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Drought recovery options – utilising vacant DSE capacity

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The recovery period places you in a unique position to review your situation and markets, and make changes to the direction and mix of enterprises that make up your farm business.

The effects of destocking during the drought are felt hardest in the first three years of recovery. Depleted breeding herds and flocks, as well as reduced cash flow, act to reduce the potential income per hectare which is realised.

Once rainfall stimulates pasture growth, the depleted breeding herds and flocks do not utilise the whole property, as they did pre-drought. This gap, or vacant DSE (dry sheep equivalent) capacity, can be exploited to enhance income generation.

How you choose to utilise the vacant DSE capacity on your property will depend upon your attitude to risk, your cash flow needs and your goals.

Options for utilising the vacant DSE capacity include:

- maintaining the status quo to regenerate country
- breeding back to original herd or flock
- buying in replacement breeders
- trading livestock
- backgrounding (growing out) livestock
- agistment
- cropping
- fodder conservation
- a combination of the above.

In practice, pastures are under a great deal of pressure after the drought breaks. Feed is expensive, and it is tempting to continue grazing paddocks. A good fall of rain in itself does not overcome drought stress. The plant has to be allowed a period of recovery to build up energy reserves, so that it is capable of reaching its full potential. Lucerne is particularly responsive to resting.

Avoid grazing pastures in the ‘green pick’ stage shortly after rain, as they are weak, and have insufficient leaf area to produce feed quickly. Plan to rest the area if you are forced to graze paddocks early. At the very least, it is recommended that you delay grazing until pastures are growing rapidly with high leaf area. Ideally, pastures should reach the flowering stage after such a long and severe stress period.

Breeding back numbers from the retained breeding nucleus is slow and reduces cash flow. Any breeding back strategy employed after drought must achieve high levels of fertility. Careful management of the reproductive cycle is required, to maximise the number of animals produced.

Designing and implementing an effective breeding program is essential. You will need to:

- define your breeding goals
- identify target market requirements
- prioritise economically important traits to determine selection criteria
- determine your current and future performance levels and production targets
- select an appropriate breeding system (e.g. straightbreeding, crossbreeding).

Buying in stock to restore numbers requires careful thought and access to finance. It allows a faster return to normal cash flow, but, for many people, it will only be possible by increasing their debt levels. This may also be the case when buying stock for short-term fattening or trading. Consider the full range of options available (e.g. mature stock

versus growing stock), and have a particular end market in mind.

Agistment is the transporting of livestock from one property with limited feed to another with adequate feed, where they are retained for a period of time. Livestock owners may take up agistment as a feeding option when the economics of handfeeding (with the associated labour involved) are judged to be more expensive.

Disputes can arise between agistment parties regarding issues such as fees, payment method and frequency, responsibility for stock welfare, time period, stock numbers, and inspection access. If you choose to accept stock on agistment, it is in your interest, as well as that of the other party, to have a written agistment agreement and to seek legal advice.

When purchasing stock, always ask for vendor declarations and animal health statements. Only buy, background or accept on agistment stock with equal or higher health status to your own stock. Bovine Johne's disease and Akabane disease are of most concern to cattle producers, while sheep producers need to consider ovine Johne's disease, as well as conditions such as footrot, lice and resistant worms.

Pastures and crops can be suitable for conservation as hay and silage. There are costs associated with production and feeding out. Know the cost per tonne, and compare costs on the basis of dry matter of feed. Identify the feed quality, including energy and protein, when determining the value of the conserved fodder. Selling fodder could generate a cash flow.

Before adopting any recovery options to utilise vacant DSE capacity, it is important to review your farm business and key risk factors (e.g. livestock, pasture, cropping, fodder, water, finances and human resources). Develop plans and implement options that will improve these key risk factors. Ensure that the risk is spread across all enterprises. Develop a sound marketing strategy.

Ensure that you have adequate safeguards in place to protect your farm business. These might include:

- detailed budgets
- analysis of gross margins, cash flow budgets, return on capital, and the capacity of your property
- adequate feed to meet the needs of all stock
- written agistment agreements
- knowledge of your stock's area of origin and disease status, and the implications to stock movement requirements.

Herd and flock rebuilding

Being understocked reduces your potential income. Rebuilding your herd or flock is one strategy for utilising the vacant DSE capacity during the recovery period and enhancing income generation per hectare. Rebuilding can be achieved by breeding back and buying in replacement breeders.

Before adopting any rebuilding option, you need to be able to answer the following questions:

- Am I better off breeding my own replacements or should I buy in replacement stock as well?
- What is the maximum price I should pay for replacement stock?
- Should I buy young or older replacement stock?
- Should I increase my maximum age at joining?

