Planning for Low Risk Farming - 2008

Capturing the potential – managing the risks 2008 — ***Facilitator Allan Mayfield***

Part 1 – Right inputs for best outcomes

- P and N rates for 2008, summer weeds and soil water — ***Nigel Wilhelm, SARDI***
- Early sowing inc dry sowing — ***Mick Faulkner, consultant***

Part 2 – Risky business

- Ranking management risks — ***Mike Krause, AES***
- Building risk management into farming advice — ***Ed Hunt, consultant***
- Balancing inputs with potential

Part 3 – Panel session

The following strategies designed to minimise up front cropping costs without limiting productivity and potential profit, have been selected from a comprehensive "Planning Guide for Low Risk Farming – 2008".

This Guide was developed following a November 2007 workshop organised by the GRDC funded low rainfall collaboration project.

Participants included senior researchers, private consultants, advisers, farmers, bankers and marketing experts.

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GRDC

Grains Research UPDATE

CROP NUTRITION

Investing in one nutrient at the expense of others may result in unbalanced nutrition that limits the benefits from the nutrients you did purchase. If you have to cut back on fertiliser, consider cutting back on all purchased nutrients.

The need for nutrient inputs will vary from paddock to paddock. The amount of late summer and autumn rainfall and stored moisture will impact on fertiliser decisions.

The following guidelines address likely nutrient dynamics following the past few years of low rainfall. Wherever possible seek independent advice and tailor these general guidelines to your specific circumstances.

Phosphorus

The following guidelines apply to cereals, canola and most pulse crops except faba beans, which tend to be more sensitive to P supply than other species.

Phosphorus (P) must be applied at seeding for maximum efficiency.

P is an expensive input, so guessing how much is needed is not a sound business approach. It is vital to know the amount of soil P available in each paddock prior to making decisions about fertiliser rates.

Soil tests or good paddock records of previous P use will provide the necessary information about P status.

Where there is a reasonable history of fertiliser management or test results, further testing in 2008 can be foregone.

Nutrient audits using previous fertiliser rates and crop yields will also assist in making phosphorus fertiliser decisions.

There is likely to be some carry-over of fertiliser P from 2007 crops into the 2008 growing season in paddocks where the 2007 crops grew poorly all year.

P application rates can be reduced when there is an early break because there will be increased mineralisation of P during the growing season.

Growers should seek specific advice but general rules-of-thumb suggest:

- Apply half the normal P rate following failed crops (crops with little growth and yielding less than 0.5 t/ha).
- Use two thirds the normal rate on non-calcareous soils following drought crops yielding more than 0.5 t/ha or which had healthy growth up until late tillering. For calcareous soils, rates should be near normal.
- Normal rate on chemically or mechanically fallowed paddocks.

P fertiliser rates should be calculated to manage P supply for the 2008 crop only. Do not fertilise for the following pasture or for build up of soil reserves.

If the fertiliser budget will not cover the whole cropping program, use the calculated rates on the best paddocks first, even if it means seeding the last paddocks without P fertiliser.

Many paddocks will require some P at seeding, but consider reducing P inputs provided there is a reasonable level of available P in the soil.

Leaving off P will have little impact on production loss unless soil P reserves are very low.

Nitrogen

Paddock N status is commonly under-estimated following a drought.

Mineral N levels can be higher than normal after a drought because of the extended period of mineralisation (the drought acts like a fallow) and some carry-over of fertiliser N.

This year there is likely to be some carry-over of fertiliser N from failed crops in 2007 and increased mineralisation if there is good early rain. There will be less carry-over from crops that grew well early but failed to finish.

How much mineralised N becomes available to the crop will depend on when the break occurs, soil type and paddock history.

Soil testing can eliminate much of the guess work. N decisions for the 2008 crop should be based on deep soil N tests, particularly if aiming for malting barley.

Do an N budget as normal, taking into account soil N level, target yield and protein.

Reduce up-front cost and risk by minimising N input at seeding and plan to top-dress N in response to how the 2008 growing season develops.

