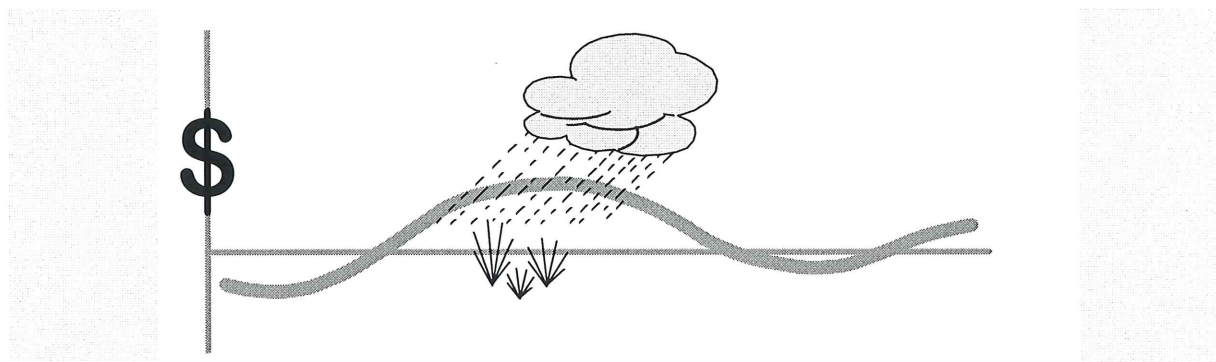


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DroughtPlan

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



Regional Report: Longreach/Richmond, western Queensland

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and Mark Stafford Smith

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CASE STUDIES (Coloured sheets):

NO. 1 - How Much Can I Afford To Invest To Improve Lambing Percentages?

NO. 2 - Which Stock Should I Sell And/Or Agist During A Drought?

NO. 3 - Recovery Of Sheep Numbers Following Drought

NO. 4 - The Effect Of Location Of Additional Property On Cash Flow

Acknowledgments

I am most grateful to those pastoralists in the Longreach, Richmond and Julia Creek regions who participated in this project. Many thanks for your valuable time, and your cheerful hospitality - I sincerely hope that you have gained some information which you can put to good use. Thanks also to staff at QDPI Longreach and "Toorak" Research Station, especially David Cobon and Peter Newman.

SUMMARY

During July and August 1994, I spoke with pastoralists in the Longreach, Richmond and Julia Creek 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 about how the economics and livestock biology of these practices cope with seasonal variations. As the project progresses, similar information is being collected from other parts of the Australian rangelands.

No single aspect of management of an agricultural enterprise can be considered in isolation, so in conducting this project I attempted to understand what was influencing pastoralists in their management. 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 summarises the many different management approaches which I found in the region, while still attempting to recognise the differences between individuals. In addition to providing statements of what pastoralists do, the report includes a series of case studies (on the coloured pages) generalised from the work on individual properties. 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 various alternatives at their disposal, and illustrate how these analyses may be conducted.

The report commences with a summary of the DroughtPlan project and of the study region. Management practices for sheep enterprises are then examined with most emphasis being placed on the methods pastoralists use to compensate for, and improve, the relatively low reproductive performances of their flocks. Less space is given to cattle management, reflecting the

smaller management effort often given to cattle enterprises. **Case Study No. 1** compares two properties in the Longreach area, one with "average" and the other with high lambing percentages; it looks at how much a pastoralist could afford to invest in improving lambing.

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 management are used in the region, including selling, the use of additional properties, agistment, shooting, feeding and so on. **Case Study No. 2** examines how a property in the Richmond area could use different combinations of these drought actions, with the resulting effects on cash flow and the time taken to recover from a drought.

Recovery from drought is as important as the actions taken in a drought. Many approaches to building up stock numbers after drought are similar to those used to cope with low lambing percentages. **Case Study No. 3** examines the benefits of three methods of building up stock numbers after a drought - natural increase, double joining of ewes, and buying sheep.

Some factors causing variation in cash flow are then examined. These include the obvious things which are out of pastoralists' control, such as seasons and prices, but there are also some less obvious factors. These include stocking pressure, enterprise mix, the location of additional property, and the ability of the manager. **Case Study No. 4** compares how cash flow varies for two similar properties in the Richmond area - one which has expanded by purchasing property close to the home block, and the other which has expanded into a climatically different region.

The report concludes with some of my personal impressions of agriculture in the region.

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 will take the products of Stream 4 and trial 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 Development Corporation, the Meat Research Corporation and the International Wool Secretariat.

A BRIEF DESCRIPTION OF THE REGION

Pastoralists surveyed in this region were in 2 distinct areas: the first was to the north and north-west of Longreach (up to 100 km from Longreach as the 'roo hops); the second was to the south of Maxwellton and Richmond, (up to 100 km from Richmond) and to the north-east of Julia Creek. Over half of the pastoralists involved in the project had additional land outside the region described above.

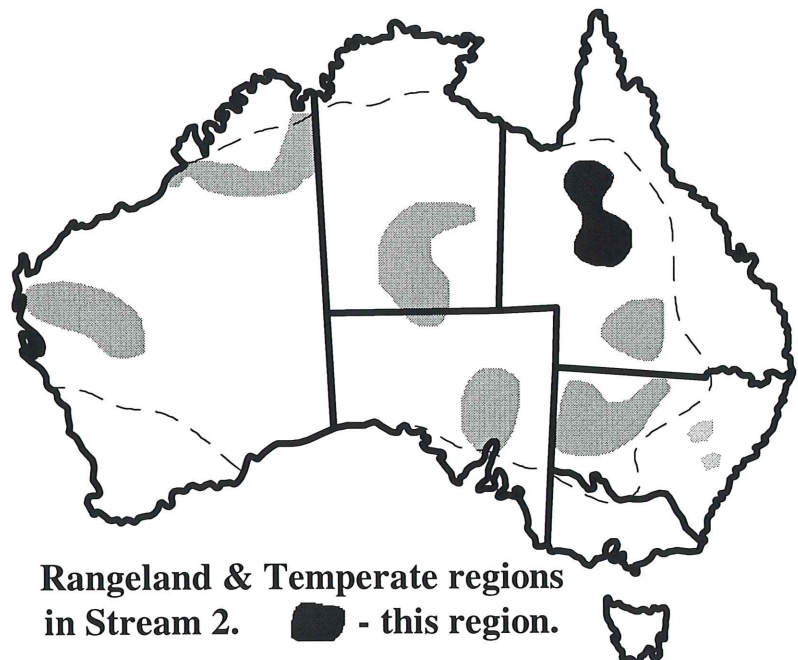
Average rainfall ranges from 420 mm (16.8 inches) at Longreach to 500 mm (20 inches) to the north-east of Julia Creek, with rainfall being summer dominant throughout.

