of cash flow caused by unreliable seasons and markets. Those I visited in this region must be an innovative bunch as I came across a wide range of diversification options, both on and off-farm, either in place or being contemplated.

Some examples of diversification observed in the region are:

- tourist operations;
- horticulture;
- contract employment teams;
- hotels;
- real estate;
- red claw;
- ostriches;
- manufacture of furniture;
- hiring of farm equipment;
- bottling of spring water.

However, one must not forget the core business of pastoralism. When venturing into new sidelines, it is easy to become distracted from the main business, with the result that what is gained from the new enterprise is more than lost on the core enterprise.

It is interesting to draw a comparison with the corporate world. In the 'greedy 80s' the push was for diversification and big conglomerates; today, in the 'lean 90s', the emphasis is on "sticking to one's knitting". Case Study No. 3 examines how one pastoralist is attempting to reduce the fluctuations in cash flow through more efficient use of existing resources.

SOME PERSONAL IMPRESSIONS

I conclude this report with a few impressions of my own, instead of pastoralists' experiences.

Business Management: If primary producers are to cope in today's business world with all its pressures, then business management skills must be improved. The business skills of those involved in agriculture are well behind those of the business world in general, and my observation is that the skills of those involved in the grazing industries are behind those in the more intensive agricultural industries. The pressures to perform in this regard have never been higher; yet I believe they will only become greater. Some financial institutions are now requiring business plans to be in place before money is advanced, and other services are also starting to demand this level of accountability. While we might complain about the pressures being applied on us, and worry that we are losing control, put yourselves in the shoes of the shareholders. Would you lend your money or services to someone with no long term plan for success? The decision to improve further, and the challenge, is yours!

Total Grazing Pressure: Stocking pressure is a major factor influencing the degree of variability in cash flow. In calculating stocking rates, many pastoralists did not even include cattle, let alone kangaroos, goats, horses and all the other pests. As in all other regions I have so far visited, the actual stocking rate on properties is much higher than the pastoralists said they are running (*ie.* excluding the natives and ferals). No-one said that they were heavy stockers - we all like to believe that we err on the conservative side! If we are serious about looking after the land resource, reducing the effect of droughts, increasing productivity on a per head basis, and so on, we must not kid ourselves about the *real* stocking rates. The issue of native and feral animals must also be taken out of the "too hard basket". Some pastoralists have taken the bull by the horns with impressive results. All too often these pastoralists are labelled as 'different': instead they should be used as an example of what can be achieved.

Feral animals (particularly goats), from which a monetary return can be received, are often

viewed almost positively. People feel that putting up with them is worth it for the 'pocket money' that they provide from time to time. But we must not lose sight of the damage and long term loss of income these ferals are causing; it's much more efficient to run a well-managed, well-bred sheep than an uncontrolled goat. It is a question of 'visible' versus 'invisible' cash flow. It's all very well to get the cheque *into* your hand at the works, but you should write another *outgoing* cheque for the long term loss of production caused by the feral animals.

Rural assistance: There is much talk about the problems of south-west Queensland (and western NSW) caused by the inappropriate closer settlement policies of the early 1900s. Many are concerned about the increasing difficulty of purchasing additional property to ensure long term viability and a future for their children. As a result, a common opinion is that the productivity of existing properties will have to be increased, as an alternative to purchasing more land. Many people are worried about the conflicts this then causes - being forced to push properties harder to maintain income, rather than appropriate management to maintain and improve the land resource. The issue of subsidies is always raised in discussing secure futures for pastoralists; unfortunately subsidies often appear to help the wrong people. Perhaps a complete change of thinking is required - from a welfare approach to a system of incentives and rewards for those who do the 'right thing'.

In relation to purchasing additional land, there is a feeling among pastoralists that 'outsiders' should be dissuaded from coming into the area - particularly from buying properties considered to be marginal. But don't fall into the trap of thinking that only 'locals' know how to run the country! While it is true that experience counts for a lot, and that these marginal blocks tend to be purchased by undercapitalised newcomers, an outsider may still have some fresh and innovative ideas. We can all learn something by watching others at work.

CASE STUDY NO. 1 - IS RESILIENCE TO DROUGHT IMPROVED BY THE PRESENCE OF MULGA ?

It would appear that the ability to feed mulga should enable a higher proportion of stock to be retained during a drought, and therefore reduce the length of time for stock numbers to recover from a drought. It could also be assumed that biological rates (eg mortality rates, lambing percentages, wool cuts etc) can be maintained on a more even keel across different seasonal conditions. Is this really the case?