Starter nitrogen (N) is important in low-N situations but adequate rates (5-10 kg N/ha applied with or near the seed) are often achieved with typical rates of DAP (or even MAP) applied to provide the P requirements of the crop.

Delay the application of any more N until well into the growing season.

You will not fall off a production cliff if you back right off N fertiliser at seeding because you can top up during the year if required.

Trace elements

Consider using a foliar spray or seed dressing to correct any trace element deficiencies. Foliar or seed dressing treatments are the cheapest option to meet the needs of the 2008 crop but will not provide any residual benefits for subsequent crops or pastures.

If you opt for a seed dressing you should also budget for a foliar spray because the seed dressing may not be sufficient to meet the needs of the crop if the deficiency is severe.

Using seed from a soil with good levels of trace elements will produce similar benefits to a commercial seed dressing. If this seed comes from another property, be aware of the potential cost of importing weed seed compared to the cost of a commercial TE seed dressing.

If your paddocks have adequate levels of zinc (Zn) and copper (Cu) consider not applying either of these nutrients in 2008.

STORING SUMMER MOISTURE

Storing moisture out of the growing season – during summer and autumn - can effectively increase the proportion of better seasons.

Stored water is used very efficiently by the crop because it is used later in crop development and so contributes more directly to grain yield. The value of stored water was seen in 2007, when many crops performed better than expected in areas that received good summer rains.

Don't assume soil moisture levels. Rainfall in the gauge is not the same as moisture in the soil.

Measure the amount of stored water by taking soil cores to the depth of the root zone prior to seeding but remember that not all the water present in the profile will be accessible by plants.

Consult with your adviser about how best to sample your paddocks and estimate plant available water for your situation. Many of the modelling tools designed to estimate water balance in a soil profile are not sensitive enough to account for individual paddock or zone conditions.

The pattern and timing of rainfall has a strong influence on the net benefit of summer rainfall, but in general:

- heavy soils can store more water than light soils but this tends to be closer to the surface, increasing the likelihood of losses by evaporation. Stored water in sands is usually deeper and less subject to evaporation.
- subsoil constraints such as salinity, boron toxicity and compaction can substantially reduce the volume of soil from which plants can extract water by reducing effective rooting depth.
- late summer/early autumn rainfall events are more likely to benefit subsequent crops or pastures than early summer rain, much of which will often be lost to evaporation. Do not expect to store more than 50% of the summer rain that enters the soil profile, even under the best of conditions.
- cracking soils or concentration of rain in furrows can increase penetration and so reduce evaporation.

The chances of storing 'out of season' moisture are improved by good summer weed control and good stubble and residue management.

SUMMER WEED CONTROL

Effective summer weed control is vital to storing 'out of season' moisture. It also clears the way for easy, timely seeding. Large summer weeds can undermine a seeding program through slowed progress, poor establishment due to blockages, reduced trifluralin efficacy and the allelopathic effects of weeds that produce toxins that prevent the germination or growth of other plants.

Summer weed control needs to be early and thorough. Timeliness is critical. The key to successful summer weed control is to spray when weeds are small and actively growing.

The window for summer spraying is often much narrower than many farmers realise. Good conditions (high delta T, vigorously growing small weeds, low wind speeds) can allow efficient control with rates as low as 50% below recommended.

Do not stop spraying because conditions are not ideal; you may not get the chance again. However, be aware of changing delta T values and be prepared to adjust chemical rates, water rates, pressures and nozzles to ensure continuing efficacy and safety in the changed conditions.

Night spraying can substantially improve the timeliness and efficacy of summer weed control.

Use the lowest-cost effective rate or tank mix. Current glyphosate costs are small in terms of $/ha and the benefits of effective weed control.

Do not rely on sheep for weed control. If sheep are to be part of the control program they are best used to clean up misses and take out later germinations after a paddock has been sprayed. When used in this way they can reduce herbicide costs by up to 30% over summer.

Cost/benefits of summer weed control
Scenario.
25 mm rainfall event in early January on sandy loam soil germinates a population of melons, wireweed and volunteer canola.
35 mm rainfall event in early March causes a second germination of weeds.

