

A cropping and livestock system

M. Donaldson

“Bracmar”, Boggabri NSW 2382

Abstract. A mixed winter cropping and cattle enterprise in the Boggabri district, run by a family partnership is described. A system of storing grain for sale or lot feeding cattle, and pasture improvement is outlined along with the effectiveness of this system during the 2002-2003 drought. Additional strategies used in the drought to maintain stock numbers and animal condition, such as grain feeding lactating cows and sacrifice paddocks are also described.

Property description

Our family partnership has an operation located 30 km west-south-west of Boggabri in the Willala district, consisting of a winter cropping enterprise of around 600 ha/year, growing wheat, barley and canola, and a beef cattle operation of around 250 cows producing European Union (EU) specification steers and heifers. The farm supports 3 families; 2 brothers, their families and their parents. The 3 men work full-time on the property. In August last year, we purchased a neighbour's property increasing our farm area by 50% from a 1600 ha base. The actual proportions of pasture and cropped area, and stocking rates are flexible at the moment as we adjust the scale of our operation, and doing some development work that fits within the confines of fiscal responsibility.

Essentially we have been running a crop-pasture rotation aiming for 5 years crop (wheat, barley, canola, wheat then barley), and 5 years of sown pasture. These pastures consist of around 525 ha of lucerne and subterranean clover mixes which are fertilised regularly. We also have native grassland, consisting of wallaby, Queensland blue grass and burr medic, and/or improved with subterranean clover, and some open grassy woodland, with ironbark, bloodwood and some cypress pine. The majority of the cropping country is sown to lucerne, with some sown to sub-tropical grasses which on occasion are used as a bloat refuge from lucerne. By sowing improved pastures and improving our native pastures, plus a regular fertiliser regime, we have tended to “rev the system up”, in order to provide reasonable income for 3 families. The addition of the new farm will allow some relief from this.

Soils consist of black self mulching clays, red basalt kurrajong country and lighter sandy cypress areas. The slope varies from creek flats to 6%, with some of our steepest country on black cracking clays, which can make it hard to manage. Our average annual rainfall is 575 mm (23”).

Cattle herd structure

We breed a Simmental-Hereford criss-cross, with our herd structure typically consisting of 4 mobs: a dry cow mob, a wet/calving mob, a fattening mob and a weaner mob. The 2 breeding mobs consist of about 250 breeding cows and heifers in total. One mob is joined to Hereford bulls for an autumn calving, the other to Simmental bulls for a spring calving. Each mob breeds replacements for the other. The staggered calving provides cash flow throughout the year and a reasonably constant and manageable feed demand.

We turn off EU specification steers and heifers at around 280-300 kg dress weight through Objective Livestock Marketing and the Double B Beef marketing group. They are usually milk to 2 tooth and sold direct to meatworks. We sell about 200-250 head of cattle a year, which includes culls.

All paddocks are rotationally grazed, with the fattening mob given preference to the best feed, then weaners and wet cows, and lastly the dry cows. Grazing paddocks are spelled for 2-6 months depending on the season. During a good season bloat is a problem, however in peak periods we use Rumensin capsules in those cattle most at risk (usually only in the fattening mob).

Grain storage

As part of our cropping operations we aim to store up to 450 tonnes of barley. Originally we started keeping bigger and bigger silos for seed, and eventually worked out that as well as having ample seed supplies on hand, we also had a marketing tool that allowed us to sell grain July-September at some premium to harvest prices, whilst still having the option of keeping the grain as a drought reserve.

The decision to sell all or part of the stored grain from the previous harvest depends on the progress of the new crop that hopefully is well established by August. We are generally reluctant to sell our grain stocks if there is no prospect of replacing it with newly harvested grain in November-December.

We try to keep around 250 tonnes of barley on hand at all times. As the new crop becomes more advanced, we generally sell off the stored grain, unless there is a chance that the season is turning bad. In that case the stored grain is directed towards the livestock operation.

In 2003 we elected not to sell about half of this stored grain. Some of this was used to feed cattle in an opportunity feedlot.

Drought reserve

As part of our philosophy of maintaining production from the farm we routinely carry drought feed reserves of around 9000 small bales of hay, plus some silage stored underground, 200-250 tonnes of barley, and up to 14,000 litres (about 3000 gallons) of molasses.