The region is characterised by the rolling open grasslands of the black soil plains. The vegetation of the region is dominated by Mitchell grass (*Astrebla spp*) with other perennials such as Love grasses (*Eragrostis spp*), Queensland Bluegrass (*Dichanthium sericeum*), Millets & Panics (*Panicum spp*), and Fairy grass (*Sporobolus spp*). Buffel grass (*Cenchrus ciliaris*) has been introduced in some areas and is considered important for maintaining and improving production in these areas. Feathertop (*Aristida latifolia*) occurs to a significant extent in localised areas in the Longreach area of the study region, and causes management problems. A variety of annual species play an important role in the overall productivity of the region, including Flinders grass (*Iseilema spp*) and Button grass (*Dactyloctenium radulans*).

The majority of the region is treeless, with Coolibah (*Eucalyptus microtheca*) present along the channels of water courses. There are quite large areas of Boree (*Acacia tephрина*) and Mimosa (*Acacia farnesiana*) around Longreach, while further north, Prickly acacia (*Acacia nilotica*) has taken over vast tracts of land and grows prolifically along the bore drains. Small areas of Gidgee (*Acacia*

cambagei) and Mulga (*Acacia aneura*) were also seen. The Mimosa is viewed as a friend rather than an enemy, providing valuable shade and forage, while the reverse holds true for the Prickly Acacia. Although Prickly Acacia also provides shade and forage, its ability to spread quickly and become very dense has substantially reduced pasture production (completely eliminated pasture in some areas) and makes mustering very difficult, among other drawbacks.

Properties are generally watered by bores either



into troughs or along bore drains. Some properties have surface dams and these pastoralists cited water as a critical factor in droughts. Those with bores never raised the issue of water in droughts.

Feral and native animals cause considerable problems throughout the region. Pigs and foxes have the potential to cause large lamb losses and some mentioned that eagle hawks (I assumed this to mean Wedge-tailed eagles) also contributed significantly to lamb losses. Kangaroos occur in extremely high numbers, while goats were only mentioned as a small and often temporary problem on one property.

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 were 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. As one pastoralist responded to all my questions - "it depends"! I will attempt to portray the "it depends" nature of management in this report, and identify *what* "it depends" on.

Enterprises

Merino breeding (including the retention of wethers) was the main enterprise in the region, with cattle increasing in significance in the north. All properties traditionally run a small

cattle herd, but there was a trend towards increasing the size of the cattle enterprise on many properties. Around Longreach, cattle numbers had built up to a third of the stocking pressure (based on DSEs), with the lowest proportion being 15%. In the north, only one property remained predominantly sheep (31% cattle); the others ranged from 71% to 84% cattle (based on DSEs). This trend towards cattle appeared to have been for 4 main reasons:

- higher returns from cattle relative to sheep, particularly in the northern area;
- the purchase of additional land which was more suited to cattle;
- owner/manager preference;
- a perceived need to diversify.

Stocking rates

The size of properties visited increased to the north, with a parallel increase in the number of stock run (see Table). Actual stocking rates vary mainly with the type of country. In the southern part of the study area stocking rates range from 2.6 to 4.1 acres/DSE, while in the north the range is from 2.1 to 4.8 acres/DSE. Only sheep and cattle are included in these calculations. To gain a more accurate picture of the total grazing pressure other animals such as station horses, kangaroos and goats should be included.

REGIONAL SUMMARY OF OPERATIONS SURVEYED	
Longreach	Richmond/Julia Creek
• Properties predominantly sheep (up to 30% cattle based on DSEs) • Average area: 27,500 acres (11,100 ha) • Average number of stock: 9,150 DSE • Stocking rate: 2.6 to 4.1 acres/DSE • Lambing percentages: 27 to 91% • Lambing: March to May • Calf branding percentages: 50 to 95% • Calving: some controlled (autumn) • Wool cuts (ewes): 4.0 to 5.5 kg • Shear: August to October, and March	• Properties predominantly cattle (up to 84% cattle based on DSEs) • Average area: 119,500 acres (48,400 ha) • Average number of stock: 37,700 DSE • Stocking rate: 2.1 to 4.8 acres/DSE • Lambing percentages: 20 to 76% • Lambing: January to May • Calf branding percentages: 45 to 90% • Calving: all year round • Wool cuts (ewes): 3.0 to 5.0 kg • Shear: August to October

Sheep

Lambing and lamb marking percentages

In the southern part of the region all properties joined ewes somewhere between October and December resulting in lambs being born between March and May. Although this meant ewes were being joined on a falling plane of nutrition, it was seen as important to have lambs born at a time when they will benefit from the seasonal peak in pasture production.

For those joining immediately after shearing, the falling plane of nutrition is to some extent offset by the effect of shearing. The stimulation of appetite caused by shearing, together with having to carry less wool, seems to lift nutrition and can be enough to start the ewes cycling.

Lambing generally occurred a month earlier in the northern area. There were several variations on this theme. One producer had ewes lambing in January/February. He felt that this allows lambs to have the maximum possible time on good feed. If lambing occurred any earlier (so that ewes were joined on a higher plane of nutrition) the whole system would become dependent on early storms which would mean more reliance on supplementary feeding - a risk that was considered unacceptable.

Lamb marking percentages were generally lower the further north the property (see Table below) - perhaps due to harsher climatic conditions and the greater incidence of feral pigs. All properties were able to run self-replacing flocks, given reasonable seasonal

Why the low lambing percentages?

- Heat stress on ewes and newly born lambs (lack of shade)
- Inadequate nutrition at joining
- Feral animals eg pigs and foxes
- Contact between ewes and rams is influenced by the number and position of watering points, and the type of country

Identifying the cause of low lambings

To identify what is causing low lambing percentages, one first needs to answer the following questions:

- Are the ewes cycling?
- Are the ewes conceiving?
- Are the rams fertile?
- Are lambs born dead or do they die later?
- What is the cause of lamb deaths?

Once these questions are answered, progress can be made towards understanding and rectifying the problem.

conditions and with the assistance of practices which may not be considered 'normal' in other regions of the country.

When lambing percentages fall below 65-70% (the exact figure depends on mortality rates, age at sale, etc), very little selection pressure can be applied to the flock. Thus, although flocks are being maintained in terms of numbers, it is hard to make any genetic gains. Many of those in this situation questioned whether they should be breeders or just wool-growers. They had decided to continue breeding due to the difficulty of finding replacement sheep which are adapted to the environment.