Decision aid to answer these questions

One decision support tool available to help answer these questions is the ImPack model from NSW DPI's StockPlan®. The ImPack model allows the user to input their breeding variables to develop a base herd or flock. The model then calculates the number of animals for sale and replacement. Once stock prices, wool income and variable costs are entered, ImPack calculates the enterprise gross margin. The model allows the user to evaluate various herd and flock reduction and recovery strategies by comparing the returns over a 10-year post-drought timeframe.

ImPack can compare rebuilding strategies, such as breeding back and buying in replacement breeders until numbers reach pre-drought levels. The model allows the user to work out the absolute maximum price to pay for replacement stock.

ImPack has a trading option, to include income generated from other enterprises. This may only be implemented if the herd or flock DSE is below that of the base herd or flock in any year, and is therefore creating a vacant DSE capacity.

For example, in ImPack (version 1.5 8/11/06), if you enter a net profit per animal traded and (if desired) change the trade animal DSE rating (default set at 10.5), the program can calculate the number of animals that can be traded to make full use of the vacant DSE capacity. This is multiplied by the profit entered and added to the sales and income details.

You can include enterprises such as cropping, cutting hay and grain and graze, as long as you specify profit per hectare (instead of profit on trade stock) and include the carrying capacity (DSE/ha) of the land (in place of DSE of trade stock). When using the trade option in this manner, the program calculates the number of hectares of crop required to make full use of the vacant DSE capacity. This is multiplied by the profit entered and added to the sales and income details.

If a feeding cost is relevant to the strategy being considered, you can enter the total annual cost of feeding the whole herd. This input area can be used to enter any variation to annual costs which might apply.

ImPack Comparison

Two rebuilding options were compared using ImPack (version 1.5 8/11/06). These were:

- option 1 – breed back
- option 2 – breed back plus buy in.

The example recovery options outlined should be used as a guide only. You would need to change them to take account of movements in commodity prices and input prices, changes in seasonal conditions and individual farm characteristics. Estimated prices are GST exclusive. Use your own figures and price assumptions to estimate your own gross margin and potential impacts.

Option 1 involved breeding back replacement stock during the recovery period until pre-drought production levels were attained. Option 2 included the strategy of buying in replacement stock during the recovery period in addition to breeding back own replacements.

Base herd and flock

The cattle scenario is based on a 300-head self-replacing beef herd. The sheep scenario is based on a 1000-head self-replacing wool flock. Average breeding variables and current market values for sales and enterprise expenses were used.

Drought management variables

During the drought, both the cattle and sheep scenario were affected by the following drought management variables:

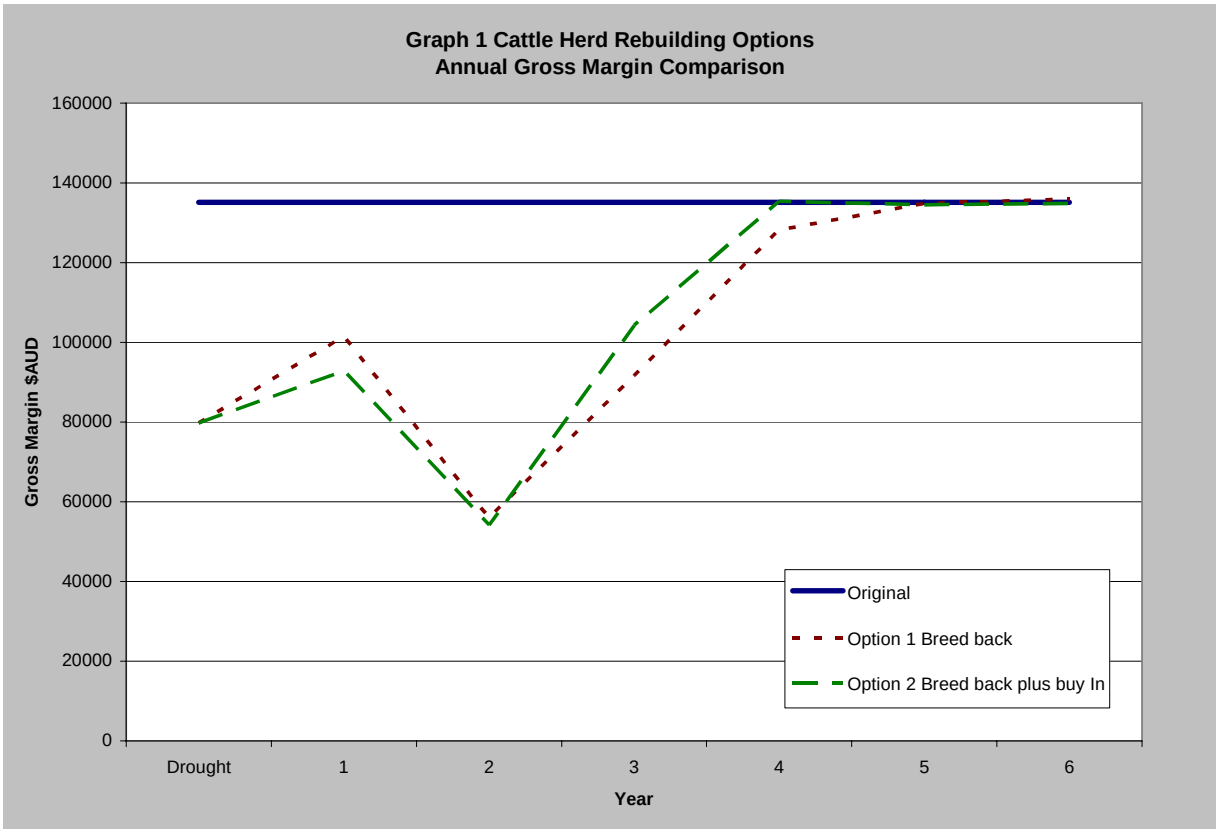
- all breeders which failed to rear were sold
- livestock were culled across most age groups: cattle – 15% of ages 2–6 years, 100% of ages 7–10 years; sheep – 15% of ages 2–3 years, 100% of ages 4–5 years
- usual number of replacements were kept
- feed was purchased at costs of $80 000 (cattle) and $20 000 (sheep)
- livestock were sold at cheaper prices
- weaning percentage was lower (70%) in the first year after drought.