Wherever possible we maintain a production system that reacts to dry or drought conditions by "leaning on" the cropping enterprise, either by feeding failed crops and/or use of our stored grain. We refrain from maintenance feeding, or selling down our production base as a reaction to dry times because it means we would be in damage control for too much of the production cycle. This would have a significant effect on our long term bottom line.

The 2002-2003 drought

Throughout the most recent drought we maintained an emphasis on producing finished cattle for a specific market, ensuring that all cows were culled early enough to fatten, and that the remaining breeders had a successful joining at the usual time. Despite

the dry, the cows continued to calve, and so we had to keep pushing out sale stock on the other end of the production line. We elected to continue supplying EU specific product to the market *via* our opportunity feedlot. This also meant production feeding the weaner mob to ensure a growth rate that would have the weaner stock up to entry weights for the feedlot.

Managing the "shades of grey"

As a producer, one of the hardest decisions seems to be determining how bad a current dry spell is, and if it really is the start of another drought. If we were to reduce our cattle numbers at the hint of a hard time, we feel we would be in damage control for a significant proportion of our average production cycle. Therefore, the opportunity feedlot has become a useful tool in clarifying those frustrating "shades of grey".

Triggers for activating an opportunity feedlot

Our trigger to move from a paddock grazing scenario to a feedlot is based on monitoring the weight gains of the fattening mob. We routinely weigh this mob at about 4-6 week intervals. We generally expect a minimum weight gain of 1 kg/head/day. If the performance of the mob falls below this level, we start to assess whether there is the prospect of improving on this performance by say moving the mob onto a different paddock or water supply.

If the season is starting to dry off and we get to the stage where we are on about our second last paddock of fattening feed, and weight gains fall to about 0.5 kg/head/day, we start selecting suitable cattle from the fattening mob, to be placed on a starter ration in the opportunity feedlot.

All cull cows (pregnancy tested empties and broken mouths) are identified and fattened on the last of the paddock feed as they are unsuitable for our feedlot situation. These cull cows are booked into an abattoir well in advance so that they do not get to the end of their paddock feed in good condition, only to slip whilst waiting for a space in a meatworks.

By activating the feedlot we are "destocking", whilst still maintaining the option of turning the stock back out onto pasture if the season changes dramatically for the better. In the meantime, we have reduced stock pressure on the dwindling paddock reserves, preserved ground cover levels and ensured that

production is maintained with the ability to continue selling finished stock to a market that is not flooded with drought "fire-sales", that is, large yardings of unfinished stock.

We maintain good contact with our marketer for advice and also book cattle into meatworks well in advance. When those in the feedlot are ready for sale we do not have to wait for access to a meatworks for over the hook sales. Using this system, the average prices for stock sold from July, 2001-June, 2003 were steers \$1140/head, heifers \$1037/head, and cull cows \$854/head (all GST inclusive).

Low cost input feedlot

Our opportunity feedlot consists of a 0.8 ha yard with hotwire, with reliable water supply and perimeter shade (trees outside), a second-hand roller mill (\$600), 2 cattle self-feeders (say \$4000), and a second hand mixall (\$3500). We use a tractor to run the roller mill and mixall. So, all up the cost is around \$10,000 for the capital side of the feedlot.

We chose to use self feeders as opposed to open troughs, as a lifestyle decision and as a form of breakdown insurance. On the couple of occasions when we had a breakdown with the feed mixing, we generally had a buffer of feed in the feeders which allowed us some time to carry out repairs without interrupting the cattle feeding in the feedlot. Self-feeders allow us to have a feed mixing day, and then a few days away from mixing feed.

It is important that we are able to pace ourselves in this type of drought feeding, so we make it easier on ourselves by not being locked into a system that requires constant labour input. The self feeders still require daily checking to ensure that they are running correctly, especially on starter (high hay content) mixes. The water trough also needs to be cleaned at least every second day.

When we introduce cattle to the feedlot, we usually double the recommended introduction period. This means using more hay, but by using a conservative approach we reduced grain poisoning, as we have made a conscious and personal decision not to use antibiotic additives in the feedlot mix. From time to time, when we do have problems with grain poisoning, the beasts are isolated and fed elsewhere.

We weighed cattle about every 4 weeks whilst they were in the feedlot and achieved an average weight gain of about 1.6 kg/head/day.

Non-feedlot drought strategies

Once we enter a dry period where we only have dry feed for most mobs of cattle, we usually start feeding molasses and urea to the dry cows and possibly the wet cows. Some supplementation of cotton seed would also be likely especially during joining. The use of molasses rollers has been quite successful, although a little labour intensive, and we are looking at ways to streamline our delivery of these supplements.