Let's compare the seasonal variability in biological rates, management, and the recovery time from drought for two properties - one which has extensive areas of mulga which are used as a drought reserve ("*Mulga*"), and another property which does not have mulga suitable for drought feeding ("*No Mulga*").

The Table shows the main biological rates for the two properties, and the actions that are required both during and after a drought.

These figures indicate that the ability to maintain stock on mulga during drought neither increases the productivity of the stock nor reduces the variability between seasons. Nor does it result in stock numbers having to be reduced by a lesser degree in drought. While the figures are peculiar to these properties, data from other properties in the region reveal similar trends.

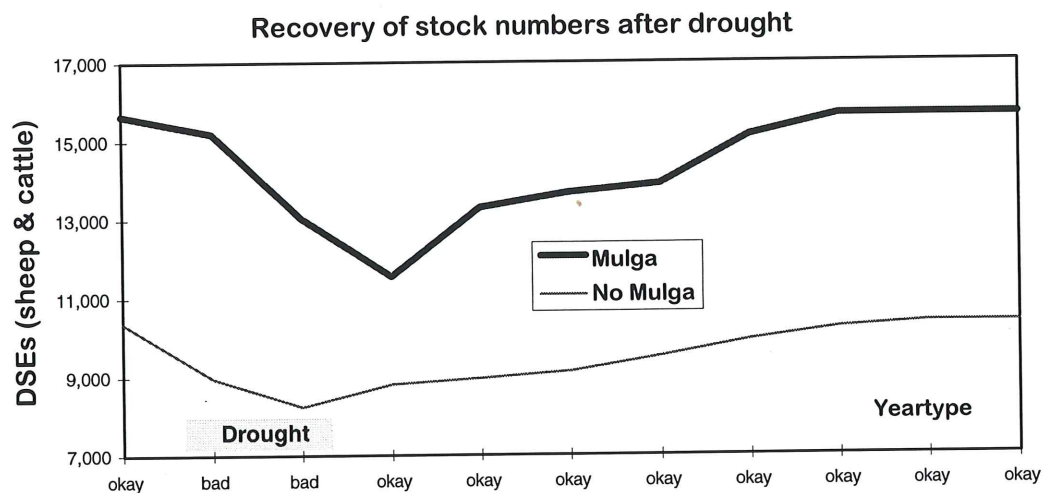
The graph on the following page shows the total DSEs for the two properties. Both properties are modelled for 1 reasonable year, then a two year drought and then sufficient reasonable years for stock numbers to return to their pre-drought levels.

Seasonal conditions	"Mulga"				"No Mulga"			
	Good	Okay	Poor	Bad	Good	Okay	Poor	Bad
Lambing %s	90	80	60	30	96	80	50	30
Calving %s	85	85	85	85	95	95	95	95
Ewe deaths %	5.0	6.5	10	15	2.5	2.5	2.5	8.0
Ewe wool cuts	5.7	5.3	4.5	4.0	5.3	5.0	4.7	4.4
Actions taken in a drought	• Sell an additional age group of ewes and wethers • Do not join maiden ewes • Push mulga				• Sell wether weaners • Feed mineral supplements			
% reduction in stock in 2 year drought	26 %				21 %			
Actions taken after drought	• Ewes retained for an extra one to two years				• Culling rate of ewe & wether hoggets reduced • Cull ewe hoggets retained and run as dry sheep			

The time taken for stock numbers to return to their pre-drought levels is six years for “*Mulga*” and seven years for “*No Mulga*”. Despite the ability to feed mulga during a drought, the resilience to drought is not improved. However, it must be remembered that mulga is just one supplement which can be used to keep stock alive in drought. If supplementary feeding is one of your reactions

to drought, then mulga may be a cheaper supplement to use (with much the same results) depending on how you cost your own labour, machinery depreciation, and so on.

This graph also highlights the time it does take to recover from an extended drought (given this particular management) - and it assumes that favourable seasons do occur until recovery is complete, which is very unlikely.



CASE STUDY NO. 2 - THE EFFECT OF STOCKING RATES ON VARIABILITY OF CASH FLOW

Increasing the stocking rate on a property often increases the variability of cash flow over time. A higher stocking rate usually means that more drastic measures must be taken in dry times, and 'droughts' occur more frequently. On properties where a lower stocking rate approach has been implemented, it appears that the productivity of the whole operation becomes more stable. Wool cuts tend to fluctuate less between seasons, and the reproductive performance of females is also more stable.

We can look at this by comparing two actual properties in the Cunnamulla-Charleville region; both are the same size and have much the same mix of country - a quarter Mitchell grass and the balance mulga scrub. I will call the properties "**High Stock**" and "**Low Stock**".