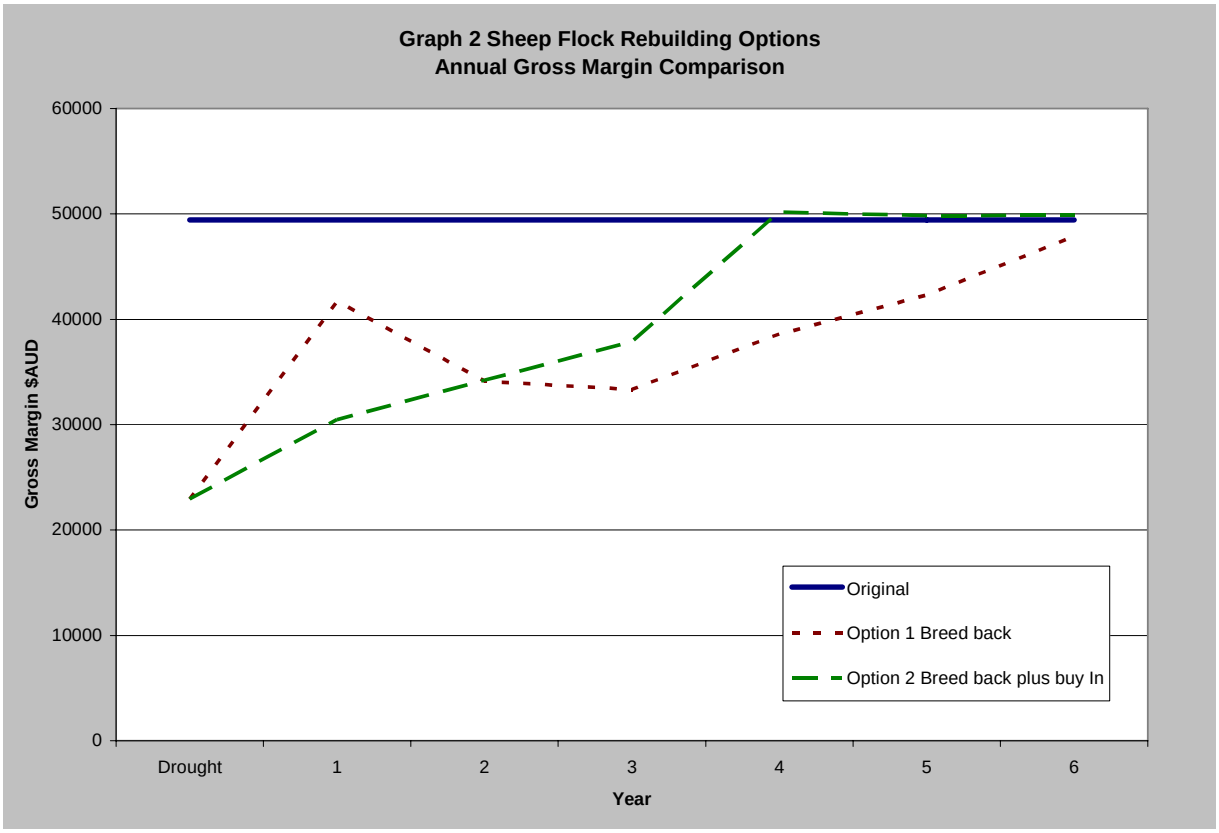
As a result of the drought management variables, the beef herd was reduced by 36% to 192 head, while the sheep flock was reduced by 37.5% to 625 head.