To reduce soil compaction, our cattle generally do not have access to the cropping paddocks off-season unless soil moisture is low. Exceptions to the rule are the use of winter feed wheats that are grazed if required during winter, and later harvested after destocking from about August.

In the last drought we did graze a few selected failed crops including canola. The canola was a valuable contribution after calving for the wet cows (6 weeks for 100 wet cows on 40 ha) and for joining, however, it was not without its difficulties as cattle tended to need a hay supplement to offset a "vomiting" effect during cud chewing. Without the hay/roughage supplement the cattle tended to stop eating the canola. However with it, we noticed a lift in fat score of the cows from say 2 to 3, whilst also feeding a calf.

Grain feeding of breeding cows

Towards the end of the drought, our paddock dry feed reserve had run down to the extent that ground cover limits were being threatened, and a decision was made to confine a mob of 120 cows and young calves in a 2 ha sacrifice paddock, and to grain feed them in an adjacent 1.2 ha holding yard.

There was plenty of advice on how much grain to feed each animal per day depending on liveweight and lactation/pregnancy status, however there was precious little advice on exactly how to do it without poisoning the "boss" cows of the mob and starving the subordinate ones. The following was our solution to this problem.

We made up a 120 m steel trough made from 16 gauge sheeting folded in a flat bottomed "on the ground" style with tapered interlocked sections. The cost was around \$3000 (conveyor belting was hard to source at the time we were developing our trough). The trough was laid diagonally across the feeding yard with the access gate in the same corner as one end of the trough (Fig 1). An electric fence hotwire was

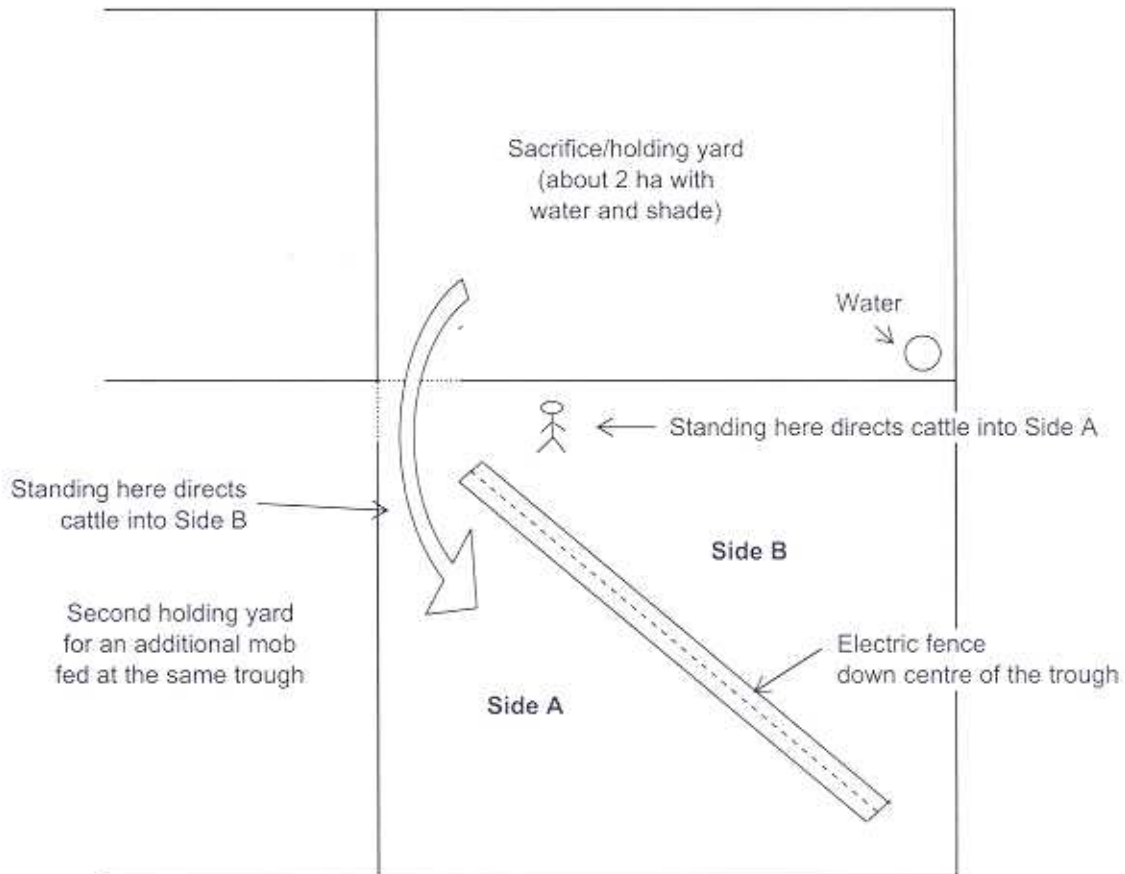


Figure 1. Paddock and trough setup to grain-feed lactating or dry cows.

