

Drought

— facing the challenge and managing the risk



This document is an initiative of NRM South and NRM North and funded by Woolworths and Landcare Australia



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This module is the result of a project funded by Woolworths and Landcare Australia and managed by NRM South and NRM North. The main aim of the project was to document and provide mechanisms to help farmers manage the risk of drought and its effect on their farm; the business, the land and the people. The project involved running a series of drought management workshops for farmers based on the NSW 'Profarm' courses. These workshops, extensive consultation with extension staff, farmers, a reference panel and the other Property Management Planning Framework (PMPF) modules have guided the development, layout and intent of this module.

This module links to and aligns with the Statewide PMPF that Tasmanian Farmers and Graziers Association (TFGA) has overseen during recent years. Completing this module will in many instances link with other PMPF modules, however the standalone content here should prove useful regardless of prior assessment and planning.



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This draft module has been developed in line with the Statewide Property Management Planning Framework (PMPF) which is collaboratively supported by Tasmanian Farmers and Graziers Association, the Tasmanian State Government and the three NRM regional bodies.



Said Hanrahan

John O'Brien

"We'll all be rooned," said Hanrahan,
In accents most forlorn,
Outside the church, ere Mass began,
One frosty Sunday morn.

The congregation stood about,
Coat-collars to the ears,
And talked of stock, and crops, and drought,
As it had done for years.

"It's looking crook," said Daniel Croke;
"Bedad, it's cruke, me lad,
For never since the banks went broke
Has seasons been so bad."

"It's dry, all right," said young O'Neil,
With which astute remark
He squatted down upon his heel
And chewed a piece of bark.

And so around the chorus ran
"It's keepin' dry, no doubt."
"We'll all be rooned," said Hanrahan,
"Before the year is out."

"The crops are done; ye'll have your work
To save one bag of grain;
From here way out to Back-o'-Bourke
They're singin' out for rain.

"They're singin' out for rain," he said,
"And all the tanks are dry."
The congregation scratched its head,
And gazed around the sky.

"There won't be grass, in any case,
Enough to feed an ass;
There's not a blade on Casey's place
As I came down to Mass."

"If rain don't come this month," said Dan,
And cleared his throat to speak -
"We'll all be rooned," said Hanrahan,
"If rain don't come this week."

A heavy silence seemed to steal
On all at this remark;
And each man squatted on his heel,
And chewed a piece of bark.

"We want an inch of rain, we do,"
O'Neil observed at last;
But Croke "maintained" we wanted two
To put the danger past.

"If we don't get three inches, man,
Or four to break this drought,
We'll all be rooned," said Hanrahan,
"Before the year is out."

In God's good time down came the rain;
And all the afternoon
On iron roof and window-pane
It drummed a homely tune.

And through the night it pattered still,
And lightsome, gladsome elves
On dripping spout and window-sill
Kept talking to themselves.

It pelted, pelted all day long,
A-singing at its work,
Till every heart took up the song
Way out to Back-o'-Bourke.

And every creek a banker ran,
And dams filled overtop;
"We'll all be rooned," said Hanrahan,
"If this rain doesn't stop."

And stop it did, in God's good time;
And spring came in to fold
A mantle o'er the hills sublime
Of green and pink and gold.

And days went by on dancing feet,
With harvest-hopes immense,
And laughing eyes beheld the wheat
Nodding o'er the fence.

And, oh, the smiles on every face,
As happy lad and lass
Through grass knee-deep on Casey's place
Went riding down to Mass.

While round the church in clothes genteel
Discoursed the men of mark,
And each man squatted on his heel,
And chewed his piece of bark.

"There'll be bush-fires for sure, me man,
There will, without a doubt;
We'll all be rooned," said Hanrahan,
"Before the year is out."

foreword

The old adage of "If you fail to plan then plan to fail" is particularly applicable to farmers when faced with a drought.

The drought of 2006 to 2008 was a real paradigm shifter for Tasmanian farmers. Our experience of drought since the 1950s in this State told us that it would last for 12 to 18 months, and we as farmers made decisions accordingly. Water supplies, fodder storages, crops grown and even the type of animals run and the balance of breeding stock to readily saleable livestock were all governed by what had happened during the past.

But this drought set new records for both duration and low rainfall, with most areas affected for up to five years and experiencing 250 mm (10 inches) less rainfall per year than the long-term annual average. The tried and true plans we had previously were no longer sufficient to cope with the new reality. This had a marked result on whole communities. People started to focus inward, social events ceased, and there was an air of desperation.

Although farmers are traditionally viewed as rugged individuals, we must be prepared to embrace help that is available to find a way forward. There are people out there that do care and can provide the resources, advice and services we need to cope with change both at a practical and an emotional level. The improved co-ordination of these services during this period was a really positive outcome that will hold us in good stead for future challenges. Their efforts must have made a difference because most of us are, after all, still on the land.

The change spiral:

Change is difficult and we all pass through the following stages of reaction and final acceptance of change. Understanding this natural process can make it easier to pass through the stages.

- ▼ Shock — "it can't be happening" — denial, anxiety and stress.
- ▼ Retreat — "last decade things were so great" — romantic notions of the past.
- ▼ Reaction — "things are different and I am not sure I can deal with this" — expressing the doubt and anxiety helps to move towards acceptance.
- ▼ Passive acceptance — "we just have to deal with it" — resignation without enthusiasm (feeling like a victim).
- ▼ Exploration — "interesting times, many possibilities, but what are the ground rules?" — enthusiasm without informed direction, confusion and sometimes panic.
- ▼ Challenge — "these are workable and exciting times" — the new is fully realised and possibilities become actualities, creativity is used to solve problems and work with the new.

...and then a new change will appear and the spiral will begin again...

So what lessons can we take from our new hard won experience? Foremost is the fact that drought is inevitable, so we must prepare ourselves to reduce the risks as much as possible. That is where this drought module can provide the basis of a new plan. Coping with drought conditions is not easy, it puts tremendous stress on everyone, people, animals, plants, and the whole environment. During the crisis is not the time to start making a plan, as it will be difficult to think rationally about the way forward, to look at your farm operation strategically and make the sorts of decisions that need to be made.

But, if you have done your homework, set yourself targets, based the plan on the best information available and then made decisions accordingly you will give yourself the best chance of coping with the one thing that is constant ... and that is change.

The best time to plan was yesterday, the next best time is today ... so don't put it off till tomorrow!

Brett & Ruth Hall
'Montlea', Oatlands

contents



introduction	Drought — tackling the risks	2
	The outlook	2
	Planning for drought	3
	Drought module	3
guidelines	Using this module	4
	Risk and opportunity	4
	Plan for success	4
	Factors to consider	4
building a plan	Family matters	6
	Climate variability	9
	Water	14
	Soil resources	18
	Stock, pastures and crops	21
	Finance	26
contacts and further reading	Contacts and further reading	31
appendices	Appendix 1: Drought Action Plan	37



introduction



Drought — tackling the risks

Drought and a variable climate are major risks to farming in Australia. During recent times the climate change debate has increased the focus and concern of the impact of drought on farm businesses, land and families.

Drought is a time of crisis for the land, its animals and its people. It is a critical testing time for sustainability, land management systems and the businesses that operate them. It will often determine whether an enterprise will survive and whether the productivity of the land on which it survives will be maintained.

Rest assured — the impact of drought can be minimised with careful planning and decision making.

The outlook

In Victoria and Tasmania researchers predict the frequency and spread of exceptionally hot and exceptionally dry years are likely to increase.

Projections indicate that:

- By 2010–2040, exceptionally low rainfall years are likely to affect about 10% of the region and occur about once every 12 years on average.
- By 2030, exceptionally low soil moisture years are likely to affect about 11% of the region and occur about once every nine years on average.

Source: Hennessy *et al* (2008) *Drought Exceptional Circumstances — An assessment of the impact of climate change on the nature and frequency of exceptional climatic events*, CSIRO, Bureau of Meteorology

Weather and climate — what's the difference?

→ Weather is what you get, climate is what you expect.

Weather is the day-to-day experience, climate is about long-term records, trends and averages.

Weather describes conditions over a short period of time — a 'snapshot' of the atmosphere at a particular time.

Climate is the sum or synthesis of all the weather recorded over a long period of time. It tells us the average or most common conditions, or extremes, or counts of events, or frequencies.

If weather is the watch then climate is the calendar.

Source: www.bom.gov.au





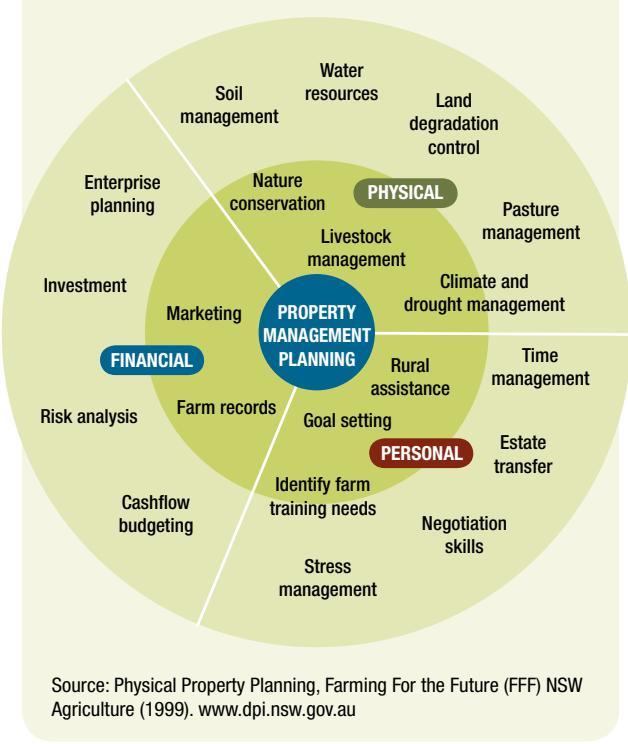
Planning for drought

Planning for drought is an important part of a bigger process often called ‘whole farm planning’ or ‘property management planning’ and some of the elements can be illustrated as shown in Figure 1.