The average long term stocking rate (allowing for seasonal variability, but only including their own sheep and cattle) on **High Stock** is 1 DSE to 3.8 acres, while on **Low Stock** it is 1 DSE to 6.4 acres. The average stocking rate on **High Stock** could be much higher than this, as it often carries sheep on agistment. The first Table summarises the differences.

The fluctuation in stock numbers is actually less on High Stock because stock numbers are not reduced through sales or agistment during drought. The effect of this and the overall stocking pressure become evident when we look at the biological rates.

	High Stock	Low Stock
Enterprises	82 % sheep	90 % sheep
Target stocking rate	1 DSE to 3.5 acres	1 DSE to 6.0 acres
Average stocking rate	1 DSE to 3.8 acres	1 DSE to 6.4 acres
Long term fluctuation in stock DSEs as % of average	35 %	43 %
Actions taken in drought	• May push scrub in a severe or prolonged drought	• Sell 60% wether weaners • Sell older ewes • Sell 50% steer weaners

Lambing and calving percentages, wool cuts and mortality rates for four different types of seasons were obtained for the two properties and are summarised in the second Table.

Lambing and calving percentages achieved on **Low Stock** are both higher and more consistent between seasons than those on **High Stock**. The wool cuts are also higher on **Low Stock**, although the variability is similar on both properties. Unexpectedly, mortality rates are higher on **Low Stock**; however, **Low Stock** had better records of losses, so mortalities may be underestimated on **High Stock**.

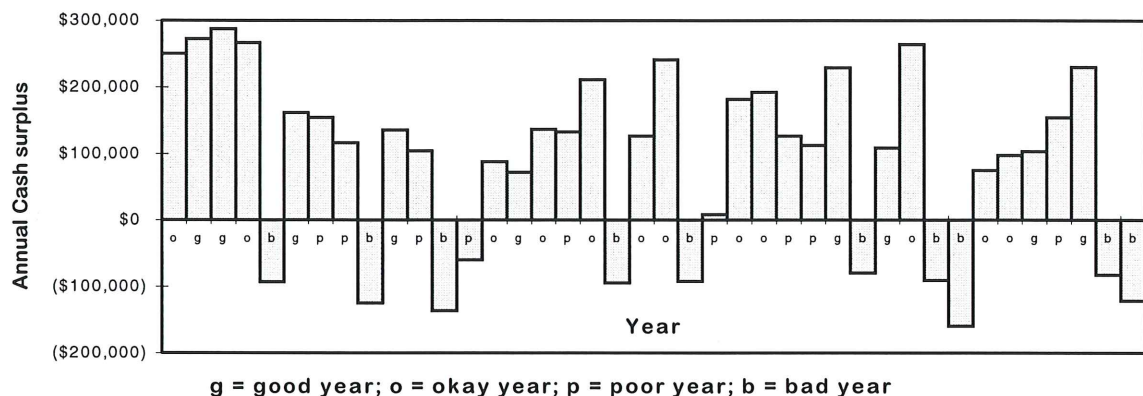
	High Stock				Low Stock			
Seasonal conditions	Good	Okay	Poor	Bad	Good	Okay	Poor	Bad
Lambing %s	75	75	50	10	90	85	80	40
Calving %s	90	80	70	50	85	80	70	60
Ewe wool cuts	6.00	5.25	4.50	3.25	6.50	6.00	4.50	4.00
Ewe hogget wool cuts	4.50	4.00	3.50	3.00	6.50	6.00	4.50	4.00
Ewe mortalities %	3	4	8	10	5	5	10	15
Cow mortalities %	1	1	1	2	1	1	3	5

The properties were modelled over 40 years of seasonal variability; the graphs on the next page show the annual cash surplus/deficit for each property.