Compensating for low lambing percentages

Pastoralists have several approaches to compensating for these low lambings.

1. Reduced culling rate of ewe hoggets.

On properties with lower lambing percentages, the culling rate of ewe hoggets never exceeded 25% and never went lower than 5%. In the odd year where a 25% culling rate resulted in more replacements than necessary, the oldest ewes were sold to keep the ewe flock at the desired number. Those achieving higher lambing percentages still tended to cull hoggets at 25%, but also culled the balance of the ewe flock (from 5% to 25%), mainly on reproductive

LAMB MARKING PERCENTAGES ACROSS THE REGION

Seasonal conditions	Good	Okay	Poor	Bad
Longreach	69 - 91	56 - 91	47 - 78	27 - 71
Richmond	55 - 76	55 - 62	40 - 55	20 - 48

Double Joining : For - and - Against	
• Maintenance of a self-replacing flock • Results in younger flock structure • Increased selection pressure • Reduces need to purchase sheep • Better quality lambs ?	• Complicates management (eg some lambs 6 months younger) • Success depends entirely on season • Lice control is difficult • Significantly reduces ewe wool cuts; poorer wool quality • Reduces subsequent lambing percentage • Extra stress on ewe; long-term reductions in fertility and wool growth? • Poorer quality lambs?

performance. One pastoralist was able to maintain a constant culling rate irrespective of the season or length of drought.

2. Retaining ewes for an extra year.

Most pastoralists visited aimed to sell cast-for-age ewes between 5 and 6 years old. Those with lower lambing percentages were forced to keep ewes until 6-7 year old. There is a continual compromise between the age structure of the flock and the culling program. Normally most emphasis was placed on keeping the youngest age structure within the flock as possible (in contrast to what was seen in other regions).

3. Double-joining of ewes.

This practice was mainly used as a way of building up sheep numbers after drought. Three pastoralists never double-joined ewes - one had adequate lambing percentages and the others felt that the problems outweighed the benefits and purchased sheep instead. Those in the northern part of the study area would double-join ewes in any year that was suitable - a reflection of their lower lambings. (See Table above).

4. Purchase of ewes and/or wethers.

At times sheep had to be purchased to maintain numbers, especially after drought. However, sheep prices immediately following a drought

are often prohibitively high, and there is an aversion to introducing outside bloodlines. Of those who did buy sheep, more purchased ewes than wethers, but some would purchase both. In the end market conditions and financial position determined what was bought.

5. Joining ewes when conditions are right.

One pastoralist in the Richmond area is concentrating more on getting ewes in lamb, rather than on the time of lambing. Ewes are joined after the first storms so that nutrition is improving. To further increase the nutritional flush, ewes are taken off feed for 48 hours then put out into a spelled paddock with the rams. A joining has never been missed - even in droughts. Only in the very worst of droughts did lambing percentages fall below 50%.

6. Hard work!

All commented that maintaining lambing percentages was something they had to work at all the time - battling to keep ewes in top condition and feral animals away.

Time of shearing and wool cuts

All but one property shears in the spring (August to October). The odd one out was shearing in March in order to get the wool off the sheep before Feathertop (*Aristida latifolia*) seed became a problem. Wool cuts (see Table

WOOL CUTS (KG) ACROSS THE REGION				
Seasonal conditions	Good	Okay	Poor	Bad
Ewe hoggets	3.8 - 5.5	3.5 - 5.5	3.5 - 4.25	2.8 - 4.0
Ewes	4.3 - 5.5	4.0 - 5.5	4.0 - 4.8	3.0 - 4.5
Wether hoggets	4.75 - 6.4	4.2 - 5.5	4.0 - 4.8	3.5 - 4.25
Wethers	5.0 - 6.4	4.5 - 5.5	4.5 - 5.5	3.85 - 4.75

below) tended to be lower in the northern areas. The cause of this could be a combination of many factors: harsher climate in the north, differences in genetics, higher incidence of double joining and slightly older flock structure in the north, and different stocking rates.

Lamb wool cuts have not been included in the table on the previous page, as these are more a function of age at shearing.

Mortality rates

It is difficult to draw any meaningful comparison of observed sheep mortality rates between the two areas of the study region. One thing that can be said, is that those who *record* stock losses have much higher mortalities than those who have no records at all! In practice, mortality rates for grown sheep must be around 3% to 7% in reasonable years and from 5% to 20% in drought years to explain the observed sheep numbers.

Cattle

In the southern part of the study area, cattle were very much secondary to the main sheep operations and hence not a lot of management effort went into the cattle, nor into cattle records. The basic management was weaning twice per year and culling. Only two properties exercised controlled mating (calving in the autumn). In the northern part of the region cattle were more significant, but management was still similar to the southern area with the exception of treatment during a drought (see later section) and no controlled mating. In several cases, the cows were run on another property in a different district, with the properties in the study region being used for growing out and fattening.

As with the lambings, calf branding rates were higher in the south than in the north. This could also be influenced by climate and nutrition, but also those using controlled mating in the south were pregnancy testing, and hence empty cows had already been removed from the

herd. (Branding rates in this report are based on the number of cows present at branding time, not at joining).

The biggest source of variation in management of the cattle enterprises across the region was the age of selling steers. Steers were sold anywhere between weaning and 4 years old, and in one case contract feed-lotting was used on a regular basis. The animal that pastoralists were selling (or markets they were trying to target) depended on the suitability of the country to produce the required product, their financial position, and personal preference.

Markets

Proceeds from the sale of surplus sheep appear to be considerably less than those received in other parts of the country. This appeared to be due to 3 main factors:

- The high cost of transporting animals to market due to the large distances involved;
- With low lambing percentages there are often only small lines of sheep to sell (particularly cull and surplus hoggets) which are relatively unattractive to buyers;
- A general disliking by pastoralists for 'marketing' rather than just delivering stock to the local sale yards.

More effort was put into cattle marketing. The northern part of Queensland has greater access to beef abattoirs and live-export markets, and there was greater acceptance of transporting cattle longer distances to market.

Those using innovative forms of selling livestock, such as electronic or direct to buyer or end-user, tended to receive higher prices for their stock, and were more likely to be price setters rather than price takers. I also noticed other benefits, such as less handling of livestock, and feedback from buyers.

CALF BRANDING PERCENTAGES ACROSS THE REGION				
Seasonal conditions	Good	Okay	Poor	Bad
Longreach	90 - 95	90 - 95	80 - 95	50 - 85
Richmond	55 - 90	60 - 85	60 - 70	45 - 60

Drought

Information on animal reproduction, death, growth rates, sale prices etc was collected based on 4 different production levels - good, okay, poor and bad. The pastoralist was then asked to describe a year in which these biological rates could be achieved. Good biological rates did not necessarily result from

Do you go into "drought mode" when.....?