A property management plan (PMP) is unique for each farm and the people involved. Each farm business will have different elements with unique emphasis and detail.

An effective plan will start by fully understanding the farm as a whole and then recognising, in this instance, where the risk and opportunities of drought present within each of the elements.

FIGURE 1 Elements of a property management plan



Drought module

This drought module has been developed under the Property Management Planning Framework (PMPF) for Tasmania, and comprises part of a larger package of planning modules that help form a base level PMP.

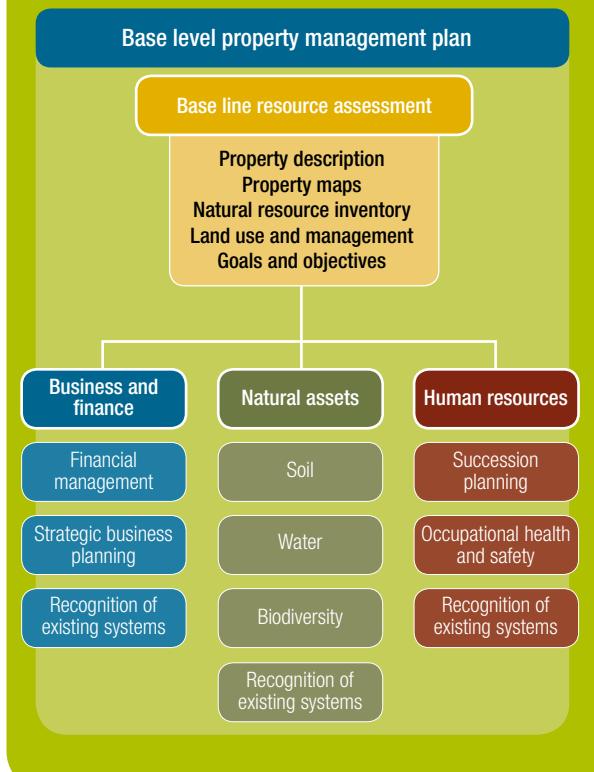
By working through each module you will be better able to gain a clear picture of the risks and opportunities within your farming business and prepare for the challenges and successes that lie ahead.

What is the Property Management Planning Framework (PMPF)

The PMPF was developed in recognition of a wide range of pressures related to private land management and a need for consistency and coordination in the development and delivery of property management planning programs in Tasmania. During June 2008 a Memorandum of Understanding (MoU) relating to a Property Management Planning Framework for Tasmania was signed between The Tasmanian State Government, The Tasmanian Farmers and Graziers Association, Cradle Coast NRM, NRM North and NRM South.

A base level Property Management Plan (PMP) as recognised by the PMPF is constituted by completing a Baseline Resource Assessment plus the completion of the Soil, Water and Biodiversity modules under the natural assets planning unit (see Figure 1). Only by completing all three natural asset base modules can a clear picture of the natural assets for a property be determined. This ‘clear picture’ is essential for landholders to manage their natural resource for the best economic and environmental outcomes.

Additional modules such as this drought module can be completed by landholders before or after the base modules have been completed.



guidelines

Using this module

Droughts are a risk to be managed. Droughts are not a problem to solved. Just like death and taxes, you can be sure that droughts are inevitable.

To survive droughts farmers need a well-planned risk management strategy that allows them to adapt as conditions and events changes around them.

Risk and opportunity

Calculated risk and informed opportunities can trigger well-timed decisions and management actions.

Unmanaged risk can cause anxiety and even physical and mental illness. Unrecognised opportunities are lost possibilities for land management, business success and personal achievement.

Drought and a variable climate are major risks or challenges Tasmanian farmers currently face. Although we cannot control climate and weather we can control how we respond and adapt to it.

“God grant me the serenity to accept the things I cannot change, the courage to change the things I can and the wisdom to know the difference.”

Source: Karl Paul Reinhold Niebuhr, American theologian

Plan for success

Before you can make any plans you need to understand a little about yourself and what makes you tick. This may sound easy in theory, but many people find it very challenging to look deep inside themselves and consider what it is that makes them who they are.

In the context of farming it can be helpful to think about why it is you are farming and what it is you hope to get out of your farm business — your **VISION**. The answer to these questions will depend very much on your **VALUES** or the principles on which you, as a person, operate.

Examples of personal values may include: honesty, family, self respect, being close to the land, creating a tangible product through meaningful work and so on.

When you have determined your core values and your reasons for farming — your **PURPOSE** — it will be much easier to develop your short- and long-term **GOALS**, or what you want your farm business to be over a given period of time (see Figure 2).

A **SMART** goal is one that is:

- Specific
- Measurable
- Achievable
- Realistic
- Timeframed.

Developing a plan that takes into consideration all the factors that will affect the potential outcome allows you to identify the steps required to achieve your goals.

Understanding the unique goals for your farm business during a drought will allow you to develop a risk management plan that will better allow you to adapt to events as they occur.

“Planning is bringing the future into the present so that you can do something about it now.”

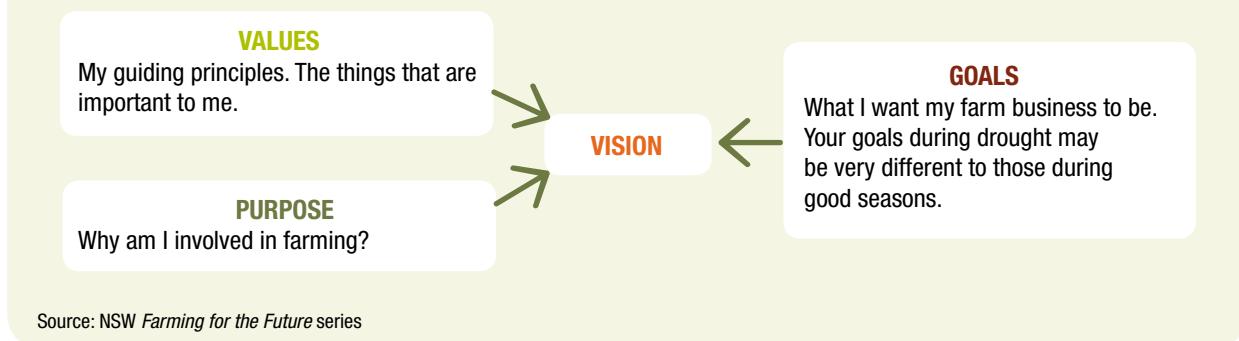
Source: Alan Lakein, author

Factors to consider

The module contains sections that highlight numerous considerations, alternatives, tools, risks, opportunities and solutions. This can help you identify your goals and meet the challenges presented during times of drought. They include:

- Family matters
- Farm climate variability
- Farm water
- Farm soil resources
- Farm stock, pastures and crops
- Farm finance.

FIGURE 2 A planning context



Source: NSW *Farming for the Future* series



Each section provides some background information to get you thinking about your goals in light of each issue and the factors to consider when planning for drought.

The tables provided will help you identify your goals, assess your risks and opportunities and build, qualify and evaluate your drought management plan.

As you work your way through each section, fill in the tables by answering each question. Points for consideration have been included to help you work through the process.

After completing each section, consolidate your thoughts into an action plan using Appendix 1 — Drought action plan.

Remember: Planning is a dynamic process that requires regular review and adjustment as your business and the environment around you evolves and changes.

Guiding principles

There is usually one vision, a few long-term goals, many short-term goals and even more actions to achieve the short-term goals. Each action, goal and vision will be linked and flexible depending on ever-changing circumstances.

For you to achieve true satisfaction when you reach your goals, they must be based on your personal values. Always think about your values, when setting your goals (see Figure 2).

An example vision:

My vision for our farm business is that it will provide me and my family with an adequate income to meet our needs and a healthy lifestyle that encourages our children to develop a love and respect for the natural world around them. I want the farm business to be operating in a way that is economically and environmentally sustainable in the long term.

An example long-term goal for drought:

During drought I want to maintain the viability of the farm business without undue stress on myself or my family. I want to protect the farm's natural resources through proactive management of water, pastures, crops and livestock. I want to make timely decisions that protect the financial stability of the business and allows the business to reinvest again when drought ends.

An example short-term goal for drought:

At the start of October this year I will match my stocking rate to the predicted water and feed reserves available for the following three months.

Strategic drought management involves:

- ✓ Reflecting on your previous experiences
- ✓ Focusing on the things you can change or influence
- ✓ Looking for windows of opportunity to adopt management practices that will be profitable during and after drought
- ✓ Continual monitoring of your position, performance and outlook

Source: 'Plan Pack' Drought Planning Tool, 'Stock Plan' NSW DPI

The purpose of this drought module

→ This module, while not claiming to be a silver bullet, offers practical and realistic solutions, tools and approaches for use in times of drought. The module can help you deal with and overcome many of the challenges and difficult decisions that drought presents. It highlights the principles, risks and opportunities that will help you make strategic decisions and plans during times of drought.

After working through this module you will be able to:

- Identify the drought-related risks and opportunities relevant to your farm business.
- Recognise the important contribution family and friends make to coping during drought.
- Understand the kind of climate and weather information that may be available and useful to support decision making during drought.
- Consider and compare water availability and quality with respect to its end use.
- Identify the key elements that protect soil and manage groundcover during drought.
- Establish some underlying principles relevant to your operation to better manage livestock and pastures throughout drought.
- Identify some crucial financial tools and adjustments to better manage financial risk during drought.
- Develop a tailored action plan that will ensure your business is better prepared when drought occurs.

family



Family matters

Families are critically important during times of stress. Consider them before and alongside the technical considerations to ensure the family members driving the plan are well 'maintained' and ready to make and carry out often difficult decisions.