Option 1 – breed back

In the example, up to 90% replacement heifers and maiden ewes are kept until breeding numbers have reached pre-drought levels. By year five of the recovery period, the beef herd has reached 300 head. By year six, the wool flock has nearly recovered to 1000 head.

This trend for option 1 is illustrated in graphs 1 & 2. Plotted on the graph are annual gross margin





returns for the base (original), as well as options 1 and 2, for the drought year and six years of recovery.

How many replacements should I keep?

Usually, during the rebuilding phase, the more replacements you keep to build up your herd or flock, the faster your recovery to pre-drought production levels.

Am I better off breeding my own replacements or should I buy in replacement stock as well?

If your breeding numbers have declined significantly, you may need to keep your own replacements as well as buy in replacement breeders, in order to improve the rate at which your herd or flock returns to pre-drought production.

Option 2 – breed back plus buy in

In the example, option 2 included keeping up to 90% replacement heifers and maiden ewes plus buying in breeders during the recovery period until breeding numbers reached pre-drought levels.

In graph 1, cattle option 2 returns to pre-drought production levels one year earlier than option 1.

In graph 2, sheep option 2 returns to pre-drought production levels two years earlier than option 1.

Option 2 (breed back plus buy in) usually has a better recovery annual gross margin than option 1 (breed back), even when a 5% discount rate is applied to the 11-year period. A discount rate is the interest rate used to determine the present value of future cash flows.

What is the maximum price I should pay for replacement stock?

The maximum amount payable for replacement stock will largely be determined by the sale price of progeny and, to a lesser extent, the value of cull stock. There is a point at which the price for replacement stock is too expensive, and the better recovery option is to breed back only (option 1).

You need to determine your maximum price for replacements. If you cannot source stock for under this value, you should breed back only (option 1).

When comparing with option 1, the maximum cattle replacement price was just over $1000/head, while the maximum sheep replacement price was approximately $130–$150/head, depending on age.

Should I buy young or older replacement stock?

When the price of all ages is the same, it is usually better to buy in younger replacements. When older stock can be sourced at a cheaper price, then it is usually better to buy in older replacements.

There is a maximum price for older replacement stock compared with younger replacement stock. This is the price at which the younger stock at a higher price becomes the better option.

In the cattle scenario, the buy-in margin between 7-year-old cows and 1-year-old heifers in year 1 of the recovery period was $26. This means that the

older cows had to be more than $26/hd cheaper; if they were not, it was better to buy in heifers at $600/hd.

In the sheep scenario, the buy-in margin between 4-year-old ewes and 1-year-old ewes in year 1 of the recovery period was $25. This means that the older ewes had to be more than $25/hd cheaper; if they were not, it was better to buy in maiden ewes at $100/hd.

Which decision makes the greatest impact?

The choice between option 1 (breed back) and option 2 (breed back plus buy in) has the largest impact on annual gross margins.

In the cattle scenario, if you compare option 1 (breed back) with option 2 (breed back plus buy in), the advantage of option 2 in total annual gross margin return over 11 years is approximately $8400 (or $5800 including a 5% discount rate).

In the sheep scenario, if you compare option 1 (breed back) with option 2 (breed back plus buy in) the advantage of option 2 in total annual gross margin return over 11 years is approximately $14600 (or $9400 including a 5% discount rate).

The difference between options with different age and price variables is small (i.e. a few hundred dollars) when considering total annual gross margin returns over 11 years, as long as prices are under the maximum price for replacements.

Should I increase my maximum age at joining?

This depends on your flock or herd structure and the destocking strategies used during the drought. In general, the impact of increasing maximum age at joining for the longer term is one of the smallest.

In the example, increasing the maximum age at joining would only become effective from year 5 in the cattle herd and from year 3 in the sheep flock. This is because older breeders were culled during the drought: 100% of 7–10 year olds in the cattle herd; 100% of 3–4 year olds in the sheep flock. Therefore, it takes a few years of recovery before the oldest breeder becomes old enough to be affected by any increase made to the maximum age at joining.