Strategy 1. No summer weed control except some grazing by sheep

Chemical control costs	$0/ha
Water stored from summer events = 5 mm + 10 mm	
Value of yield from the stored water (15 mm x 40 kg wheat/ha x $200/t)	$120/ha
Weeds not trimmed back fully by sheep delay seeding of the paddock by one day due to blockages (100 kg wheat/ha lost per week) and reduce the effectiveness of trifluralin (0.05 t/ha lost from extra rye-grass competition)	$-15/ha
Net effect of summer rain on wheat	**$105ha**

Strategy 2. Two herbicide sprays, followed by some light grazing by sheep

Chemical control costs (2 x $15/ha)	$-30/ha
Water stored from summer events = 10 mm + 20 mm	
Value of yield from the stored water (30 mm x 40 kg wheat/ha x $200/t)	$240/ha
Cost of yield loss from interrupted seeding	$0/ha
Net effect of summer rain on wheat	**$210/ha**
Net $ benefit from two summer weed sprays	**$105/ha**

Spraying the paddock twice over summer with $30/ha of chemical increased the return from the following wheat crop by $105/ha

Downside from spraying
- money up front
- possible loss of some summer grazing
- potential increase in herbicide

Upside from spraying
- easier and more timely seeding
- fewer weed seeds carried over to the following season
- better-quality grain (more nitrogen available because less used by weeds over summer)

Residue management

Aim to maintain good cover – a combination of standing stubble and an even spread of straw – from harvest to seeding.

High levels of surface residue will enhance the amount of rainfall stored in the soil profile and slow the rate of evaporation. However, all the moisture could still be lost if there are extended periods of dry, hot conditions after a rainfall event.

Stubble cover will prevent moisture from lighter falls reaching the soil.

ENTERPRISE AND VARIETY SELECTION

Avoid making decisions on the run. Develop a detailed written plan for the year including strategies to handle different sets of circumstances depending on how the season unfolds.

The plan should include triggers for the different strategies (e.g., no canola after the middle of May).

Aim for flexibility by identifying multiple end uses for crops, adjusting inputs and tweaking the enterprise mix.

Gaining maximum benefit from such a plan requires awareness of all the end-use options and knowing how to manage crops to achieve the best outcome if you need to change from grain to hay, for example. Management considerations include the long-term implications of strategies such as hay cutting.

Test the potential for savings or improved efficiency by setting yourself a '10% challenge' to either reduce total business costs by 10% - without reducing productivity or increasing productivity by 10% without increasing costs.

Reduce risk

There may be opportunities for growers to reduce production risk by storing or arranging access to larger quantities of seed of different crop types and more varieties. This is a low-cost option that maximises flexibility. In low-rainfall areas consider keeping sufficient seed for two cropping seasons in case a drought results in no or little harvested grain.

EARLY SEEDING

Timely seeding is the single most important influence on crop performance.

The benefits from early seeding – either at the very start of the season or at a pre-determined date either 'dry' or after the break - appear to be increasing, partly because some of the risks from early seeding are being better managed.

Spread the risk:

- Don't commit your whole cropping program to any one seeding option.
- Not all paddocks are suitable for very early seeding. Soil type, surface cover and weed burden all need to be considered.
- Reduce the risk of frost damage by seeding the hills first.
- If frost damage does occur, limit the losses by cutting frosted crops for hay.

When considering whether or not to seed early:

- Be aware of the real impact of the pros and cons. Delayed seeding can carry penalties but there can also be benefits, including -
    - cheaper weed control, which may offset lower yield potential.
    - avoiding spore showers, which can reduce disease.
    - later development can result in less leaf disease in spring.
- You do not need to no-till to seed early but it is often an advantage because it is easier to get the crop in early without greatly increased erosion risk.
- There will be less soil moisture loss with no-till seeding.