Drought increases both the financial and emotional stress in farm families. Yet it is during such times farm families are expected (and need) to be most resilient, adaptable and resourceful.

Agriculture is a unique industry where the home and family and the business are usually so closely linked that making farm business decisions is often difficult with high emotional stakes.

This section is presented first in this module because health and wellbeing is fundamental and should be the first step when managing farms through drought.

Friends, family, fellow farm workers and local community are towers of, often untapped, strength during tough times. The support required and given by family, friends and acquaintances is unmeasured, often unexpected, two-way and very much underestimated in its capacity to help and heal.

"Even though the Government provided technical and financial help during the past drought, the thing that really got me through (and still is!) was getting together with family and friends informally and at organised events. It provided me with a distraction from the pressures that come with drought and showed me that I was not the only one finding it hard sometimes."

Source: Tasmanian farmer



Family matters — goals, risks and opportunities

Question:	Things to consider:
<p>1. What are your personal and family limitations or boundaries in terms of:</p> <ul style="list-style-type: none">• Time• Off-farm commitments• Vulnerabilities• Capabilities• Financial needs?	<ul style="list-style-type: none">• Define the needs of the whole family and the time resources and capabilities they have. This will ensure plans and expectations can be realised with minimal stress.• Write a list of the emotions and feelings that, in the middle of a drought, make decisions hard to identify and carry out.• Defining ‘financial need’ as apposed to ‘financial want’ is a powerful way to focus effort during challenging times.

Notes: *Children at boarding school, experience, skill and finances may limit ability to develop off-farm investments.*

Share these limitations with family, friends or support networks to find solutions.

Question:	Things to consider:
<p>2a. What plans do you have to regularly spend time with family and friends and to relax both on and away from the farm?</p> <p>b. Is there someone who can look after the farm for a few days or weeks?</p>	<ul style="list-style-type: none">• Plan at least one long holiday each year away from the farm. A holiday needs to be planned early and does not need to be expensive — staying with friends and camping is cheap.• Make a list of friends you can catch up with often. This ensures social activities will happen and many farmers find social events provide a great focus when things are tough.

Notes: *School holidays, long weekends, camping, tennis, rock climbing, pony club, motorbike trips.*

Question:	Things to consider:
<p>3. What plans do you have to regularly involve family in the planning and running of the farm?</p>	<ul style="list-style-type: none">• Writing down and discussing clear, specific goals and actions and placing defined time frames around them will help to reduce the influence emotions have when making tough decisions during a drought.• Allowing others to be involved in decision making shares the responsibility — and the burden.

Notes: *Monthly meetings to provide updates and develop plan for next month.*

family

Family matters — goals, risks and opportunities

Question:

- 4a. Who will help develop and implement strategies and decisions during drought?
b. Do you have someone you can share your fears/feelings with during stressful times?

Things to consider:

- There are numerous support and advice networks (see contacts and further reading section) and having contact details easily at hand allows for early and timely contact that can provide vital information for decision making.

Notes: *Accountant, farm advisor, good friends, neighbours, rural financial counsellor, priest, doctor, lawyer.*

Question:

5. How will you record the details of the strategies and decisions so that other people can also be involved in carrying them out?

Things to consider:

- At the end of this module is a template that can be used as a guide for writing down plans and actions (see Appendices 1 and 2). Involve others in developing the guiding principles statement and place it on the fridge.

Notes: *Develop operational plan on the computer with a hardcopy file to be kept in farm office and copy with lawyer or keep a notebook that all the family has access to so they can help develop and modify the strategies and decisions over time.*

Question:

6. What does your calendar of events look like for the next 12 months?
(Is there a balance between work and play? And have you planned adequately so you can fit it all in?)

Things to consider:

- There are many different formats for plans the right way is the way that works for you.

Notes: *Farm operations — shearing, lambing, harvest and sowing.*

Personal activities: sports, hobbies.

Family/social activities: holidays, BBQs.



Climate variability

It is impossible to predict the length of a drought. However, information is available on the normal patterns and variations that have occurred during the past. The course of previous droughts can provide some useful indications, landmarks or triggers for action in a current drought plan.

The climatic information that can be monitored and measured directly on a farm, combined with published information, predictions and probabilities provides a fundamental understanding of the risks and probabilities required for strategic decisions to be made in times of drought. Available information will include seasonal forecasts, median or average rainfalls, past variabilities and extremes.

Recording climate and weather information and tracking these against when specific actions and decisions need to be made will allow timely responses. Timely and calculated decisions reduce the risks, costs and anxiety that can result from lower-than-average rainfall.

Australian farmers have, to date, largely adapted to a variable climate. The climate change debate brings expectations of greater changes to average rainfalls and temperatures and in the frequency and severity of floods, droughts and fires. Strategic adaptations to these changes will result from a better understanding of available data and predictions and applying this to individual landscapes, enterprises and personal situations.

Forecasting — what is the point?

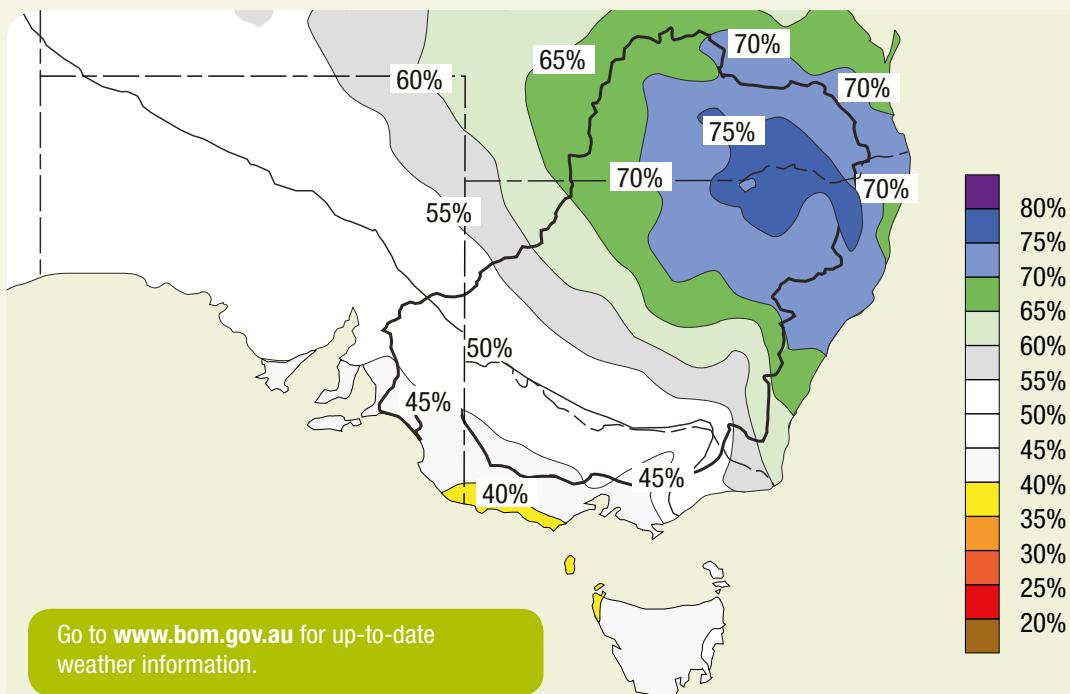
Well-understood seasonal predictions and probabilities of expected rainfall can support conservative, low-risk plans for a coming season. For example, if an average season is predicted two-thirds of your average carrying capacity and cropping could be planned. Or if a poor season is forecast, one-third of carrying capacity and cropping may be planned (see Figure 3).

Past yields for different enterprises under different conditions can provide a benchmark for farm performance for the forecast season ahead.



climate

FIGURE 3 Three-month rainfall outlook for south-east Australia. The chance of exceeding median rainfall over the next three months.



Source: www.bom.gov.au, select 'Climate Services', then 'Seasonal Outlooks', then 'SE Aus'

What is the 'median' rainfall?

→ The MEDIAN (often called the 50th percentile) is the value that is in the middle when all the values are ordered. Median rainfall provides a better estimate of a typical measurement.

For example a median of 10 is illustrated in bold below:

150, 85, 67, 40, 16, 15, 15, 12, **(11, 9)**, 7, 7, 6, 5, 5, 4, 2, 1, 1

The average of these figures is 23 and shows how the large numbers can skew our understanding. Rainfall data is often presented as a median or 50th percentile to provide a more typical representation or a more likely value.

In many parts of Tasmania medians and averages are quite similar values.

"Don't wait for the light at the end of the tunnel. Walk to the end of the tunnel and turn the bloody light on yourself."

Source: Sara Henderson



Climate variability — goals, risks and opportunities

Question:	Things to consider:
1a. How do you access up-to-date weather and climate information relevant to your area? b. How do you monitor rainfall on your farm?	<ul style="list-style-type: none">Interpreting the available information so it is meaningful in terms of identifying trigger points can be time consuming, but is crucial to improving the odds of successful decision making during drought.

Notes: *websites (www.bom.gov.au), television, radio*

Question:	Things to consider:
2a. Which seasonal forecasts can indicate the climate extremes and variability that may occur in the short term? b. What are the local annual rainfall averages or medians for your area? c. What information is the published short-term and seasonal forecasts based on?	<ul style="list-style-type: none">Compare the historical rainfall and temperature data available for your farm with that of the local area and that used for seasonal forecasting.Climate risks can be reduced and decisions clearly defined with an astute understanding of what the broader forecast predictions mean for your local area and your farm. So spend the time required to:<ul style="list-style-type: none">Know your way around the Bureau of Meteorology (BOM) website.Collect and record your own farm weather records.

Notes: *websites (www.bom.gov.au), television, radio*

Question:	Things to consider:
3. How does the probability data influence the decisions you have to make in your farm business?	<ul style="list-style-type: none">Climate forecasts predict how rainfall or temperature in a coming season is likely to be different from the average. These forecasts are calculated over a long period of time.Seasonal forecasting is usually for the next three-month period. An optimistic forecast, for example, could be between 60–80% chance of above median rainfall for the next three months.