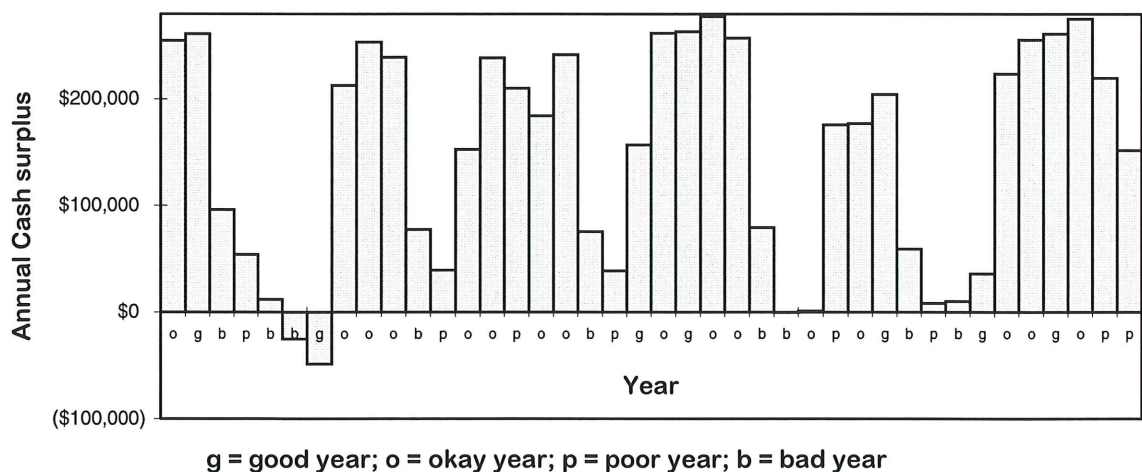
The reduced variability of cash flow over time for **Low Stock** is evident. Not only is the variability reduced, but there are fewer years when a cash deficit is experienced, and the absolute cash flow is higher for **Low Stock**. Note that these figures *do not include* interest, loan repayments, personal expenditure, capital expenditure, etc. The Table summarises the differences in the cash flows.

There are certainly other benefits from a lower stocking rate regime which have not been included in this study. Perhaps the most important is that the condition of the land can be maintained in a better state, and perennial pasture species should be maintained or improved. This further improves the stability of the enterprise.

Annual cash surplus / deficit for "High Stock"



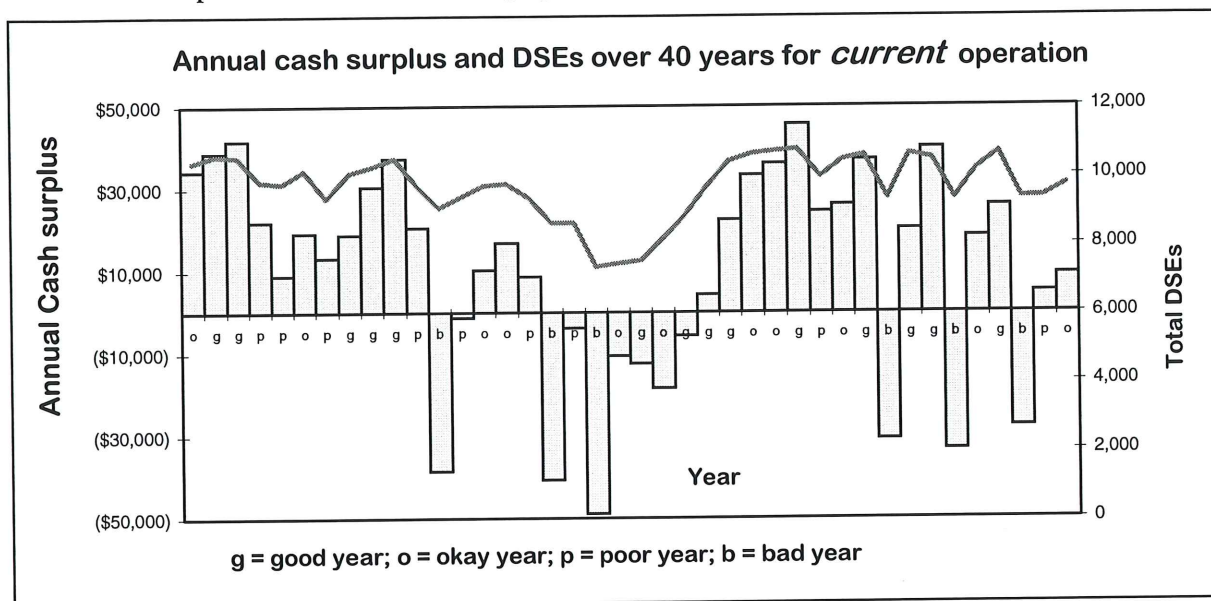
Annual cash surplus / deficit for "Low Stock"



	<i>High Stock</i>	<i>Low Stock</i>
Average annual cash surplus	\$ 87,508	\$ 148,209
Fluctuation in cash flow	\$ 446,393 This is 5.1 times the average annual cash surplus	\$ 326,641 This is 2.2 times the average annual cash surplus

CASE STUDY NO. 3 - REDUCING VARIATIONS IN CASH FLOW BY USING EXISTING RESOURCES MORE EFFICIENTLY

One pastoralist was concerned about fluctuations in his cash flow caused by variable seasons. The modelled annual cash surplus/deficit over 40 years of seasonal variability (bars) and total DSEs (line) for his current operation are shown in the graph below:



This would be enough to frighten most people! When an extended drought occurs, the business has trouble keeping its head above water. Many options for diversification are cut off due to existing financial pressures, so we examined ways of improving the cash flow by increasing the productivity of the operation. The changes which could be made and the assumed consequences are:

Changes

- increase flock performance recording and class sheep accordingly;
- join the top 80% of ewes only;
- run lambing ewes only on the best country, so they can be better managed with existing labour.