- Summer rainfall is less than 6 inches
- Summer rainfall is less than 3 inches
- Winter rainfall exceeds 50 points
- You experience the second 'dryish' year in a row
- You experience the second 'bad' year in a row.....?

A drought is a different thing to different people, and causes different reactions

the highest rainfall! For example, a high rainfall year could result in high mortality rates due to bogging, drowning, eating poisonous plants, flystrike, *etc*, while winter rain could cause conditions similar to drought due to the rapid deterioration of feed quality.

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.

Changes in management due to drought

The options used to reduce stock in drought were many and varied, and one option was never used to the total exclusion of all others. Nobody is fixed in what they do because "it depends" - on the geographical extent of the

The aims of drought management

- Reduce the number of mouths to feed
- Maintain the herd/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

Changes in management due to drought

- Sell
- Send to a second property
- Shoot
- Agist
- Contract feedlot
- Supplementary feed
- Cut costs

drought, markets at the time, stock on hand, current financial pressures, the relative price of feed, freight and agistment, and (perhaps most importantly) on past experiences.

If generalised statements could be made about selling, they would be: *make* normal sales earlier, *sell* stock in saleable condition, *cull* heavier, *sell* some or all wethers, *sell* some or all steers, and *avoid* selling from only one age group or class. Case Study No. 2 looks at several ways of reducing stock numbers during a drought using combinations of the sell and agist options.

The issue of supplementary feeding brought mixed reactions. Several felt that molasses and urea were "the best thing since sliced bread", while others felt that if it got to the stage of having to feed to keep animals alive they should no longer be on the property - it only caused an acceleration of land degradation, and placed too much pressure on the water supply. Those supplementary feeding used many forms - urea dispensed in water, molasses and urea, lick blocks, cottonseed, meatmeal, corn, sorghum, hay and any combination of these. Mainly the feed is bought in, but some were making hay, others were growing opportunity crops. Often the use of supplements was dictated by the state of the finances.

One pastoralist found the use of contract feed-lotting of steers to be most useful in avoiding the inevitable low prices received for drought affected cattle, but was still somewhat wary of using this option due to movements in grain prices.

Timing of drought management decisions

In this region, the presence of a summer dominant rainfall makes the timing of drought management options relatively straight forward. Most pastoralists were able to give me a date by which stock numbers must be reduced if the

summer rains had not been adequate. All pastoralists said that it was important to make and implement decisions early - even if these actions turned out to be unnecessary. This is in contrast to other parts of the country, where the possibility of useful rains later in the year results in the adoption of the "wait and see" approach with possible negative effects on stock and land condition and stock sale prices.

Changes in management following drought

Again, circumstances dictate what pastoralists do after a drought to build up 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, the demands from the bank manager often had more weight than the desire to do the "right" thing!

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 were purchased

Options during recovery from drought

- Purchase stock
- Double join ewes
- Reduce culling rate of replacement females and older females
- Retain breeders for an extra year
- Bring stock in on agistment
- Allow numbers to build up naturally

to increase cash flow rather than to consume the over-abundant pasture. This particularly applied to taking stock on agistment, which provides income for no capital outlay as long as the pasture is not damaged.

Other facets of recovery following a drought are discussed in the earlier section on low reproductive rates.

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 also results 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 climate 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 we are all familiar with - season, 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, I observed four main factors which appeared to have a strong influence on the degree of variability in cash flow in the study region.

Some factors which affect the degree of fluctuation in cash flow

- Stocking pressure
- Enterprise mix
- Location of additional property
- Ability of the manager

Stocking Pressure

Higher stocking rates tended to result in greater fluctuations in cash flow. A higher stocking rate often necessitates more drastic measures to be taken in droughts, decisions need to be made a lot earlier and 'droughts' tend to occur more frequently. Two pastoralists I visited in the Longreach area ran very similar operations in terms of size, location, enterprise mix and general management practices, but varied

considerably in stocking rate. The amount of rainfall considered to result in drought conditions for the higher stocked property was only considered to be a dryish year for the other property and did not require any extraordinary management. Hence 'drought' was occurring more frequently on the higher stocked property.

If pastoralists wish to take the high stocking rate option, then they have to be prepared to accept the risk and lower level of animal performance associated with it, and to take action when and where appropriate. One pastoralist with a higher than average stocking rate (and who recognised it) said "...my cattle are only tourists on this place".

Enterprise Mix

The study region has traditionally been a wool growing area, but there is now a steady increase in the number of cattle. With the decline in the wool market over recent years, and a relatively strong cattle market, the general recommendation has been to increase cattle at the expense of sheep, to increase cash flow and diversify (spread the risk). However, the expansion of a cattle enterprise often increased the degree of variability in the property's cash flow. Meat production in cattle is not as resilient in drought as wool production is for sheep, so that cattle need to be moved off properties much earlier than sheep. This is despite the fact that season has a much less dramatic effect on the reproductive performance of cattle than sheep. Some said that they wouldn't be able to run cattle if drought freight subsidies were abolished.

The effect of enterprise mix on the variability of cash flow is very similar to the stocking rate effect described above. A property in the Richmond area which was predominantly cattle (71% based on DSEs) had a similar stocking rate to another property in the same area which was predominantly sheep (31% cattle); however, the difference in variability of cash flow, measured in terms of standard deviation, was around \$305,000. On the predominantly cattle property, stocking rate had to be reduced well before there were drought conditions and up to a year before any reduction in stocking rate had to be made on the predominantly sheep property.

The increase in cattle may have the disadvantage of increasing the variability of cash flow, but there are also advantages. It may be that the country is protected more in drought by having stock removed earlier. The balance between these effects will be determined by how resilient the country is, as well as personal preferences of pastoralists.

Location of additional property

When property expansion is considered, people tend to purchase land in another region to spread the seasonal risk. The location of this additional property was all important to its success or otherwise. In some cases the purchase of a second property had "backfired" - with all properties experiencing the same seasonal conditions at the one time, which in turn increased the variability of cash flow, as well as the financial and managerial burdens.

I saw several situations where the purchase of additional property was very successful. These families had purchased property which had a very consistent and reliable climate - but not necessarily a high level of productivity. This had the effect of eliminating much of the variability in cash flow. This is illustrated in Case Study No. 4.

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 many factors in an agricultural system. However, those who I perceived to be the 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.