Notes: *Helps with stocking rate decisions and cropping percentages.*

Question:	Things to consider:
4a. List the factors that affect the decisions you make about your enterprises each season. b. What outlook time period is realistic for making changes to existing enterprise plans? c. What is the limit (high or low) for each factor that needs to be reached before a decision is implemented?	<ul style="list-style-type: none">Different enterprises have different levels of climate risk and so different trigger points and decisions are required.Critical periods of rainfall are required for activities to begin on time and continue through to completion which is why identifying planning periods for each enterprise will help to analyse risk and make timely decisions.Compare your (or local) past production figures with rainfall records during the past 10 years. These can often show that rainfall and profit are not necessarily directly proportional.

Notes: *Minimum rainfall required during August–September to fatten 300 lambs in Back paddock is xxml.*

climate

Climate variability — goals, risks and opportunities

Question:	Things to consider:
5. Identify critical dates for enterprises and areas on the farm that if sufficient rainfall (or other factor) is not received will trigger specific decisions and actions to take place.	<ul style="list-style-type: none">Trigger points that include set dates, set actions and are based on set climatic assumptions can be adjusted easily according to day-to-day conditions. Revisit, monitor and adjust plans regularly so that actions are taken on time.
Notes: <i>If by Hobart show day we haven't received average rainfall we will start to off-load cull ewes.</i>	
6a. If you run livestock, which livestock are likely to suffer temperature (heat or cold) stress during drought?	<ul style="list-style-type: none">Heat stress in cattle and sheep may be an increased consideration in Tasmania in the future.
b. What actions could you take to reduce this risk?	
Notes: <i>Lightweight weaners during winter are at risk of stress and can be supplementary fed to maintain condition.</i>	
7. How could you manage areas on your farm differently so as to reduce evapotranspiration and increase the effectiveness of rainfall?	<p>Evapotranspiration:</p> <ul style="list-style-type: none">Rainfall is most effective if it can be stored in the soil and protected from evaporation by groundcover. Following sections details these points further. <p>Effective rainfall:</p> <ul style="list-style-type: none">Have you mapped areas on your farm according to their aspect, slope, soil type and other factors that affect their resilience to drought (see page 19 soil management)?
Notes: <i>No-till sowing, stubble retention.</i>	

“Unless we change our direction, we are likely to end up where we are headed.”
Source: Confucius



Drought — textbook definitions

→ Drought can be experienced and hence defined in different ways. There are essentially four types of drought:

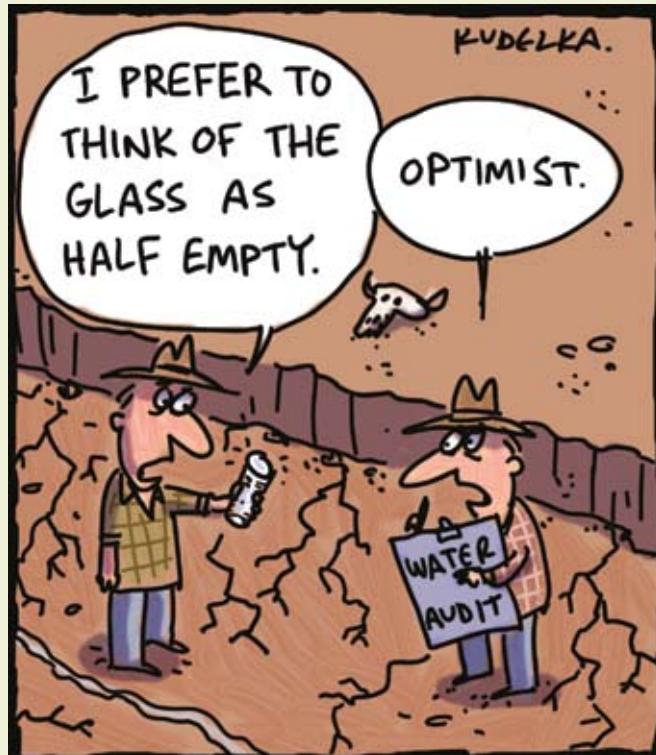
- **Meteorological drought:** a period of months to years when atmospheric conditions result in low rainfall. This can be exacerbated by high temperatures and high evaporation, low humidity and desiccating winds;
- **Agricultural drought:** short-term dryness in the surface soil layers (root-zone) at a critical time in the growing season. The start and end may lag that of a meteorological drought, depending on the preceding soil moisture status;
- **Hydrological drought:** prolonged moisture deficits that affect surface or subsurface water supply, thereby reducing streamflow, groundwater, dam and lake levels. This may persist long after a meteorological drought has ended;
- **Socio-economic drought:** the effect of elements of the above droughts on supply and demand of economic goods and human wellbeing.

Source: American Meteorological Society. Meteorological drought – policy statement. Bulletin of the American Meteorological Society 78, 847 – 849 (1997)

A wise farmer once said:

"To have a sustainable enterprise... it's simple..... just remember:

- *Distant pastures are forever green.*
- *When all is said and done there is a lot more said than done.*
- *Make sure your reasons are not excuses.*
- *Build wealth.*
- *Plan to leave the land in better shape than when you got it.*
- *The only advantage of not planning is that failure comes as a complete surprise and is not preceded by periods of worry and depression.*
- *Don't worry about the weather you have no control over it but you have control of its effects.*
- *Keep your eye on the ball.*
- *If you concentrate on things over which you have no control you are wasting your time.*
- *And at the end of the day if you don't do your job well...*
- *It could be a good day for walking."*





Water

A water supply/use budget is an essential planning step in drought management.

An audit of existing water resources including dams and direct takes, bores, irrigation schemes and water reuse systems combined with a detailed overview of current water usage is the first step.

During drought stock require more water as their feed is generally more fibrous and their tolerance to low water quality may be reduced as they become weaker.

Water quality can be significantly affected in times of drought and drought recovery. This is due to many factors including reduced groundcover, erosion, evaporation causing concentrations of salts, ground water influences, and/or the use of alternative sources.

Make sure you monitor farm water quantity and quality during drought.





Farm water — goals, risks and opportunities

Water quantity

Question:	Things to consider:
1. What are the capacities of all your storages (dams and tanks) on the property?	<ul style="list-style-type: none">Consider the relevance of seepage, evaporation and other losses from dams and strategies that can reduce these. Also consider siltation of dams since their volume was measured. Various guides are available regarding daily water requirements see contacts and further reading for more information.Consider rating these sources (good, average, poor) as this will help in assessing the real value of the water reserves, and usability. This rating may be an overall palatability rating considering salinity, turbidity, general contamination etc.

Notes: *The combined capacity of all my storages is 500ML.*

Question:	Things to consider:
2. What are the daily water requirements of livestock, crops and other water needs on the farm?	<ul style="list-style-type: none">Compare your water resource capacity against your animal and plant and domestic requirements.

Notes:

Question:	Things to consider:
3a. How effective is the rainfall stored in the soil on your farm? b. How efficiently can rain infiltrate your soil?	<ul style="list-style-type: none">Run-off after rain is good when it is surplus to what the soil can hold, store and make available to plants — in other words plan to store water in the soil first and then in dams.Rainfall is most effective when it can infiltrate well and be held in the soil. Infiltration rates and soil water holding capacity depends on many factors including rain intensity, groundcover, organic matter, slope and soil chemistry.

Notes:

Question:	Things to consider:
4. What will be the trigger point at which you reduce stock numbers to match water availability?	<ul style="list-style-type: none">When identifying critical dates to reduce stock numbers to match water availability consider:<ul style="list-style-type: none">Stock sale dates as animals have to be carried from one sale to the next.Carcass specifications that sale animals need to meet.Condition of animals for transport.

Notes:

water

Farm water — goals, risks and opportunities

Question:	Things to consider:
5. What water supply and storage plans do you have in place?	Strategies for: <ul style="list-style-type: none">• alternative water supply.• water efficiency and infrastructure.• emergency water supply.

Notes: *Purchase water, install additional tanks on sheds.*

Question:	Things to consider:
6. Do you know of other water resources available for your farm and the likely future of these water resources?	<ul style="list-style-type: none">• CSIRO's Tasmania Sustainable Yields Project (TasSY) has developed an assessment of the current and likely future extent and variability of surface water and groundwater resources in Tasmania. www.csiro.au/partnerships/TasSY• Contact the DPIPWE's Water Management Branch for details on water management plans that may be available for your area.

Notes:

Water quality	
Question:	Things to consider:
<p>7a. How often do you test the water quality (particularly salinity) in your dams and water storages/supply?</p> <p>b. Rate all your water resources in terms of quality and palatability considering salinity, turbidity and other general contamination.</p>	<ul style="list-style-type: none">• Salinity levels often rise as dams recede.• The risk of blue green algae is higher after rains that follow dry times.• Specific requirements or tolerances for different classes and types of stock and crops.• The type of testing and analysis can depend on the end use.• Rating your water resources and matching them to use will help to assess the real value of the reserve and their usability.

Notes:

Question:	Things to consider:
<p>8a. What protection mechanisms do you have in place to prevent contamination (for example sediment and faeces) of water sources?</p> <p>b. Do the catchment areas of your dams and riverbanks have sufficient groundcover and how will you maintain this during drought?</p>	<ul style="list-style-type: none">• Off-stream watering points or hardened/fenced drinking points.• The role of groundcover in filtering run-off so sediment and contaminants do not reach waterways.• The location of sacrifice paddocks/feedlots so run-off does not reach dams or rivers and buffer strips of groundcover below sacrifice/feedlot paddocks.