In the cattle scenario, if you compare option 1 (breed back) with another option (breed back plus increase maximum age at joining from year 5), the advantage of the latter option in total annual gross margin return over 11 years is small ($500, or $277 including a 5% discount rate).

In the sheep scenario, if you compare option 1 (breed back) with another option (breed back plus increase maximum age at joining from year 3) the difference in total annual gross margin returns over 11 years favours the latter option ($12800, or $8900 including a 5% discount rate).

The benefits in the sheep example are felt during years 4–7, and can be attributed to the following:

- keeping the older ewes longer means that you sell more younger maidens (to maintain numbers at a constant 1000hd)
- maidens are sold at a higher price than CFA ewes, improving gross margin returns.

Grain graze or cropping

Once rainfall stimulates pasture growth during the recovery period, the depleted breeding herds and flocks do not utilise the whole property, as they did pre-drought. Even when implementing option 1 (breed back to rebuild the herd or flock), there is still vacant DSE capacity which can be exploited to enhance income generation.

Cropping and grain graze strategies could utilise the vacant DSE capacity during the recovery period, and enhance income generation per hectare.

ImPack Comparison

Three options were compared in ImPack (version 1.5 8/11/06). These included:

- option 1 – breed back (as in ‘Herd and flock rebuilding’)
- option 3 – breed back plus grain and graze
- option 4 – breed back plus grain only.

The example recovery options outlined should be used as a guide only. You would need to change them to take account of movements in commodity prices and input prices, changes in seasonal conditions and individual farm characteristics. Estimated prices are GST exclusive. Use your own figures and price assumptions to estimate your own gross margin and potential impacts.

Option 1 – breed back

In the example, the base cattle herd and drought management variables from ‘Herd and flock rebuilding’ were used. Option 1 involved breeding back replacement stock during the recovery period until pre-drought production levels were attained. Option 1 still had vacant DSE capacity to utilise.

Current gross margin budgets from NSW DPI were used when developing the grain graze and cropping scenarios. These publications included:

- Oats/wheat: grazing/grain (short fallow), central zone – east (*winter 2007*)
- Wheat: short fallow, central zone – east (*winter 2007*)

The main assumption used to generate the grain graze scenarios was that the carrying capacity of the land supported 8 DSE per hectare. Carrying

capacity varies from location to location. You may already be familiar with your carrying capacity. To calculate it, refer to NSW DPI publications *Using DSE's and carrying capacities* and *Adjusting the budgets for your area*.

In the example, the area of land that could be utilised for the grain graze scenarios was calculated to be approximately 107 ha, 77 ha and 10 ha in years 1, 2 and 3 (respectively) of the recovery period.

Option 3 – breed back plus grain and graze

In addition to breeding back replacement stock, option 3 utilises the remaining vacant DSE capacity to sow wheat for grazing and grain. The scenario described in the gross margin budget *Oats/wheat: grazing/grain (short fallow) central zone winter 2007* formed the base for this example. In short, the wheat was grazed at 2.3 hd/ha, gaining 1 kg/day for 80 days, priced at $1.90/kg of live weight gain. Wheat yield was 2.5 t/ha at $190/t on farm. Additional livestock costs were added to the gross margin, including cartage to property ($10/hd), veterinary costs ($9.26/hd) and selling costs of approximately $50/hd to cover commission, cartage from property and levies. Interest on monies borrowed to purchase stock was not included. Therefore, the combined gross margin used for the wheat grain and graze example enterprise was approximately $300/ha.

Option 4 – breed back plus grain only

In addition to breeding back replacement stock, option 4 utilises the remaining vacant DSE capacity to sow wheat for grain only. Wheat yield was 2.8 t/ha at $190/t on farm. For more details, refer to the gross margin budget *Wheat: short fallow, central zone, winter 2007*. The gross margin for the wheat-grain-only enterprise was approximately $224/ha.

Plotted on graph 3 are the annual gross margin returns for the base (original), as well as options 1, 3 and 4, for the drought year and six years of recovery.

The options which more fully utilise the spare DSE capacity bring higher returns.