SOME PERSONAL IMPRESSIONS

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

Resilience: Comparing this region to others visited, I was struck by the resilience of the land to drought compared to the resilience of the livestock. Here, the pastures are relatively resilient to stocking pressure, and bounce back quite quickly after a drought. By contrast, the livestock are less productive relative to other areas, and *their* resilience to drought is low. In other areas, the reverse appears to apply: country that is relatively fragile supports much higher levels of animal productivity.

Total Grazing Pressure: Stocking pressure is a major factor influencing the degree of variability in cash flow. In calculating stocking rates, many pastoralists with predominantly sheep operations did not include even cattle, let alone station horses, kangaroos etc. I would not be surprised if kangaroos often doubled the perceived stocking rate. 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, the issue of native and feral animals must be taken out of the "too hard basket". Some pastoralists have taken the bull by the horns with astonishing results. All too often these pastoralists are labelled "different" - instead they should be used as an example of what can be achieved.

Competitive advantage: While travelling around the country, you notice factors which give the producers of a region an advantage over their competitors. The minimal use of chemicals in animal husbandry stood out to me in this region - maybe you could market the "clean green" product. Variable costs are low for both sheep and cattle enterprises compared to temperate regions - maybe you are more resilient to the cost price squeeze? (Perhaps productivity needs to be increased to take advantage of this). Close proximity to the populous Asian countries has already proved to be an advantage to northern cattle producers - does the same possibility exist for sheep and wool?

To illustrate the minimal expenditure on sheep health costs (dip, drench, vaccine etc) in this

region, consider the following. The Gippsland Farm Monitor Group (in SE Victoria) shows that farmers spend between \$0.40 and \$3.36/DSE on sheep health, and a similar group in SW Victoria shows a range of \$0.22 to \$2.63/DSE. By comparison, in this study region the range was \$0.10 to \$0.60/DSE.

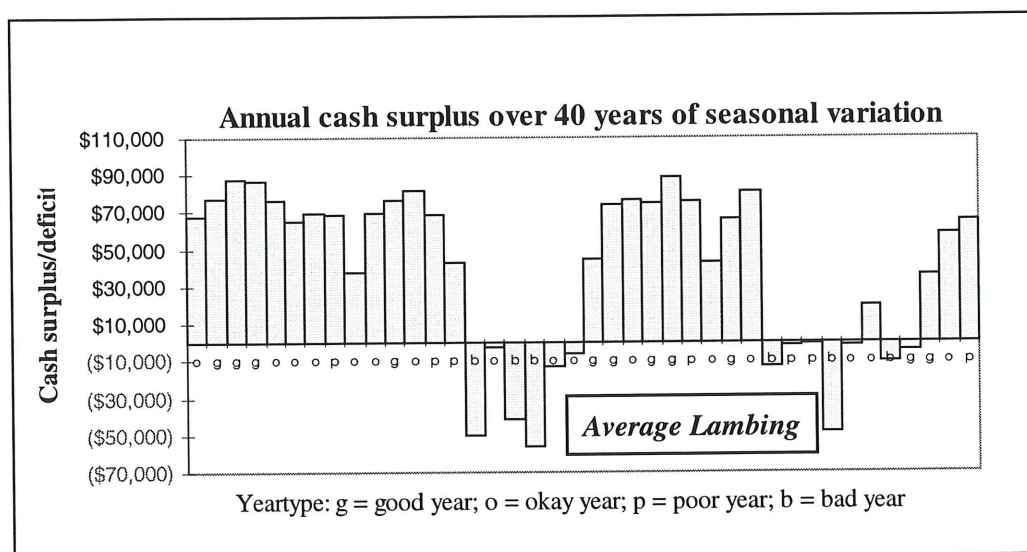
Diversification: Diversification is one of those buzz words, and many see this as the answer to agriculture's declining terms of trade. Venturing into enterprises such as red claw or ostriches may sound exotic and exciting, but beware the traps! Often I felt that more income could be made if people "stuck to their knitting". Ventures on the side can take peoples' minds off their core business with the result that what is gained from the new enterprise is more than lost on the core enterprise. At times we all get caught in the trap of thinking that if something is simple and mundane it's no good, and we risk directing our efforts away from the mundane but important things into ventures which have the potential to bring us unstuck. That is not to say that diversification is a bad thing - just make sure the main business is under control first.

Business Management: If primary producers are to cope in today's business world, 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 involved in the more intensive agricultural industries. A day spent in the office should not be viewed as shirking work! When referring to business management skills, I mean the whole spectrum from organising your time, negotiating with the bank manager, through to planning the long term direction of the business. Pastoralists who are managing properties for companies or other family members have better business skills than their self-employed counterparts. The self-employed pastoralist may lack discipline - there is no boss banging on the desk, requesting a report by a certain date or demanding a certain level of performance. The decision to improve and the challenge is yours!

CASE STUDY NO. 1 - HOW MUCH CAN I AFFORD TO INVEST TO IMPROVE LAMBING PERCENTAGES?

Take the case of two actual properties in the Longreach district: the first has “average” lambings and the second property (within 50 kms) has much higher lambing percentages. I will call the properties *Average Lambing* and *Better Lambing*. There are certainly differences in the type of country, amount of shade, flock genetics, etc., between the two properties, but imagine that *Average Lambing* can improve the reproductive performance of the flock to the same level as that of *Better Lambing*. How much can *Average Lambing* afford to invest to achieve this?

<u>Lambing percentages for the two properties</u>		
	Maidens	Others
<i>Average Lambing</i>		
Good	50 %	75 %
Okay	25 %	65 %
Poor	16 %	58 %
Bad	10 %	20 %
<i>Better Lambing</i>		
Good	83 %	95 %
Okay	85 %	95 %
Poor	75 %	80 %
Bad	68 %	72 %



Management on *Average Lambing* maintains a self-replacing flock by double-joining ewes, purchasing ewes and wethers, and reducing the culling rate of ewe hoggets from time to time. The pattern of cash flow which could be expected over 40 years of seasonal variation is shown by the graph on the next page.