Notes: *Use of troughs instead of dams and rivers.*



“During the drought I thought I had it all pretty well planned — I had reduced my stocking rate to 30% and the dams still had a fair amount of water in them. One morning however I found several stock dead and dying around one of the water holes. It turned out that the water had become too salty due to evaporation. I will now regularly test the water quality in my dams, particularly in a drought.”

Source: Tasmanian farmer





Soil management

Even small management changes can significantly increase soil protection and health during and beyond a drought.

The losses from soils exposed during drought can be significant in terms of productivity and restoration costs.

Soil erosion risk by wind or water is affected by a number of often overlapping variables including:

- Soil type
- Tillage
- Slope
- Aspect
- Groundcover
- Sodicity
- Soil organic matter.

Groundcover protects the soil against erosive actions including raindrop splash, run-off, and wind. Groundcover includes plant material, rocks and stones, litter, biological soil crust and small shrubs and trees and contributes to organic matter in the soil.

"Soil erosion costs the earth!"

Source: Declan McDonald (pers comm)

Sufficient groundcover and soil organic matter increases infiltration, reduces evaporation, reduces loss of topsoil and nutrients and increases the response to even small amounts of rainfall. This improves the rate of recovery for pastures following the drought.

As the land dries strategic withdrawal of stock from different areas can be based on 'land capability'. For example, Class 5-7 land is likely to be steeper country, more vulnerable to drying and therefore it can be advantageous to remove stock from this country early during a drought.

Land capability and drought management



Tasmania's Land Capability Classification System is based on physical limitations of land including slope, aspect, climate, soil type and erodibility.

The classification system comprises seven classes ranked in order of increasing degree of limitation in relation to agricultural use. Class 1 is the best land and Class 7 the poorest. Class 4 is considered marginal for cropping activities.

A map of land capabilities based on slope, aspect and soil type and an intimate knowledge of your own land can greatly assist sound management decisions and the identification of trigger points for the different areas and enterprises on the farm.



Farm soil management — goals, risks and opportunities

Groundcover and soil protection

Question:	Things to consider:
1. What is the minimum % groundcover that you can tolerate for the different land capabilities on your farm?	<ul style="list-style-type: none">DPIPWE recommends maintaining groundcover above 70% to prevent the detachment of soil particles and initiation of erosion. On erodible soils or high gradients, such as north-facing slopes in south-eastern Tasmania, groundcover needs to be maintained at levels greater than 80%.A map of your farm's land capability is one of the most vital elements of a property plan, not only for drought but for all land and productivity decisions.

Notes: *If there has not been sufficient rainfall by late September I do a pasture check. If groundcover is down to 75-80% I make a plan to reduce the stocking rates on my run country. I check feed levels in the better country and assess how many I can carry till next sale time.*

Question:	Things to consider:
2a. Do you know the species mix and the seasonal growth patterns of the species in your pastures? b. How do you make decisions on stocking rates to maintain groundcover and protect the soil?	<ul style="list-style-type: none">Assessing pastures for groundcover and species mix regularly and fencing to land capability allows grazing management and stocking rates that utilise pastures most effectively while encouraging persistence.Perennial pastures and rotational grazing can assist in soil stabilisation and pasture improvement.

Notes: *My knowledge here is limited. Investigate options for involvement with pasture improvement group or workshop.*

Question:	Things to consider:
3. How do you determine when to develop drought lots (sacrificial areas) to prevent overgrazing and possible land degradation?	<ul style="list-style-type: none">Locate drought lots in areas that can withstand a degree of damage and be relatively easily rehabilitated.Drought lots should be based on soil vulnerability to erosion, run-off potential into river or dam, slope, available water and shelter.Any groundcover in sacrifice paddocks will soon be depleted and will need to be resown after drought.

Notes:

Farm soil management — goals, risks and opportunities

Question:	Things to consider:
4. What additional fencing could you undertake to maximise management of your paddocks during drought?	<ul style="list-style-type: none"> Identify and fence vulnerable so they can be managed more sensitively to maintain groundcover and prevent soil loss and erosion.
Notes: <i>North-facing slopes and other erosion-prone areas are fenced to allow stock exclusion during drought.</i>	
Question:	Things to consider:
5. How do you monitor your soils to allow for proactive management during drought?	<ul style="list-style-type: none"> Soils with high levels of organic matter are more effective at maintaining water in the soil for longer periods and improve the effectiveness of rainfall. Carbon sequestration initiatives and incentives may be available. Sustainable levels of organic matter and groundcover: <ul style="list-style-type: none"> Greatly improve the effectiveness of any rainfall. Significantly reduce evaporation rates. Improve recovery of productive pastures.
Notes: <i>Test soils for organic matter content and manage them to maintain healthy levels.</i>	
Question:	Things to consider:
6. How do you maintain biodiversity across vulnerable areas of the farm?	<ul style="list-style-type: none"> Wind erosion can be minimised and groundcover improved through high species diversity in vulnerable areas. This also improves infiltration rates and soil water holding capacity.
Notes:	

stock, pasture and crops



Stock, pasture and crops

Managing stock and pastures through drought requires that objectives and strategies are stated in terms of numbers, dates and/or dollars.

Determine the strategies or trigger points well in advance of when the decision has to be made to ensure they are based on clear rational thinking and not when under the pressure of a prolonged drought. Animal health and nutrition is vital during drought when stock are more vulnerable. Skilled stock managers anticipate the needs of their stock and plan well ahead to prevent problems rather than spending a lot of time curing them.

Stock numbers, flock structure and genetics compared with feed requirements, availability and grazing systems provide a baseline to plan drought strategies for stock management. Sometimes you need to spend money to make money and

deliver the best chance of maximising returns. There is no money in dead stock.

Drought-related risks for cropping include poor crop development and low yields, increased insect infestation, low resistance to plant disease, and the possibility of wind erosion of highly erodible soils.

A crop's susceptibility to drought (from emergence to maturity) can be managed by minimising the number of tillage or cultivation passes.

No-till minimises soil moisture loss from the soil's surface. It enhances beneficial soil physical properties such as increased infiltration rate, maintenance of soil macropores, and reduction of surface run-off during rainfall, thus increasing soil moisture storage.



stock, pasture and crops

Farm stock — goals, risks and opportunities

Stock management

Question:	Things to consider:
<p>a. What are the critical dates at which time (if little or no rain has occurred) drought strategies will commence?</p> <p>b. What other critical measures (for example, pasture feed availability) can indicate or trigger drought strategies to commence?</p>	<ul style="list-style-type: none">Consider trigger points or indicators for drought action in measurable terms (for example, millimetres of rain, kilograms of dry matter per hectare).Drought actions are often timed according to market dates, i.e. when stock can next be sold.The periods between markets are critical in identifying manageable stocking rates that reflect the limitations of pastures, feed availability, water supply and finances.

Notes: *If there hasn't been a good rain by Hobart Show day then it is time to take the first drought action and sell some stock.*

Question:	Things to consider:
<p>2. On the farm what are the current:</p> <ul style="list-style-type: none">Stock numbers?Flock or herd structures?Genetic groups and their value?	<ul style="list-style-type: none">Stocking rates for different areas of the farm should be a match between:<ul style="list-style-type: none">Feed requirements of stock.Feed availability in a pasture.Maintaining the desired botanical composition.The grazing management system that is in place.

Notes: *I need to expand my knowledge regarding stock composition and management. Investigate options to source relevant information or workshop support.*

Question:	Things to consider:
<p>3. If stock need to be sold:</p> <ul style="list-style-type: none">Which stock will be sold first?Which stock will be preferentially fed?Which stock could be agisted?	<ul style="list-style-type: none">The structure and genetics of the stock on the farm are the keys to strategic selling, feeding or agistment.Having readily identifiable and saleable groups outside of your core breeding stock allows swift action.A planned disposal of stock must ensure the remainder is appropriate for an efficient recovery after drought.Industry and Investment, NSW 'Stockplan' is one example of a program that can project feed demands as well as flock/herd structures during and after drought. See the contacts and references section for more information on the Stockplan Series of information products.

Notes: *I have a mob of ewes that is in pretty good condition to sell at the 'sale yard or Auctions Plus'. Their genetics do not do well on my country, they're dry and they should fetch a good price at sale time. I can also shear and sell 200 older wethers — they will not get a good price but they are not worth feeding in the long run.*



Farm stock — goals, risks and opportunities

Question:

4. How will you determine the length of time pastures can supply feed before supplementary feeding or destocking needs to take place?

Things to consider:

- Pasture assessment in terms of species mix, groundcover and food value are key to effective and productive management of pastures through drought times.
- ‘Prograze’ is a training program that provides tools to assess and manage pastures. More information can be found in the contacts and references section.
- Possible cropped areas where time on and time off (for example, 2hrs/day for a mob together with supplementary feeding).

Notes: *Pasture budgeting using regional benchmarks for pasture growth rates and livestock requirements.*

Question:

5. What are the logistics of supplementary or drought lot feeding?

Things to consider:

- Drought lots (sacrifice areas) need to be carefully planned, located and costed.
- Storage requirements for feed.

Notes:

Question:

- 6a. What are the feed and water requirements for any retained stock?
b. How will I access suitable feed for retained stock?

Things to consider:

- Feed budget tables that show rations required per head, per type of stock, per condition score, per level of pasture available.
- Feed tests as a basis for comparing and buying feed alternatives.
- Tonnage and cost of feed required.
- Order feed with plenty of lead time for delivery.
- Gain advice from a specialist animal health nutritionist.
- Using feed tests as a basis for comparing and purchasing fodder alternatives.

Notes:

Question:

7. Are there animal health-related activities that may only be undertaken in drought times that reduce risks and improve returns on stock, for example:
• Pregnancy scanning.
• Supplementary vitamins and feed blocks.

Things to consider:

- Remove dry ewes to sell or to lower-quality feed area.
- Minerals, vitamins and extra nutrition assists stock during times of stress.
- Start supplementary grain feeding to maintain stock condition rather than feeding only when stock reach poor condition.