placed above the trough to prevent cattle jumping over the trough or bully those on the other side. Initially it was not turned on.

The feed grain mix was augured into the trough from the mixall, whilst the feeding yard was empty. Once the feed was out, cattle were moved into the yard, and directed first to one side and then the other side of the feeding trough. The trough was wide enough to allow cattle to feed from both sides. Once the grain in the trough was eaten, the cattle learned to leapfrog each other further up the side of the trough. When the full length of the trough was empty (15-20 min.), the cattle were returned to their watered sacrifice/holding yard.

As the cows were lactating, we elected to feed the mob on a daily basis. The system worked well, even allowing calves to feed without the boss cows dominating them. This system would allow multiple mobs of stock to use the same feeding facility, and allow more of a farm to be "destocked" to feeding yards.

Lessons from the drought

Sale of mated heifers

During the drought we were given some very sound marketing advice – to sell our recently joined replacement heifers. The argument put to us was that they were of a marketable age and size, and that they would not be contributing financially to the enterprise for at least 18 months. We decided to follow this advice, put the heifers through the feedlot and sold them with EU specification direct to meatworks for an average price of around \$1100 each. Most of these heifers were fed for around 7 weeks. We purchased a similar number of 6-year old cows in advanced pregnancy in May 2003 towards the end of the drought, for \$825 each.

Whilst this action was more a case for "not feeding" in a drought, I suppose we hedged our bets a little and to some extent proved that both "production feeding" and "sell don't feed" decisions can have benefits.

Silage feeding of weaners

Silage feeding was quite successful, using oats based silage that had been stored under ground for over 10 years. We had some trouble removing silage from underground silage pits (backing out of a hole in the ground with a heavy load on the silage fork). However, there was a lesson learned, and we have a new design for silage pits using a hole or pit constructed into the side of a hill, with a surveyed and drained floor. We are also considering high density baled silage as opposed to the flail cut silage we used last drought.

Fertilising native pasture

Topdressing native pasture makes them more palatable to stock. This is good and bad in that although there is a high utilisation of available dry matter, it often means that a carry over of "rough dry grass" into a dry period is not as common as it used to be. Feed reserves tend not to slowly decline, but rather come to an abrupt end. Therefore monitoring and assessing what you have left is more critical.

Ground cover

Ground cover levels are monitored during the dry period and a ball park figure of around 70% used as the threshold level at which a paddock was destocked. During the most recent drought, most of the more fragile and steeper areas of the farm were destocked for over 6 months. This destocking usually meant that the stock had to go into sacrifice areas that hopefully were more stable and able to recover.

Feed budgeting

Feed budgets were essential. Knowing how many bales or tonnes of feed were on hand compared with the estimated consumption by the current numbers of livestock, was essential for planning our feeding and sales strategy. To some extent it also helped ease some stress levels by having some sort of handle on our short and medium term situations.

Would we do anything different next drought?

We would probably do most of it again, including early weaning, sale of recently mated heifers, sacrifice paddocks, and feeding-off failing grain crops. The opportunity feedlot is reliant on labour being available to run it. It is a constant and demanding job that has significant demands on your time, but it is also very

beneficial in terms of cash flow.

Establishment of perennial grass based pastures, including Premier digit, Bambatsi panic, Katambora Rhodes and Consol lovegrass will become a higher priority. These pastures act as a "haystack in the paddock", allowing for better levels of ground cover, and higher levels of available dry matter per hectare. Some of our native based pastures are only just making the grade so we are planning to put some areas under permanent introduced grass and legume-based pastures. Our rotations of crops and pastures will take into account some preparation for these areas.

Routine topdressing of all our pastures will continue. A move towards a mix of perennial grasses and lucerne and clover pastures is likely, to try and balance our pasture mix between high production and high protein medics and subterranean clovers, and the less bloat prone serradella and grass based pastures.