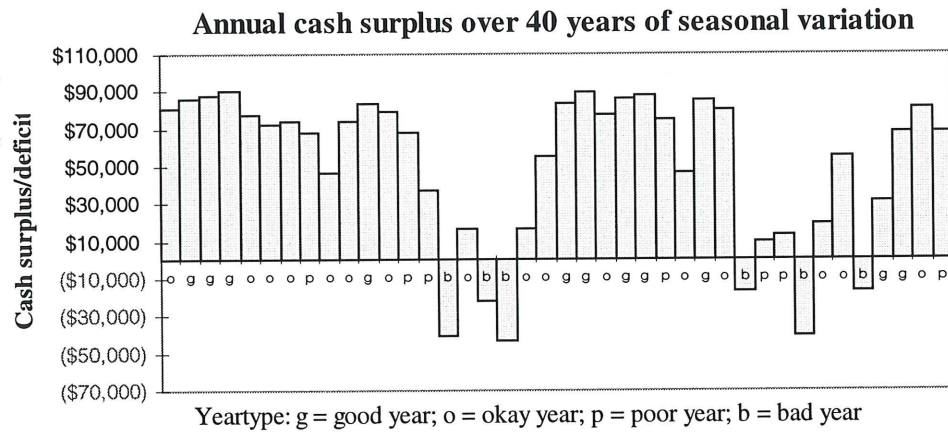
Now assume that lambing percentages on *Average Lambing* have been increased to those being achieved on *Better Lambing*. No longer does *Average Lambing* need to double-join ewes or purchase sheep to maintain the numbers, and the culling rate of ewe hoggets can be maintained at a more desirable level. Also, it is possible to sell cast-for-age ewes a year younger.

The graphs on the next page compare cash flow without and with the improved lambing percentages; the effects are summarised as numbers in the Table below. From this analysis *Average Lambing* could afford to spend an average of \$11,592 each year to increase lambing percentages to those levels being achieved by *Better Lambing* without being worse off financially.

	<i>Average Lambing</i>	<i>Better Lambing</i>	Improvement
Average annual cash surplus	\$ 38,140	\$ 49,732	\$ 11,592
Range in cash surplus/deficit	-\$ 56,486 to +\$ 88,651	-\$ 43,386 to +\$ 90,570	Range decreased by \$ 11,181
No of years with a cash deficit	13	6	7 years
Standard deviation (variability)	\$ 44,416	\$ 41,479	\$ 2,937

So how might you invest \$11,592 each year to achieve this aim? Some suggestions are:

- Feral animal control to reduce lamb losses;
- Native animal control to reduce total grazing pressure which in turn would improve animal productivity;
- Supplementary feeding of ewes prior to joining to improve conception rates;
- Purchase of superior quality rams.



Better Lambing

In fact there are other benefits to be gained from improving the lambing percentage which have not been included in this analysis; eg. the sale price from cull and surplus sheep may increase due to having larger lines to sell, wool cuts may increase as a result of the greater selection pressure, and so on. In practice it would take some years to make the improvement, and using this type of analysis it is possible to look at intermediate stages.

CASE STUDY NO. 2 - WHICH STOCK SHOULD I SELL AND/OR AGIST DURING A DROUGHT?

Consider a sheep and cattle property in the Richmond area running around 29,500 DSE in a reasonable year (approximately 2,600 head of cattle and 4,000 head of sheep). The property is now into the second year of drought. The first year of drought did not cause too many problems, with all stock maintained using some supplementary feeding. The summer rains have failed again and feed has virtually run out. It is possible to hold most of the breeding stock with supplementary feeding, but it is necessary to destock the balance. Options are to sell and/or agist. The main aim of the exercise is to keep as much of the breeding herd and flock intact as possible and have saleable stock after the drought so that a cash flow can be maintained.

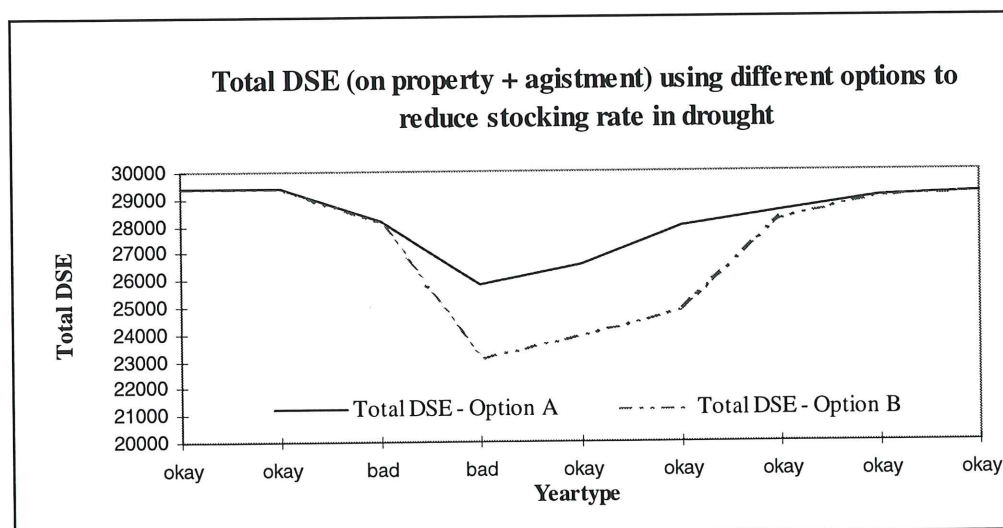
Option A	Option B
<i>Send all wethers to agistment</i>	<i>Sell all wethers</i>
Sell 20% of ewes, keep the balance on property with feeding	Sell 20% of ewes, keep the balance on property with feeding
Sell all 3 year steers (normal sale made earlier in the year due to drought)	Sell all 3 year steers (normal sale made earlier in the year due to drought)
<i>Sell 20% of weaner, 1 and 2 year steers</i>	<i>Sell all steer weaners</i>
<i>Send balance of steers to agistment</i>	<i>Send 1 and 2 year steers to agistment</i>

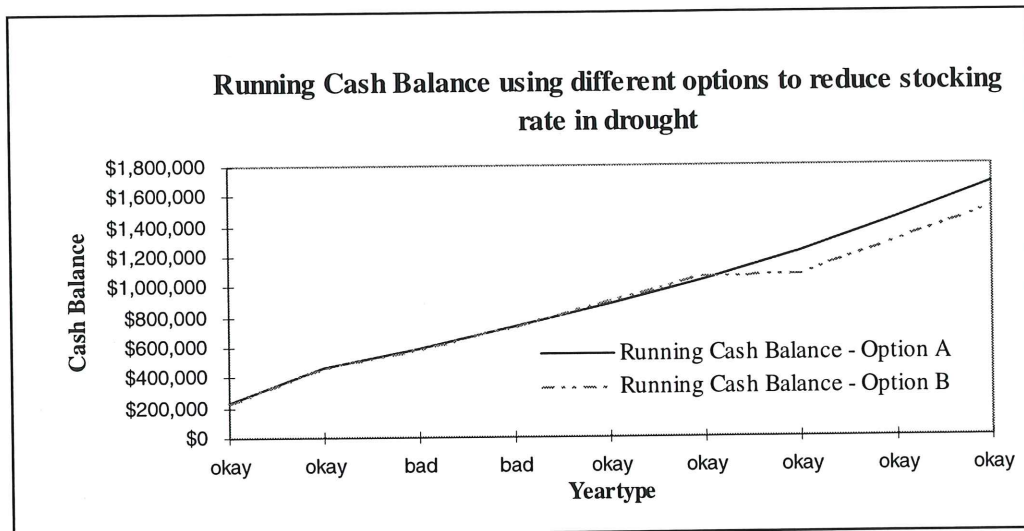
Using Herd-Econ it is possible to look at what happens to stock numbers and cash flow when different selling and agistment options are used. We will compare two options, both of which reduce the stocking pressure by the same amount - italics in the Table highlight the differences.