Notes:

stock, pasture and crops

Farm crop — goals, risks and opportunities

Crop management

Question:	Things to consider:
8a. How much and when is rainfall required before sowing? b. What is the stored soil moisture and likely moisture during the cropping phase?	<ul style="list-style-type: none">Available water use efficiency models are available to predict the yield responses to water at different development stages of the crop.
Notes:	
9a. What trigger points will determine whether to sow a crop dry or not? b. What are the optimum sowing dates for different crops and the potential yield losses after these dates?	<ul style="list-style-type: none">Soil profile moisture reserves.Time of year and probability of rain.Cost of production and expected returns.Availability of irrigation.
Notes:	
10. If no rain falls during the growing period what are the yield estimates and dry matter potential?	<ul style="list-style-type: none">Weigh up the options of harvesting, grazing or cutting for hay or silage?
Notes:	
11. What other crop management methods could improve crop yield potential and resource (soil and water) conservation?	<ul style="list-style-type: none">Groundcover can be protected through practices such as stubble retention, direct drilling or no-till. Leave sandy banks uncultivated/uncropped.Straw mulch within beds, rows or contour drains (in intensive cropping situations).
Notes:	



Get it in writing

"We found cattle agistment was more readily available than sheep agistment, so we sent cows and calves away and this let us reduce our stocking rate over the whole property to help maintain groundcover.

Inspection of the agistment area showed that our cattle would fatten there. Subsequent to our stock arriving the owner decided to also agist a few thousand wethers on the same paddocks. By the time we made the next inspection six weeks later the stock had lost condition, had poor calves and had not got in calf for the next season.

Despite all the budgeting beforehand, it turned into a financial disaster! So in future we will use a signed contract that specifies all the details before entering into any agistment."

Source: Tasmanian farmer



Making the hard decisions early

"Not only were we going to be short of feed but water supplies were not good either. With no rain the decision was made to sell all the cattle from the property and free up country for the sheep. This was a tough decision to make and after months of anxiety about selling these cattle we finally did it.

That night, after the cattle had been sold, was the first night of decent sleep I had had in months! It was not having to worry about them.

Why was the decision made to get rid of the cattle?

1. *Cattle are harder to manage than sheep, bogging up low waters, putting pressure on fences that are as new as they could be,*
2. *The figures for sheep returns are greater than those of cattle,*
3. *They were still in good condition and by making the decision early we had a saleable product.*

As it turned out it was a good decision — people who hung onto their cattle lost cows and those that survived were in such poor condition that they failed to get back into calf the following year. This additional lost production further impacted on their finances.

Next time I will act even sooner (stick to the plan) and lose less sleep!"

Source: Tasmanian farmer

finance



Finances

During droughts most farmers lose money. Reducing the loss is the key to success. Successful farmers plan, set goals and minimise these losses and take advantage of situations when the drought subsides or is over.

Off-farm income sources are often used to finance the core business during drought. Debt management will affect long-term viability. Feasible money borrowing in light of changing earning capacities is a major consideration.

Short-term options can provide significant relief, such as debt restructuring, tax breaks and deferment, interest rate subsidies, drought relief packages and selling capital items that are not producing a return.

Implementing succession plans and/or changes in farm business structure also can lead to positive changes for all family members.

As with the people and natural resources that make up the farming business, keep the long-term financial picture clearly in view to ensure the continued and sustainable viability of the farm business.

"Traditionally farmers are the 'provider' in most farming families in Australia. Our role is our 'reason for being' and one we undertake willingly and responsibly. During drought it can feel like this role is taken away through no fault of our own."

"Not being able to provide enough food and water for our livestock, enough income to support our family and employees, and seeing the environment suffering, makes us feel like failures and our 'self worth' hits rock bottom."

"When this happens it can really affect our ability to make decisions and react in the best way based on what information we have before us. Every decision has a financial cost. Having a good plan and sticking to it can help the process when things get tough."

Source: Tasmanian farmer



Gaining a clear picture of your financial position



Do you understand the financial ratios, the long-term trends for your businesses and how a drought impacts them?

Liabilities to income — establish your ability to finance debt in relation to the income you generate.

Cost to income ratios — establish ways to improve this ratio. Reduce costs and/or increase income through better prices (increased quality or quantity).

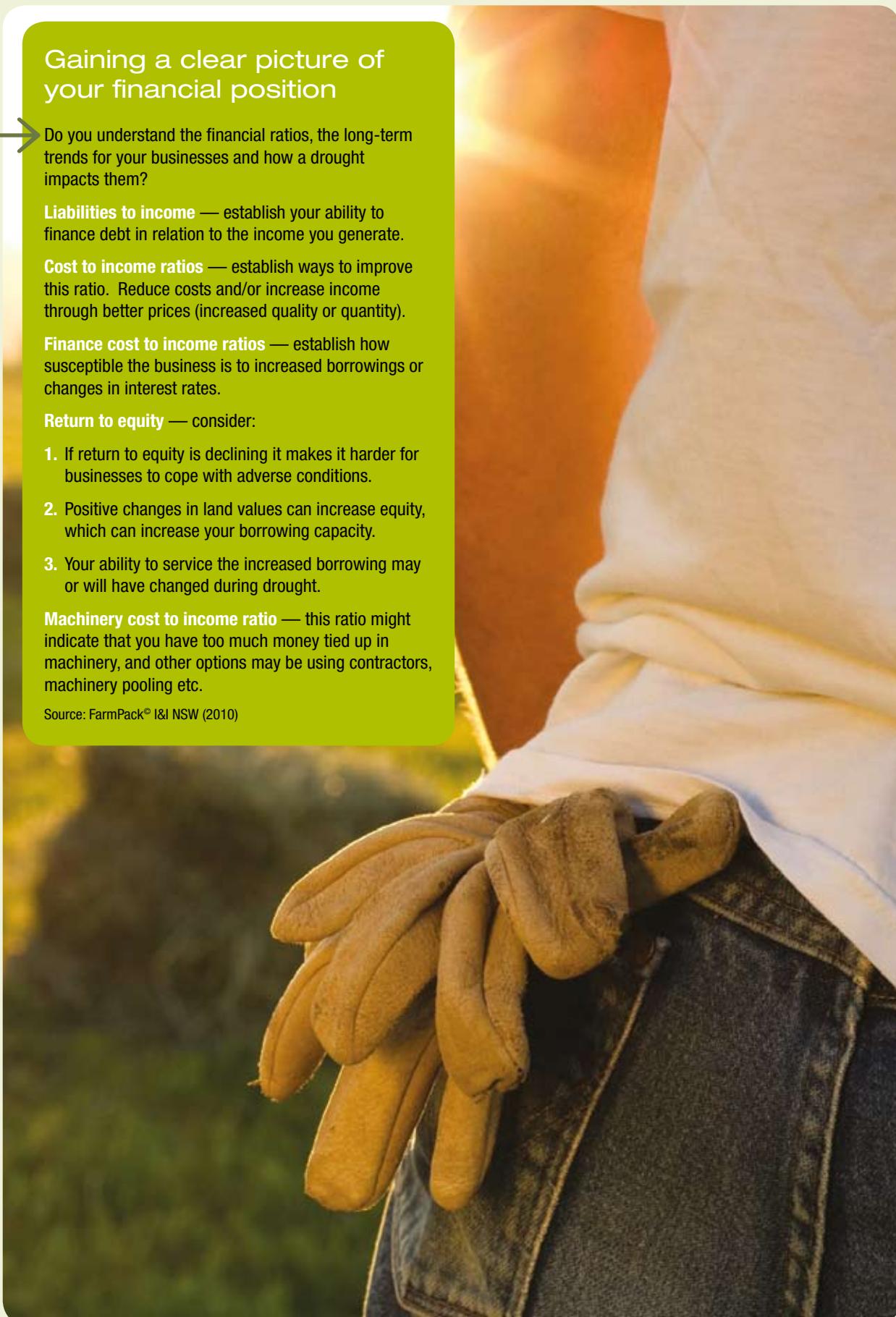
Finance cost to income ratios — establish how susceptible the business is to increased borrowings or changes in interest rates.

Return to equity — consider:

1. If return to equity is declining it makes it harder for businesses to cope with adverse conditions.
2. Positive changes in land values can increase equity, which can increase your borrowing capacity.
3. Your ability to service the increased borrowing may or will have changed during drought.

Machinery cost to income ratio — this ratio might indicate that you have too much money tied up in machinery, and other options may be using contractors, machinery pooling etc.

Source: FarmPack® I&I NSW (2010)



finance

Farm finance — goals, risks and opportunities

Question:	Things to consider:
1a. Have you worked through some different budget scenarios that may eventuate during drought? b. Do you know the difference between 'profit and loss statements' and 'trading accounts'?	<ul style="list-style-type: none">Monitoring cash flow and trading accounts helps decision making.Strategies such as feeding can cost more than they return.Define objectives in terms of dates, dollars and yields. Review them regularly and make firm decisions early based on numbers not on emotions.

Notes: *Develop theoretical budgets under differing scenarios.*

Question:	Things to consider:
2. How are your loans structured?	<ul style="list-style-type: none">Changes to loans can have positive cash flow benefits. Lenders can help!Debt restructure is not always hard.Agribusiness finance is usually more expensive than that sourced from banks.Loans that are associated with business plans can sometimes attract lower interest rates.Interest rate subsidies are sometimes available.

Notes: *Loan structure (existing and potential improvements)*

Question:	Things to consider:
3a. What current taxation arrangements may be relevant to you during drought? b. What are the benefits of Farm Management Deposits?	<ul style="list-style-type: none">Tax concessions are available to livestock producers.Income from forced sales can be deferred.Farm Management Deposits can be used to defer income from good years to bad years thereby reducing taxation.

Notes: *List the current tax arrangements that could be of benefit to you (you may need to discuss this with your accountant)*

"The significant problems we face cannot be solved with the same level of thinking we were at when we created them..."