Risks with early seeding include:

- You could lose the seed due to lack of follow up rain (low risk).
- Weed control can often be dearer (most in-crop control options will involve the use of higher-cost selective chemicals) but this can be minimised by selection of clean paddocks.
- You need very good-quality seed because germination and emergence conditions are often marginal.
- Leaf disease pressures can be higher.

- Poor operator or machinery performance can be an issue because early-seeded paddocks are the first of the season. It is important to make every effort to avoid problems because the paddocks selected for early seeding should be your best country, so any mistake will be expensive.
- Increased likelihood of frost damage.

DRY SEEDING

If you are not confident you can achieve good, even establishment, do not opt for dry seeding.

Dry seeding can:

- reduce seeding time when rain occurs.
- maximise the length of growing season available to crops.
- limit the yield reduction due to late sowing.
- minimise the impact of delays due to excess rainfall reducing seeding once the break occurs.
- maximise efficiency of machinery and labour.

Dry seeding is generally most successful:

- in light soils.
- when the soil is very dry (not patchy or marginal).
- with less determinate crops such as canola that can mature early or late, depending on conditions.
- with pulses.
- where there is a low weed burden or a low-cost control strategy is available.
- where wind erosion risk is low.

Dry seeding is hard on equipment due to hard, dry soil and dust.

Dry seeding works best:

- in paddocks that -
    - will be seeded no matter when the season breaks.
    - have low, or controllable, weed burdens.
    - won't erode or fill in furrows (which can result in excess soil cover and poor emergence).
    - have low levels of disease and few soil-living mites and insects.
- with larger-seeded species that are sown deeper.
- where there is sub-soil moisture.
- in soils that will provide good seed to soil contact without the risk of excessive soil throw or herbicide damage.
- with crops that don't require the use of highly soluble post-sowing pre-emergent herbicides that could cause crop injury if applied to dry soils.
- where low nitrogen rates can be used safely.

Risks from dry seeding include:

- wind erosion.
- inability to easily or cheaply control weeds.
- seed death due to multiple small falls of rain after germination.
- fertiliser toxicity.
- lack of subsoil moisture to produce economic yields.
- the input costs are committed whether or not the rain arrives.
- the growing season does not suit the dry-seeded crop.
- diseases.

- insects.
- poor crop establishment due to seeding depth, poor seed to soil contact or herbicide damage.
- rapid early growth leading to haying off in spring.

Herbicides that work with dry seeding

Herbicide	Herbicide activity at germination if applied dry and incorporated by seeding	Herbicide activity at germination if applied dry before or after seeding and not incorporated	Herbicide damage potential on crop if applied dry after seeding and incorporated by rainfall
Trifluralin	√√√	x	x
Triallate	√√√	x	x
Metolachlor	√√√	√√√	√ High
Triasulfuron	√√√	√√√	x
Chlorsulfuron	√√√	√√√	x
Monza™	√√√	√√√	x
Diuron	√√	√√	√ Mod
Simazine	√√√	√√	√ Mod/High
Atrazine	√√√	√√√	√ High
Metribuzin	√	√	√ High

RISK MANAGEMENT

1. Effective management of risk and profitability is the key to success in farming. Manage to maximise whole-farm profit, not yield.
2. Level of risk is a combination of the likelihood of a risk event occurring and the impact of that event. Identify the important risks and put strategies in place to manage them.
3. Some risks, like drought, can't be prevented but it is possible to adjust management to reduce their potential impact on the business.
4. Inadequate managerial skills pose the biggest risk to a farm business. Make sure you can manage or have access to good advice on commercial and legal issues (leases, succession), economic circumstances (exchange rates, commodity prices), environmental factors and political circumstances. As with drought, it is important to understand and manage the potential impacts of these on farm businesses.
5. Assess risks in terms of likelihood and impact then rank them in terms of relative importance.
6. Develop strategies and detailed plans to manage the top 5-6 risks. These plans will be influenced by the current strength of the business and the attitude of the farm family to risk. This process requires analysis, discussion with partners and advisers and ultimately calculated judgments.
7. Review these well-researched management strategies periodically and be prepared to make changes in light of new circumstances. The art of good planning is to continually monitor as the future unfolds.
8. Risk management planning gives you an understanding of your real position and your options. This is the key to ensuring the well-being of you, your family and your business.