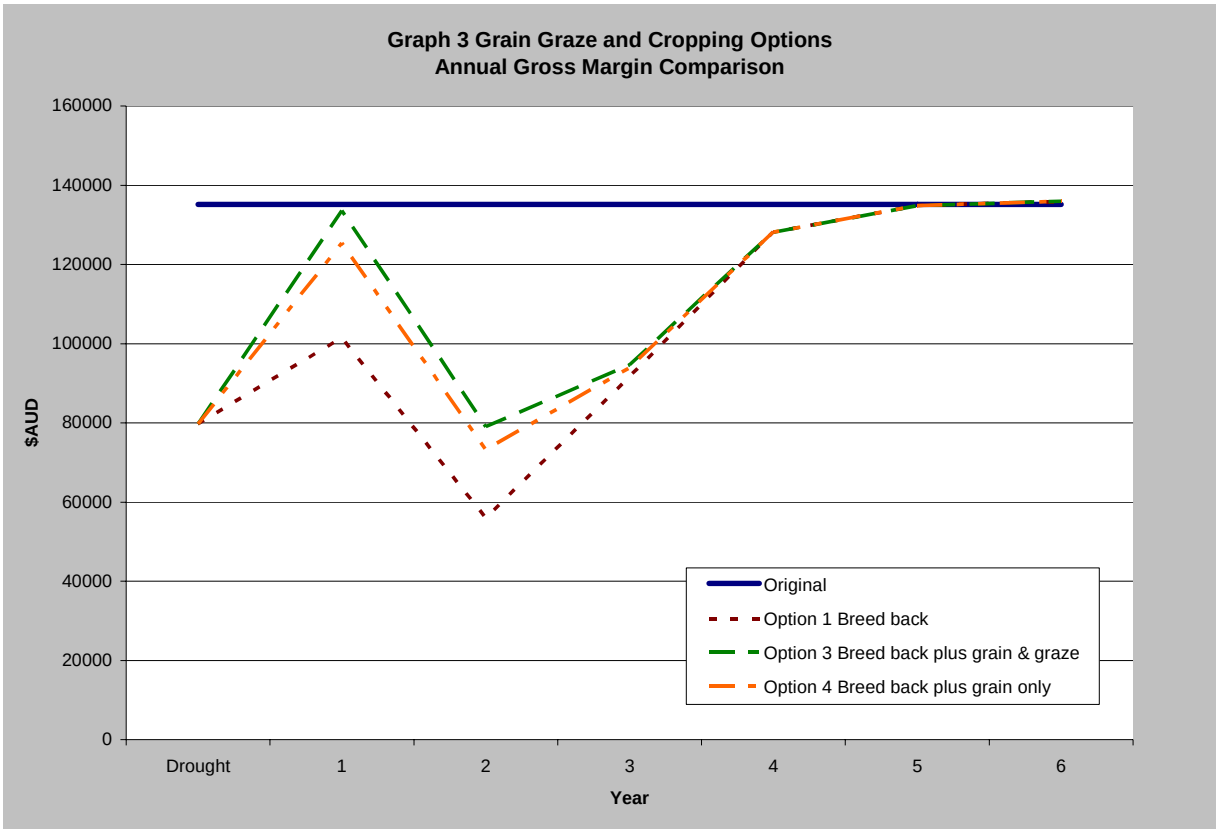
If you compare option 1 (breed back) with option 3 (breed back plus grain and graze), the advantage of option 3 in total annual gross margin return over 11 years is significant ($58200, or $51500 including a 5% discount rate).

If you compare option 1 (breed back) with option 4 (breed back plus grain only) the advantage of option 4 in total annual gross margin return over 11 years is significant ($43400, or $38400 including a 5% discount rate).

Trading stock or agistment

Once rainfall stimulates pasture growth during the recovery period, the depleted breeding herds and flocks do not utilise the whole property, as they did pre-drought. Even when implementing option 1 (breed back to rebuild the herd or flock), there is still vacant DSE capacity which can be exploited to enhance income generation.

Trading stock or accepting stock on agistment



could utilise the vacant DSE capacity during the recovery period and enhance income generation per hectare.

ImPack Comparison

Three options were compared in ImPack (version 1.5 8/11/06). These included:

- option 1 – breed back (as in 'Herd and flock rebuilding')
- option 5 – breed back plus trade stock
- option 6 – breed back plus agist.

The example recovery options outlined should be used as a guide only. You would need to change them to take account of movements in commodity prices and input prices, changes in seasonal conditions and individual farm characteristics. Estimated prices are GST exclusive. Use your own figures and price assumptions to estimate your own gross margin and potential impacts.

Option 1 – breed back

In the example, the base cattle herd and drought management variables from 'Herd and flock rebuilding' were used. Option 1 involved breeding back replacement stock during the recovery period until pre-drought production levels were attained. Option 1 still had vacant DSE capacity to utilise.

The current beef cattle gross margin budget for 'Growing out steers 240kg–460kg in 12 months (*May 2007*)', from NSW DPI was used when developing the trading and agisting options.

The main assumption used to generate the trading and agisting scenarios was 8.2 DSEs/steer. In the example, the number of steers that could be traded or accepted on agistment was calculated to be approximately 104 hd, 75 hd and 10 hd in years 1, 2 and 3 (respectively) of the recovery period.