Source: Albert Einstein



Farm finance — goals, risks and opportunities

Question:	Things to consider:
4. Which of your enterprises provides the best return per hectare and/or per DSE during drought?	<ul style="list-style-type: none">Drought can increase the 'cost of production' for different enterprises.Reduced stocking rates can increase production per head.Running ewes can cost more than running dry sheep but ewes can help during recovery periods.Review the 'cost of production' calculations for each enterprise regularly to ensure timely and quick decisions that suit your operation.

Notes:

Question:	Things to consider:
5. How do different decisions/scenario impact on your bottom line during drought?	<ul style="list-style-type: none">A single trading decision made at the right time could contribute more to the viability of the farm than a long-term feeding program.Opportunities that reduce the risk of selling into depressed markets include:<ul style="list-style-type: none">Buying or leasing land instead of buying feedReplacing old animals with younger onesChanging breedsReducing farm work by selling animals.

Notes:

Question:	Things to consider:
6. What off-farm opportunities, assets, investments and income streams could be worth considering?	<ul style="list-style-type: none">Off-farm income can be used to finance the core business during difficult times.Off-farm investments made during 'good times' can help finance the farm during drought.

Notes: Share portfolio, investment properties, income from additional family members.

"Having actively managed feed from previous better-production seasons and storing a reserve of grain and hay and silage during the past drought, we avoided buying such feed at peak demand, and high price, times when many other properties needed to buy in feed."

Source: Tasmanian Farmer

finance

Farm finance — goals, risks and opportunities

Question:	Things to consider:
7a. What options are there for government assistance during drought? b. Are there any members of the farm family that are eligible for government support?	<ul style="list-style-type: none">Consider talking to a rural financial counsellor to make sure you are aware of all the assistance and support that government provides.
Notes:	
8. What could be some potential benefits of implementing a succession plan during drought?	<ul style="list-style-type: none">Succession planning and implementing changes in the family farm/business structure and operation may provide some assistance during difficult times.
Notes: <i>Pension, allowances, apprenticeships</i>	

"I had a good handle on my cash flow budgeting and farm planning before the past drought. I was able to sell lambs as stores, have more money earlier than planned and I bought (with the help of an NRM grant) fence material to fence out near-dry water holes and streams and set up watering points.

Not having lambs getting bogged in muddy water holes was a bonus, and the next time there was a drought the system was improved."

Source: Tasmanian farmer

contacts and further reading

General drought references

Industry and Investment NSW

The following resources provide general information about planning for, managing and recovery from drought.

Publications

- *Managing drought*
- *Drought recovery guide*
- *Physical Property Planning — Farming For the Future*
NSW Agriculture (1999)

Courses

- Developing a Drought Strategy: This course provides participants with an opportunity to discuss as a group and develop their own drought strategy.
- Drought Recovery Strategies: This course addresses the basic strategies that need to be considered to successfully recover from drought with a focus on pastures and livestock.

W: www.dpi.nsw.gov.au

Farmpoint

FarmPoint provides ready access and useful information for Tasmanian farmers. FarmPoint can assist farmers to manage and develop their businesses, use information for property management planning, and access Government information in a user-friendly format.

T: 1300 368 550
W: www.farmpoint.tas.gov.au



Family matters

Rural Alive and Well Inc

Organisation delivering suicide prevention and community wellbeing services to the Central Highlands, Glamorgan Spring Bay and Southern Midlands Municipalities in Tasmania.

T: (03) 6259 3014
W: www.rawtas.com.au

Beyond Blue

Beyond blue is an Australian organisation that provides information about depression to consumers, carers and health professionals. All beyond blue books, videos and information are free including postage.

T: 1300 22 4636
W: www.beyondblue.org.au

Standby response service

Support for people bereaved by suicide.
M: 0400 183 490
W: www.lifeline.org.au

Tasmanian Farmers and Graziers Association (TFGA)

The TFGA website provides an easy link to drought support in Tasmania.

T: (03) 6332 1800
W: www.tfga.com.au

Australia's Farming Future

The Australian Government's climate change initiative for primary industries. It provides funding over four years to help primary producers adapt and respond to climate change.

W: www.daff.gov.au/climatechange/australias-farming-future

Rural Financial Counselling Tasmania

A Statewide confidential and free service providing information and support for the farming community.

T: (03) 6272 5992 or (03) 6334 2768
W: www.rfcstasmania.com.au

contacts and further reading



Climate

Bureau of Meteorology (BoM)

The BoM website contains a vast amount of weather-related data that is continually being updated, information, explanations and links. It is worth spending time getting to know it. For general statistics of specific sites close to you go to the website and select 'Water and the Land', then select: 'Climate Data Online' (under Agricultural services), then choose 1/ 'Monthly statistics', 2/ 'TAS', 3/ name of closest station.

W: www.bom.gov.au

Tasmanian and Antarctic Climate Services Centre, Bureau of Meteorology, Hobart

The BOM is the Tasmanian Climate Service centre that can provide additional climate information on request. There may be a charge for some information.

Contact Hours: 10am-12pm and 2-4pm

T: (03) 6221 2043

F: (03) 6221 2045

E: climate.tas@bom.gov.au

South Eastern Australian Climate Initiative

The South Eastern Australian Climate Initiative (SEACI) is a three year, \$7.5 million research program investigating the causes and impacts of climate change and climate variability across south eastern Australia.

Launched in 2006, SEACI is a partnership involving government and industry. The Murray-Darling Basin Authority, CSIRO and the Bureau of Meteorology are the initiative research partners.

This website provides general information on the climate of south eastern Australia as well as reporting on the results of SEACI research.

W: www.SEACI.org

CSIRO's 'Climate Adaptation' National Research Flagship

A national research initiative that aims to "...equip Australia with practical and effective options to adapt more effectively to climate change and variability..."

W: www.csiro.au

Climate Futures for Tasmania Project (DPIPWE)

A cooperative project between the Tasmanian Government, the Commonwealth Environment Research Facilities Programme, and Hydro Tasmania, to research and provide future climate information at local scales around Tasmania. The Project will provide projections that can be used for local decision-making. This Project is part of the Antarctic Climate and Ecosystems Cooperative Research Centre that leads Australia's effort to understand the roles of Antarctica and the Southern Ocean in the global climate system and climate change.

W: www.acecrc.org.au

Managing Climate Variability R&D Program

The Managing Climate Variability Program has been helping Australian farmers to manage climate risk on-the-ground for more than a decade, providing them with practical tools to incorporate climate information into farm business decisions. CLIMAG is the program's free newsletter, printed twice yearly. CLIMAG features stories and keeps readers up-to-date with the latest information on climate research, agriculture and natural resource management.

W: managingclimate.gov.au

'Australian RainMan'

A package (DVD) of rainfall information to assist in forecasting and managing climate variability. Standard version available from Queensland's Department of Employment, Economic Development and Innovation (DEEDI).

T: (07) 4688 1200

W: www.dpi.qld.gov.au

(go to services / bookshop / search for 'rainman')

Heat stress in stock

www.coolcows.com.au is a website designed for dairy farmers but can be applied to general grazing situations. It provides an integrated, whole-of-year approach to manage the risk of heat stress in cattle, a risk that may become more common in Tasmania in the future.

W: www.coolcows.com.au



Water

Department of Primary Industries Parks Water and Environment (DPIPWE)

Catchment water management plans.

W: www.dpipwe.tas.gov.au

DPIPWE regional water management officers

T: 1300 368 550

The CSIRO Tasmania Sustainable Yields Project (TasSY)

CSIRO's Tasmania Sustainable Yields Project (TasSY) has developed an assessment of the current and likely future extent and variability of surface water and groundwater resources in Tasmania.

W: www.csiro.au

Australian Wool Innovation

AWI has a range of publications, tools and resources that drought-affected farmers can access:

- Stock water — a limited resource

W: www.wool.com

Tasmanian Farmers and Graziers Association (TFGA)

PMPF — Water module

W: www.tfga.com.au

Department of Primary Industries Victoria (DPI Victoria)

Drought information notes

- Drought reserve dams
- How long will my dam water last?
- How much water do I need?
- Minimising algal growth in farm dams
- Water quality for farm water supplies
- Water supply for stock containment areas

Courses

- Farm Water Supply and Climate Risk: This course examines managing climate risk and the fundamental requirements of farm water supply including water auditing and planning, supply in drought and water quality maintenance.

W: www.dpi.vic.gov.au

The Tasmanian Property Management Planning Framework's Water Module



The PMPF Water Module aims to ensure that water users understand and comply with regulations pertaining to water use. The module aims to ensure that irrigation is applied efficiently, that drainage impacts are managed in accordance with regulatory standards, that water quality is suitable for its intended use on the property and that management practices do not negatively impact downstream water quality.

W: [www.tfga.tas.au \(under policies and projects\)](http://www.tfga.tas.au (under policies and projects))

contacts and further reading



Soil management

Department of Primary Industries, Parks, Water and Environment (DPIPWE)

Publications

- *Land Capability Handbook — Guidelines for the Classification of Agricultural Land in Tasmania*, Second Edition, Edited by C J GROSE, Department of Primary Industries, Water and Environment, Prospect Offices, 1999. W: www.dpipwe.tas.gov.au/inter.nsf/Publications/LBUN-6EXA9F?open
- *Soil Management — A Guide for Tasmanian Farmers*. First Edition, Hamlet AG, DPIPWE Tasmania, 2002
- *Managing Tasmania's Cropping Soils, a practical guide for farmers*. Chilvers, WJ. DPIF Tasmania 1996
- *Soils Alive! Understanding and Managing Soil Biology on Tasmanian Farms* — McDonald, D. and Rodgers, D. Department of Primary Industries, Parks, Water and Environment, Tasmania, 2010. W: www.dpipwe.tas.gov.au

Tasmanian Farmers and Graziers Association (TFGA)

Publications

- *PMPF — Soil module* W: www.tfga.com.au

The Tasmanian Property Management Planning Framework's Soil Module



The PMPF Soil Module aims to ensure that a healthy soil resource base is maintained into the future. The module aims to; minimise the potential for water and wind to erode soils, that management activities do not create or exacerbate salinity or sodicity problems, that acid sulphate soils are stable, that nutrient and general production practices are sustainable and minimise the potential for off-site impacts and that significant geomorphological features are protected.