FINANCIAL MANAGEMENT

1. If you haven't done so already, assess the strength of the business and your options for the coming season. Put aside the emotional impact of 2007 and make an objective assessment of the current financial status of the business.

2. Important parameters include
    - Balance sheet (assets – liabilities)
    - Equity (net worth/assets)
    - Current budget or cash flow including actuals to date
    - Details of financial commitments that must be met in the coming season, including repayment schedules on large capital items, payments to family members etc.
    - Cash flow budget(s) based on your optional farm programs for this year. These must include peak debt and how you plan to cover that exposure.

3. Banks are interested in the 5-year future for the farm. They do not want to be farm managers or take over the farm but are starting to tighten up on their lending strategies. Banks want financial details.
    - Identify best, average and worst-case scenarios and show the bank the impact of various lending outcomes on your and their investment. You are making the business decisions, not them. Their confidence in you as a manager is paramount.
    - Banks work on averages but will look at sensitivities to various factors. Include your views on relevant sensitivities in your case to the bank.
    - Banks need to be informed about the real agronomic and other changes that are happening on farm because these have big impacts on long-term financial viability
    - Having a good succession plan is important to the bank.
4. Don't plan on Exceptional Circumstances (EC) interest rates being available in the long term.
5. Some farmers may be disinclined to carry on. In these cases sale or leasing are real options. Exiting the farm business may be an opportunity, not a source of embarrassment.
6. Seek outside advice. There is wisdom in discussing the options with an outsider who can be objective and may bring valuable new information.
7. Expert farm financial management is in short supply. Make sure any consultant you engage in this area has relevant training and experience

Worth Considering

Cost cutting can have a counter intuitive effect if the wrong costs are cut. Small reductions in costs that have a negative impact on production will lead to large reductions in profit.

Modifying management to improve farming efficiency is the way to reduce costs. Eliminating unnecessary operations and improve efficiency of operations leads to greater labour efficiency and fuel savings. Block farming, reduced tillage or the use of genetically superior varieties are examples of efficiency improvements that can lead to reduced costs.

Increases or expected increases in the price of glyphosate, phosphorus, nitrogen and fuel will increase total enterprise expenses by around 25%. This leads to a profit reduction of 30% assuming 10 year average prices ($180/t) and production. If forecast export parity prices of wheat achieve $250/t ($220/t upcountry) then profits will increase by 20%.

Strive to optimise water use efficiency. A reduction in water use efficiency of 25% results in a reduction in profit of 70%. Timely operational crop management goes a long way to optimising water use efficiency.

Low rainfall farming environments will need different risk management strategies to higher rainfall farming environments as they have a greater variation in returns. The probability of breaking even falls from 70% to 45% where WUE is reduced from 16 to 12 kg/ha/mm in a low rainfall environment. In a high rainfall environment the probability of breaking even falls from 85% to 70% with the same decrease in WUE.

Fifty percent of the profits come in 20% of years. 2.5 years worth of profit over a 10 year period are foregone if the profits are halved in the good years. Other implications are increased debt, reduced equity and lower interest cover. You must put yourself in a position to capture the benefits in the good years.

The trick to maximising profit in the good years and minimising losses in the poor years is to act tactically in those years. For example, in cropping enterprises input costs such as nitrogen and fungicide costs can be reduced when crop moisture is limiting, or increased when moisture is non-limiting.

Most farm businesses are still asset rich, due to the rate of capital growth of their greatest asset – agricultural land, but many have not generated an operating profit for several years. Equity levels have not changed significantly over a ten year period, except where farm expansion or severe losses have occurred, however the debt in absolute dollar terms, for most farms, has increased significantly.

Agricultural advisers don't just supply technical input they provide on farm investment advice. The adviser's recommendations could have a significant impact on the long term viability of the business, particularly if the business is carrying a high debt level. The technical advice given on a crop will have a range of flow on implications at the whole farm level.