Option 5 – breed back plus trade stock

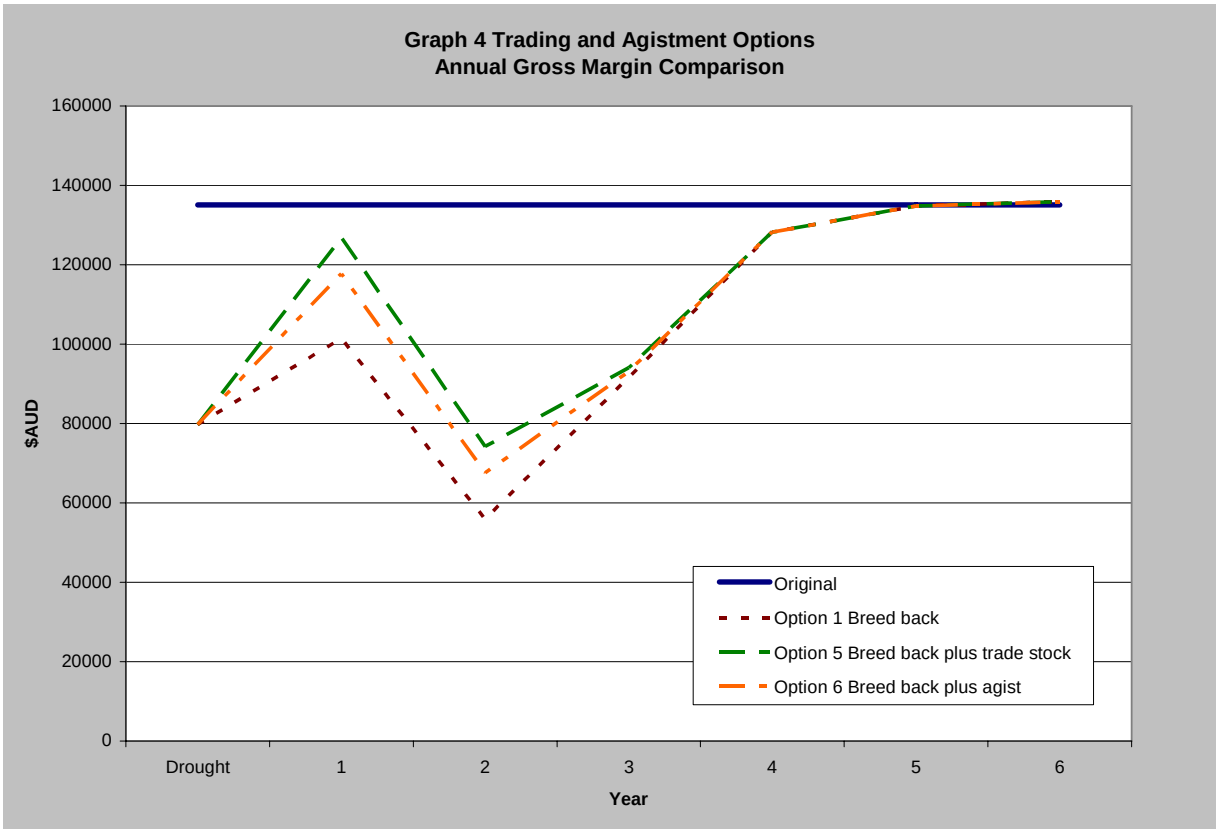
In addition to breeding back replacement stock, option 5 utilises the remaining vacant DSE capacity to trade steers. The scenario described in the beef cattle gross margin budget for 'Growing out steers 240kg–460kg in 12 months (*May 2007*)' formed the base for this example. The gross margin per head of traded stock used for this example was $244/hd.

You may need to access finance in order to purchase livestock capital during the recovery period. If stock are purchased using borrowed monies, interest costs should be included in the gross margin.

Although no interest costs were included in the gross margin of option 5, they could be as much as $50/hd if accessing finance.

Option 6 – breed back plus agist

In addition to breeding back replacement stock, option 6 utilises the remaining vacant DSE capacity to accept steers on agistment. The steers used had the same DSE rating as those in option 5. Net profit for agistment was set at $3/hd/week for 12 months. The gross margin per head of agisted stock used for this example was $156/hd.



Plotted on graph 4 are the annual gross margin returns for the base (original), as well as options 1, 5 and 6 for the drought year and six years of recovery.

The options which more fully utilise the spare DSE capacity bring higher returns.

If you compare option 1 (breed back) with option 5 (breed back plus trade stock), the advantage of option 5 in total annual gross margin return over 11 years is significant ($46100, or $40800 including a 5% discount rate).