The property has had 2 reasonable years before the drought, then the two year drought; then we assess the effects after a run of average years which allows stock numbers to recover.

The graph below shows the effect on stock numbers. Points to note include:

- the time taken for to recover is much the same for the two options due to the breeding nucleus being maintained;
- where more agistment is used (Option A), an assessment would be needed to determine whether the property could handle the number of stock in the few years immediately after the drought.





The graph above shows that there is quite a difference in cash flow between the two options. Points to note include:

- during the drought, both options are producing much the same cash flow;
- for two years after the drought, Option B (all steer weaners sold) is producing slightly more cash than Option A (cross section of steers sold), due to all the 1 and 2 year steers being retained (on agistment) so that normal sales can be maintained in the years following a drought;
- in the third year after the drought, the cash flow for Option B falls behind because there are no steer sales that year - a lag caused by selling all the steer weaners in the drought;
- selling rather than agisting wethers has a minimal effect on the outcome due to their relatively small number.

Thus for this particular property a more stable cash flow can be maintained during and after a drought if a cross section of stock are sold/agisted during a drought rather than selling an entire class or age group.

Many other options could be assessed using the same method, such as:

- selling heifers compared to selling older cows;
- using contract feedlotting compared to agisting or selling;
- using agistment to maintain the breeding herd versus selling breeders and buying back after the drought;
- comparing different agistment costs and stock prices.

CASE STUDY NO. 3 - RECOVERY OF SHEEP NUMBERS FOLLOWING DROUGHT

This case study looks at 3 methods a property in the Longreach region may use to build up sheep numbers after a drought. The study property is assumed to run predominantly sheep (75% sheep), with cattle numbers being maintained irrespective of season.

Wethers are normally retained until 5 years old; during a drought, however, all wethers are sold. Lambing percentages in the maiden ewes fall from 25% in an okay year to 10% in a drought, with the remainder of the flock falling from 65% to 50%. Ewe mortality rates in a drought year are estimated at 10% compared with 7% in an okay year.

The 3 recovery options are:

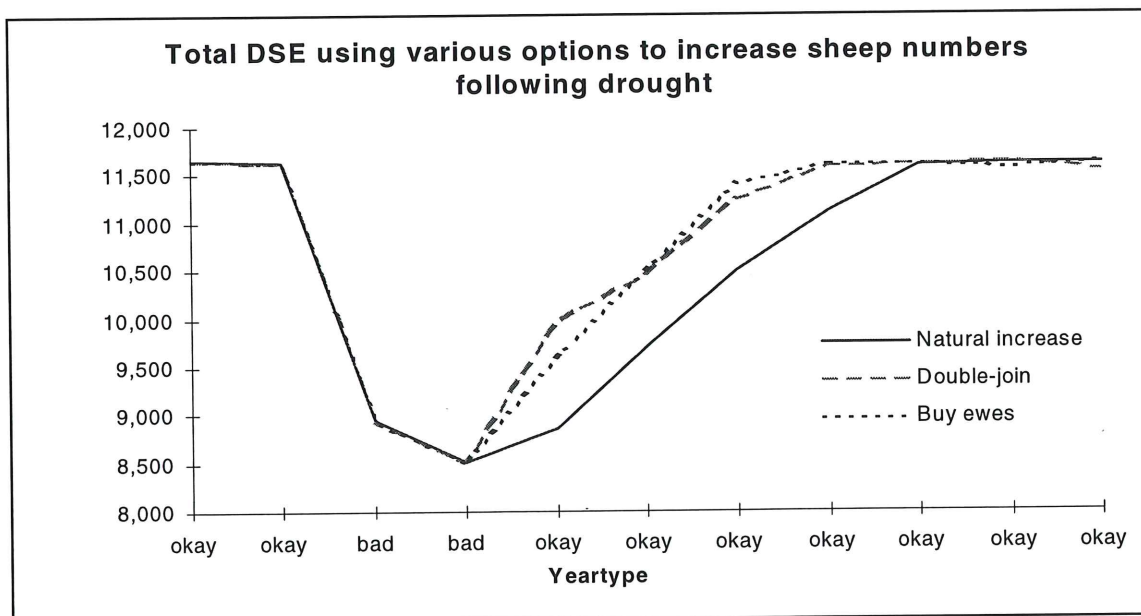
1. Allow numbers to build up naturally. The culling rate of the ewe hoggets is reduced from 20% to 10% until ewe numbers return to their pre-drought level.
2. Double-join ewes. In the year following drought, two-thirds of the ewes are re-joined in April for a spring lambing. The

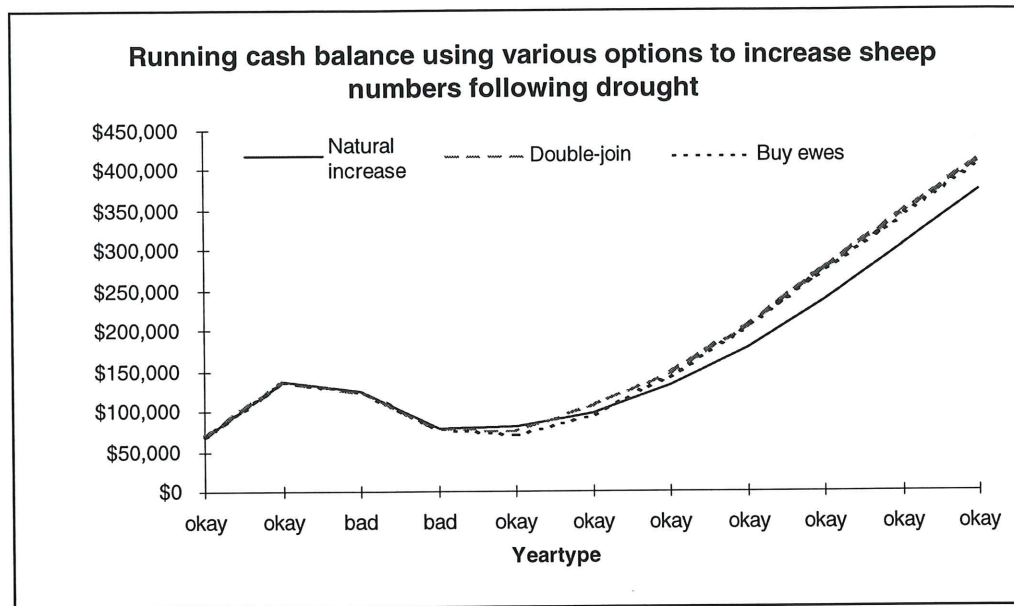
same lambing percentages are assumed for this lambing as in any okay year, however, the following lambing suffers, with lambing percentages falling to those of a bad year. Wool cuts from the ewes also suffer and are reduced by 0.5kg.