One of the many challenges facing farmers is the limited capital (cash) for on farm investments. During the coming years, due to the increased debt loads incurred over the last two droughts, cash will be even more limited so weighing the risk and return of on-farm investment decisions will become all the more critical. The adviser's role is to evaluate the risk and to maximise the returns from each investment decision, be it new seed, fertiliser or additional livestock.

MARKETING

Don't throw the baby out with the bath water. There are still sensible opportunities to reduce market and price risk in 2008 despite the bad experiences in 2007.

Forward selling is a tool to reduce price risk, not maximise price. It transfers price risk to the buyer BUT the farmer-seller retains the production risk because he is obliged to deliver the grain. Having someone else manage your risk always comes at a cost.
Most banks do not like to see more than 25-30% of the anticipated crop production forward sold.
Price risk is a major element of marketing risk. Other risk factors include:

- Quality. Do I get the quality I have forward sold?
- Counter-party. Does the party to whom I've sold perform when it comes time for delivery/payment?
- Contract execution. Does delivery to the correct delivery point occur within the contract period?

Price risk can be managed by floating or fixing the risk.

- **Floating**

With a floating position the price remains unfixed and you accept the results over a period of time.

Floated risk can be:

- outsourced by selling the grain for a price at harvest to a pool that markets it.
- in-sourced by the grower running his or her own mini-pool by delivering grain to a market (e.g. a feedlot) and taking the spot price on the day of delivery for the tonnage delivered.

- **Fixed**

With a fixed position you lock in a margin for your enterprise.

The tools available for fixing price risk are:

- Forward Cash sale
  Known sale price for future delivery period.

- Forward Sale using Basis/Futures/Swaps
  With this approach the final price comprises three elements:
  Basis + Futures + Exchange rate = Cash Price.
  The final return is not known until all three elements are locked in when the product is sold. However, the outcome can be estimated based on historical relationships.

Basis = Difference between Cash and Futures price
Futures = Price quoted on a futures exchange for a given delivery month and given grade specified
Swap = simple conversion of US futures price into A$ for specified delivery month (i.e., the swap price does not include the basis, which needs to be added/deducted to arrive at the final return)

- Option
  An option secures the right to sell at a price set at the time the option is bought but leaves you free to sell at a higher price if the market rises. An option also requires delivery of the grain at the agreed price at a specified time.

  Options require money 'up front' and costs vary. They are cheapest when no-one is worried about price movements and become expensive when everyone wants to protect themselves against market volatility.

  Option costs can be minimised by accepting a price 'out of the money' below the current market price. For example, buying a 'put' option at December's wheat price of $350-380 would have been expensive. Locking in a price of, say, $250-280 at that time would have been much cheaper.

Forward selling is not attractive in areas where production is very uncertain because in poor years all the crop can be locked in while in good years only 5-10% is covered by the contract.

On-farm storage can be used to manage price risk by storing the crop for sale when the price rises or contracting to supply stored grain to a local market at the spot price or a price based on the spot price when deliveries are made.

One option gaining popularity in some areas is to contract for a price at an agreed point between an agreed base price and the spot price on the day of delivery.

Points to consider

- Future export parity prices for Australian wheat are predicted to be about $250/tonne in the next few years.
- The world market is changing, with demand for grain for biofuel feedstock and as stock feed to meet the demand for higher-protein [meat] diets in countries such as China and India.
- High world prices are projected to correct over 2008-9 because last season's high prices have prompted near maximum plantings world wide. This is likely to see conflict between the area required for wheat, corn and soybeans with potential for world prices to rise and fall in response to annual market signals.
- Prices are expected to be very volatile in early 2008 because world stocks are very low and the market will be guessing what will happen with EU and US crops.
- In Australia, barley is effectively fully deregulated and wheat is headed towards deregulation.
- The price of the dollar (exchange rate) has a huge impact on export grain prices. At a price of around $350, each one cent move in the value of the Australian dollar against the US dollar shifts the grain price by $A4/t.