Consequences

After the development phase, we assumed that:

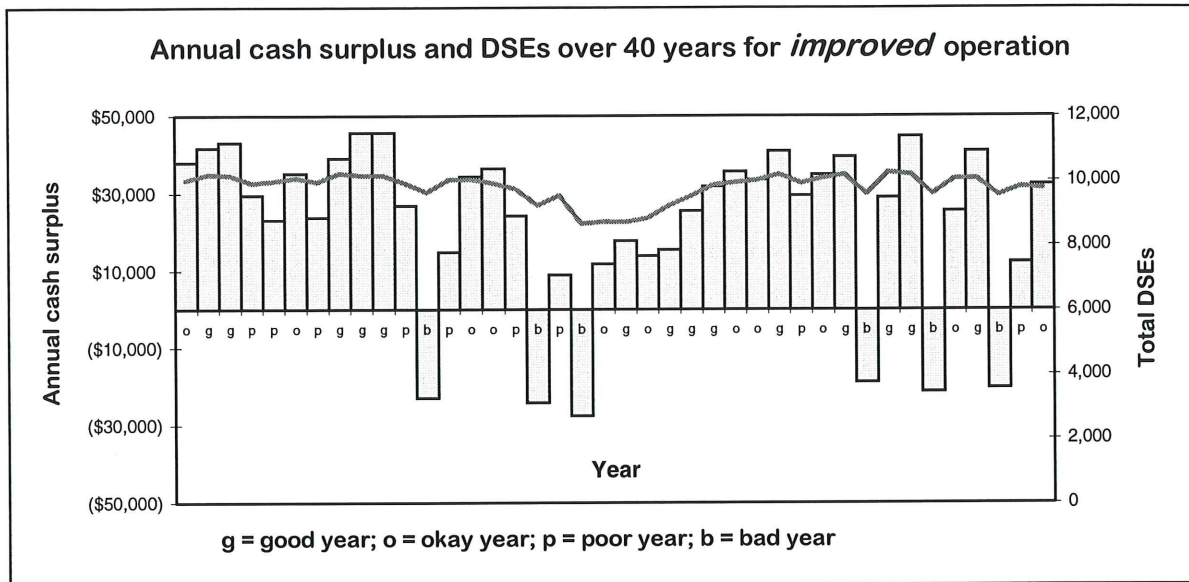
- lambing percentages in poor and bad seasons would be increased as shown in the first Table;
- wool cuts for all sheep would be increased by 10%, as shown in the second Table;

Lambing	Current operation				Improved operation			
Seasonal conditions	Good	Okay	Poor	Bad	Good	Okay	Poor	Bad
Lambing %	96	80	50	30	96	80	70	50

Wool cuts (kg/hd)	Current operation				Improved operation			
Seasonal conditions	Good	Okay	Poor	Bad	Good	Okay	Poor	Bad
Lambs	3.3	3.0	2.8	2.6	3.63	3.3	3.08	2.86
Ewe hoggets	5.0	4.6	4.3	4.0	5.5	5.06	4.73	4.4
Ewes	5.3	5.0	4.7	4.4	5.83	5.5	5.17	4.84
Wether hoggets	5.0	4.7	4.4	4.1	5.5	5.17	4.84	4.51
Wethers	5.8	5.5	5.2	4.9	6.38	6.05	5.72	5.39

- unjoined ewes would have the same mortalities and wool cuts as the wethers.

Are these improvements in productivity realistic? I leave that judgement to you. Assuming they are, the graph above shows the considerable improvement in the stability of cash flow and stock numbers, and in the long term viability of the operation.



	<i>Current Operation</i>	<i>Improved Operation</i>
Average cash surplus	\$ 9,963	\$ 22,256
Fluctuation in cash flow	\$ 94,524	\$ 73,207
No. of years with cash deficit	12	6
Average DSE	9,666	9,784
Fluctuation in DSEs	3,401	1,542

The differences between the *current* and *improved* operations are summarised in the final Table. The implication is that the pastoralist can afford to spend about \$12,000 per year to achieve the improvements, and still be ahead in the long run.