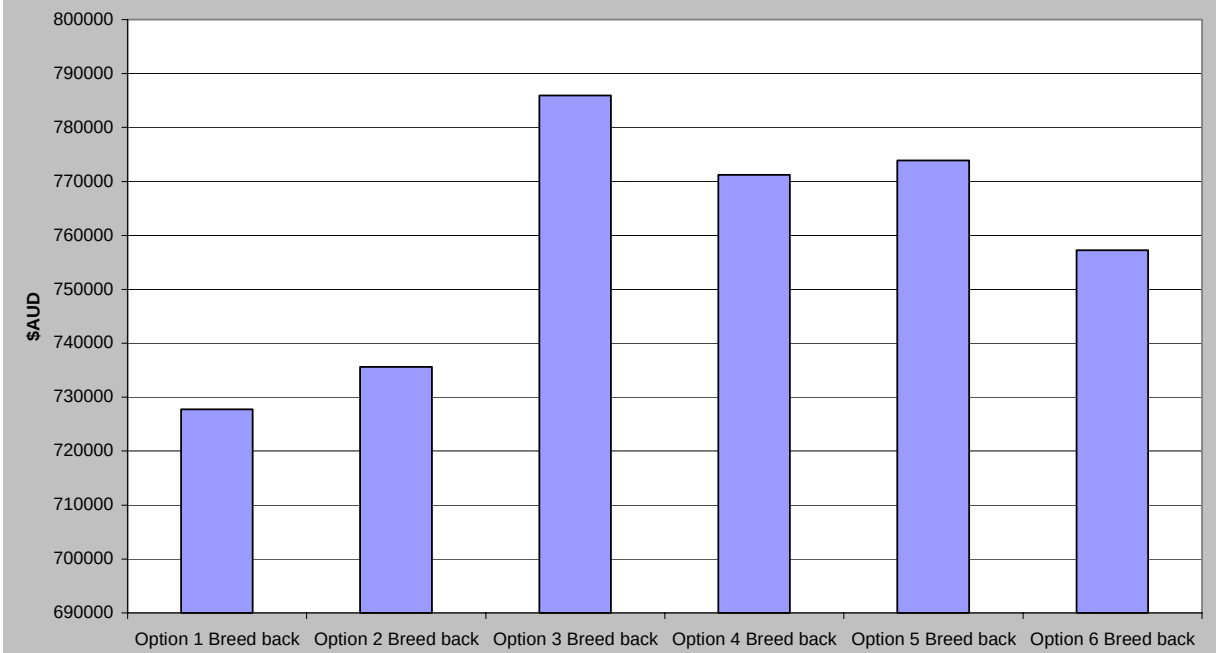
If you compare option 1 (breed back) with option 6 (breed back plus agist) the advantage of option 6 in total annual gross margin return over 11 years is significant ($29400, or $26100 including a 5% discount rate).

The annual gross margin total of each cattle recovery option for the drought year and the first six years of recovery is provided in graph 5. Top-ranking options include option 3 (breed back plus grain and graze) and option 5 (breed back plus trade stock). In order to implement recovery strategies such as options 2–5, it is highly likely that money would need to be borrowed; therefore, these options could incur a significant interest cost, which has not been included in this analysis.

Key considerations for recovery

- Review key risk factors (e.g. livestock, pasture, cropping, fodder, water, finances and human resources).
- Aim to improve key risk factors by developing plans incorporating the necessary safeguards (e.g. budgets, agreements, disease status) to protect your farm business.
- Spread risk across all enterprises.
- In a grazing-only situation, calculate the maximum price you can pay for breeding animals. Breed your own replacement stock and buy in replacements under their maximum price until full stocking rates are achieved.
- Trading livestock (e.g. cows, steers, wethers) on spare DSE capacity can form part of a grain graze enterprise (on arable land) or a graze-only enterprise.
- Cropping and grain graze enterprises on spare DSE capacity can be the best options if land is arable.
- Accepting stock on agistment or to background can utilise extra feed and increase cash flow without the added burden of increasing debt levels (as when investing in livestock capital).
- If spare capacity cannot be exploited as described above, consider a fodder conservation strategy to help utilise excess feed in good seasons. Costs are associated with production and feeding out. Selling fodder could generate a cash flow.

Graph 5 Cattle Recovery Options
7 Year Annual Gross Margin Total
Includes drought year and all years up to year 6 of recovery



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Primefact 41 *Managing pastures after drought*

Primefact 620 *Developing an effective breeding plan for your beef business*

Primefact 395 *Restocking after a drought*

Primefact 297 *Agistment guidelines*

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