3. Purchase ewes. In the year following a drought, ewes are purchased so that ewe numbers are returned to their re-drought level.

The graph below shows that:

- purchasing ewes after a drought results in sheep numbers returning to their pre-drought levels at least 12 months before the other two options;
- allowing numbers to build up through natural increase takes 5 years to reach pre-drought levels, compared to 3-4 years years for either the double-join or buy options.





The graph above shows the impact of drought recovery times on cash flow:

- when purchasing ewes after a drought, cash flow initially drops below the other two options - this has implications for how much working capital is required;
- the options of purchasing ewes or double-joining result in higher cash flows than natural increase from 2-3 years after the drought;
- the magnitude of the difference in cash flow is dependent on the purchase price of

the ewes (in this example a price of \$12 off-shears was used).

Of course, **there are factors other than cash flow that need to be considered.** Allowing numbers to build up gradually may be better for the country in the longer term; alternatively it could allow additional low-risk income to be generated through agistment. Conversely, reducing the culling rate of ewe hoggets may be detrimental to the genetic improvement of the flock. There are also other drawbacks to the use of double-joining (see discussion in the main text).

CASE STUDY NO. 4 - THE EFFECT OF LOCATION OF ADDITIONAL PROPERTY ON CASH FLOW

This case study looks at the annual cash surplus or deficit over a 40 year period for two actual properties in the Richmond area. Both are predominantly cattle operations.

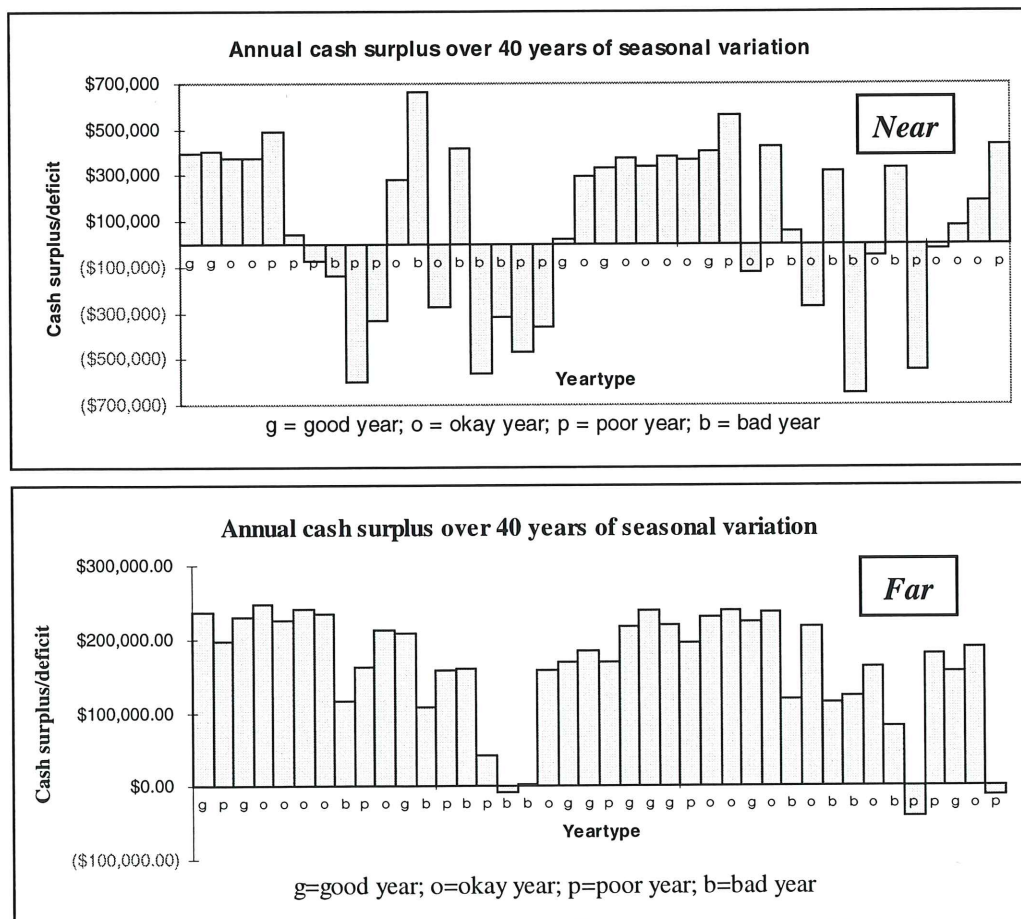
The first property (let's call it "*Near*") has expanded by buying country close to the home block, while the second property ("*Far*") has bought into a very different climatic region - one that has a much more reliable rainfall and therefore enables a consistent level of productivity, albeit considerably lower than the home block (based on area required per animal).

The other major difference between the two properties is stocking rate on the home property; however, in drought both require a similar level of destocking, only the timing differs slightly. For simplicity I will refer to the additional property as the second property.

Near's second property must be destocked at the same time as the home property, while *Far*'s second block has a more reliable rainfall (eg. monsoonal country in the north) and can maintain stock numbers and even take a few extra stock while the home block is in drought. The advantage of this for *Far* is that the effect of climatic variability on cash flow is reduced.

The first graph below shows the annual cash surplus or deficit for *Near*. The second graph shows the annual cash surplus or deficit for *Far*. It is clear that the fluctuation in cash flow is much greater for *Near* than for *Far*.

Of course, there are many other things to consider when contemplating buying a second property. The logistics of having a second block which is distant from the home property can be awkward. Having to travel between properties can be a drain on time and also lead to reduced quality of



management, while difficulties could arise if the properties are in tick and non-tick areas.