W: www.tfga.tas.au (under policies and projects)

Department of Primary Industries Victoria (DPI Victoria)

Drought information notes

- Paddock protection and stock management during dry times
- *Protecting the Land in Dry Times*

Industry and Investment New South Wales (I&I NSW)

Prograze® — grazing management planning and fodder budgeting.

Courses

- NSW Profarm course: Managing Land Capability, Soil Erosion and Ground Cover.
- Managing groundcover, weeds and soil erosion: This course covers the issues associated with soil erosion and groundcover during a drought by identifying the risks, developing field assessment skills and addressing management strategies.

Further publications

- *Soil health for farming in Tasmania*. Cotching, WE. 2009. W: eprints.utas.edu.au/9088/



Stock, pastures and crops

Industry and Investment New South Wales (formerly NSW DPI)

Courses

- StockPlan®'s Drought Pack (NSW DPI): Feeding cost assessment and break-even prices for specific animal classes.
- StockPlan®'s ImPack (NSW DPI): Herd structure and management options for selling and recovery.
- StockPlan®'s FSA Pack (NSW DPI): 'Feed', 'sell' or 'agist' decision evaluation for different drought scenarios.

Publications

- NSW PRIMEFACT 297: 'Agistment guidelines' available from www.dpi.nsw.gov.au/agriculture/livestock/beef/management/agistment-guidelines.

Tools

- Feed cost calculator: This online tools helps producers compare the costs of various feed options (www.dpi.nsw.gov.au/agriculture/livestock/nutrition/values)

W: www.dpi.nsw.gov.au

Grazfeed

GrazFeed® is a decision support tool developed in CSIRO Plant Industry to help graziers improve the profitability of livestock production, through more efficient use of pastures and supplementary feeds. GrazFeed is regarded as the industry benchmark for the nutrition of grazing animals in temperate Australia.

W: www.hzn.com.au/grazfeed.php

Meat and Livestock Australia (MLA)

MLA has a range of publications, tools and resources that drought-affected farmers can access:

- Looking after drought pastures
- Managing groundcover to reduce run-off and water loss
- Rainfall to pasture growth outlook tool
- Managing weeds after drought

W: www.mla.com.au/livestock-production/environmental-management/drought-and-disaster-management

Australian Wool Innovation

AWI has a range of publications, tools and resources that drought-affected farmers can access:

- Which sheep do I keep?
- Managing sheep in droughtlots
- Managing fodder prices in droughts

W: www.wool.com

EverGraze

EverGraze® has a range of information sheets and tools to help manage pastures and develop feed budgets.

W: www.evergraze.com.au

Lifetimewool

Tools

- Feed Budget Tables for drought/dry conditions in southern Australia. A two page summary of ewe maintenance requirements 'rules of thumb' that can be used as a guide for supplementary feeding in the dry period (calculated using 'Grazfeed®').

W: www.lifetimewool.com.au

Department of Agriculture and Food Western Australia (DAFWA)

Publications

- *Feeding and Managing Sheep in dry times* — Prepared by the DAFWA and Primary Industries and Resources South Australia (PIRSA).

W: www.agric.wa.gov.au

contacts and further reading



Finances

Rural Financial Counselling Tasmania

A Statewide confidential and free service providing information and support for the farming community.

T: (03) 6272 5992 or (03) 6334 2768

W: www.rfcsta.com.au/index.html

TFGA

The TFGA website provides an easy link to drought support in Tasmania

W: www.tfga.com.au

Grain Growers Association

Publications

- *Financing Your Farm* includes information relevant to managing farm finances through crises such as drought.

W: www.graingrowers.com.au

Industry and Investment New South Wales (I&I NSW)

Programs

- *FarmPack®* is a program available from Tocal that assists in the assessment of a farm business using historical and/or projected information that provides meaningful performance indicators to help with decision making in the future.

T: 1800 025520

W: www.tocal.com

Other contacts



Appendix 1: Drought Action Plan

The following action plan templates allow you to develop drought-related goals using the information you have recorded on the tables in this workbook.

Before filling in these tables, it is worthwhile reviewing pages 4 and 5 of this module as a reminder of what is important when setting your goals and developing your actions.

There is no right or wrong way to fill in the following action plans. Some goals and actions will appear in more than one section — this is fine! For example, goals and actions for soil and stock management will often overlap.

The important thing is to take the first step and develop your goals and action plans by writing them down.

This is *your* drought management plan — make it work for you.



appendices

Drought action plan — family

Goal (example):

To continue to make time for at least one monthly family activity off farm, such as a picnic, trip to a local sporting match, camping over a weekend.

Action	Risks	Risks	Who	Where	When	Achieved (Y/N)
	Conflicting priorities	Sally and James	Office		Mid of preceeding month	
1. <i>Monthly meeting to plan family activity for following month</i>				How will I know this has been achieved?		
Goal:						
2.						
3.						
Goal:				How will I know this has been achieved?		
4.						
5.						
Goal:						
6.						
7.						
Goal:						
8.						
9.						
Goal:						
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26.						
27.						
Goal:						
28.						
29.						
Goal:						
30.						
31.						
Goal:						

Drought action plan – climate

Goal (example):
To identify seasonal key climate and pasture availability trigger points that will promote a decision to sell-down stock in the cattle enterprise.

	How will I know this has been achieved? (example)		
	List of trigger points will be recorded on computer and copy kept on office noticeboard.		
Action	Risks	Who	Where
1. Source information on pasture growth curves and stock requirements to identify key risk periods. 2. Develop list of rainfall and pasture trigger points	Conflicting priorities Knowledge gaps	James	Computer
Goal:	When Achieved (Y/N)		
		By end of September	
	How will I know this has been achieved?		
Action	Risks	Who	Where
1.			
2.			
3.			
Goal:	When Achieved (Y/N)		
	How will I know this has been achieved?		
Action	Risks	Who	Where
1.			
2.			
3.			
Goal:	When Achieved (Y/N)		



appendices

Drought action plan – water

Goal (example):

To accurately calculate the potential storage capacities of all farm water storages by the end of November.

How will I know this has been achieved? (example)			
List of water resources and their capacities to be recorded on computer in Excel file.			
Action	Risks	Who	Where
1. Develop list of water stores and their capacities.	Knowledge gaps of storage capacity calculations	Sally	Computer
Goal:			By end of November
			How will I know this has been achieved?
Action	Risks	Who	Where
1.			
2.			
3.			
Goal:			How will I know this has been achieved?
Action	Risks	Who	Where
1.			
2.			
3.			

Drought action plan – soil

Goal (example):

To implement a system of grazing on native hill pastures to better manage groundcover during the next 12 months.

How will I know this has been achieved? (example)
List of trigger points will be recorded on computer and copy kept on office noticeboard.

Action	Risks	Who	Where	When	Achieved (Y/N)
1. Fence off hill paddock from back paddock along change of slope.	Conflicting priorities Labour for fencing Money for fencing equipment	James Contractors	Hill paddock	By end of February	
2. Install trough and pipes to supply water to hill paddock.	Conflicting priorities Labour for water Money for water equipment	James Contractors	Hill paddock	By mid March	

Goal:

Action	Risks	Who	Where	When	Achieved (Y/N)
1.					
2.					
3.					

Goal:

Action	Risks	Who	Where	When	Achieved (Y/N)
1.					
2.					
3.					

Goal:



Drought action plan – stock pastures and crop

Goal (example):

Develop an annual feed budget across each livestock enterprise by end of October.

How will I know this has been achieved? (example)
Feed budget will be recorded on computer and copy kept on office noticeboard.

Action	Risks	Who	Where	When	Achieved (Y/N)
1. List all classes of stock	<i>Conflicting priorities</i>	Sally	<i>On computer</i>	<i>By end of October</i>	
2. Develop feed budget	<i>Conflicting priorities</i> <i>Knowledge gaps</i>	Sally	<i>Computer</i>	<i>By end of October</i>	

Goal:

How will I know this has been achieved?

Action	Risks	Who	Where	When	Achieved (Y/N)
1.					
2.					
3.					

Goal:

How will I know this has been achieved?

Action	Risks	Who	Where	When	Achieved (Y/N)
1.					
2.					
3.					

Drought action plan – finances

Goal (example):
Reassess current loan structures by end of October.

How will I know this has been achieved? (example)
Loan structure will have been reviewed, changed or consciously stayed the same.

Action	Risks	Who	Where	When	Achieved (Y/N)
1. Make appointment with bank manager	Conflicting priorities	Sally	Launceston	By end of September	
2. Review information	Conflicting priorities	James and Sally		By mid October	
3. Make decision regarding loan structure	Conflicting views between James and Sally	James and Sally		By mid October	
4. Implement change if required		Sally	With bank	By end October	

Goal:

Action	Risks	Who	Where	When	Achieved (Y/N)
1.					
2.					
3.					

Goal:

Action	Risks	Who	Where	When	Achieved (Y/N)
1.					
2.					
3.					



notes

Notes

NRM North
Level 2, McKenzie Building
63-65 Cameron Street
PO Box 1224
Launceston TAS 7250
T: (03) 6333 7777
F: (03) 6334 2822
W: www.nrmnorth.org.au

NRM South
313 Macquarie Street
PO Box 425
South Hobart TAS 7004
T: (03) 6221 6111
F: (03) 6221 6166
W: www.nrmsouth.org.au

