

## Integrate or separate – the debate: integration case study 1

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“Wyuna”, Mullaley NSW 2379

### Outline of property and objectives

“Wyuna” is located 17 km south-west of Mullaley (half way between Coonabarabran and Gunnedah) at 300–400 m elevation and with an average annual rainfall of 650 mm. We operate as a family farm partnership with my parents Lewis and Nola on 2 farms adding up to 3200 ha.

Thirty nine percent of that area is full time, no-till farmed with a winter and summer crop rotation with anhydrous, SF 45 DAP and zinc fertilisers added as needed. These areas are mixed alluvial flood plains and black earth slopes. In theory, the cattle do not graze these areas unless the soil is very dry and we are in the midst of a major drought. In practice, this occurs 1 in every 10 years on sorghum stubble.

The slopes with shallow black earths or grey and red clays are farmed in a rotation of winter cereals, canola and planted pastures. Sixteen percent of the total farm area is currently in the cropping phase of this rotation and 6% in the improved pasture phase. Again, different fertilisers are used as needed.

Thirty eight percent of the farm is non-arable volcanic slopes or riparian areas. These native pastures have had aerial application of legumes and SF 45 every 3 years. The final 1% is rocks and bush on “jump up” hills. These are mostly not fertilised and unless they have been fertilised the cattle do not normally climb them.

The predominantly Angus herd has 400 females and we also run numerous kangaroos and feral pigs.

Our objectives as a business are: have a safe and learning work environment; to be a good neighbor; to be good to do business with, and, to be profitable for the long run.

### How long and why have we been integrating cropping and pastures?

In May 1989, we trial planted a 100 ha paddock of mixed soils to a lucerne, phalaris, clover and annual

medic mix. Despite doing many things wrong it was a tearaway success. The paddock was used for fattening steers for more than 3 years and there was no following or planting of forage crops required in that paddock. The reason for this trial was that Mark had been sick with chronic fatigue for 4 years and he wanted to do less work by increasing the cattle and decreasing the cropping. Also, this paddock had a long history of poorly yielding winter cereals and the soil was too shallow to support a summer crop rotation and we had very mixed results with winter legume crops.

We have been seeking to improve the chemical and physical qualities of our soils and manage disease by having a planned pasture phase so that we can grow better winter crops. We can make money producing beef, but given good soil health and water we can make a lot more growing winter grain crops.

### What are the advantages?

- Makes life interesting. Not only do cows look pretty, they are great to chase on a nice XR.
- Can plan cattle management activities to fit into the quieter times in the cropping enterprises. This has the effect of spreading the labour requirements more evenly over the year.
- Spread economic risks and improve profitability.
- We have beef cattle on the non-arable areas of the farm (38%), hopefully making a sustainable income.
- Flexibility is provided by the 22% of the farm that is in rotation between cropping, forage and pastures. The proportions of crop and pasture can be varied according to the relative market values of beef and grains. Also, the relatively new dual purpose winter wheat varieties give an added flexibility to farm management from the point of view of the cattle feed requirements. We are planning to plant less forage crops and replace

them with dual purpose crops.

- The grazing of winter wheat provides good quality feed to steers when lucerne is bloaty or semi-dormant.
- We "scratched" a forage cereal into a couple of overgrazed perennial pastures in 2003. We didn't aim to kill the pasture and we did very rapidly improve ground cover and later on there was plenty to eat. We did do a post emergent broadleaf spray and SF 45 was spread on one of these paddocks. The perennial grasses stayed and grew well in the summer, when it rained.
- On these soils and areas of the farm that cannot economically support a summer crop rotation the pastures offer a disease and weed break. We have used lucerne pastures for providing nitrogen to the soil. Bambatsi panic and legumes pastures have been established to manage rising water table and/or improve soil organic matter levels. The cattle allow us to make money from those pastures at the same time.
- Lucerne was planted in one field that was due to be planted to sorghum. The lucerne was planted soley to help remove a compaction layer in the paddock. We made hay from it, applied SF 45 and grazed it for 4 years. The following durum wheat crop yielded well and went DR1. At the time of writing we have not as yet dug a hole to check what the effects on the soil compaction layer were.
- When a severe drought comes along we do have access to a "haystack" of fibre in the form of sorghum stubble (on average about 400 ha).

### **What are the disadvantages?**

- Bloat is the most obvious problem, but not the biggest.
- Need to have smaller paddocks and access to water for the pasture phase and bigger areas for cropping phase.
- Cattle compact and rough up the soils when they are wet.
- Still working out how to manage wild oats better. That is, how to economically manage wild oats in the pasture phase so as not to be reliant on post-emergent wild oat sprays in the cropping phase. We have found that smaller paddock sizes can put more grazing pressure on the wild oats.

Also spraying out pasture prior to seed set of wild oats and ryegrass.

- Ever present danger of being greedy. Any short term benefits of completely grazing out (<70% ground cover) a pasture forage crop or crop residue is far out weighed by the costs to the soil and the plant population. The soil can be compacted, pulverised and eroded. Also the soil's ability to collect and retain water is adversely affected. The overgrazed perennials can die or take a long time to recover. Either way the pasture can become less biodiverse and less stable with an increase in weeds and annual grasses. It is also important to remember that kangaroos can keep lowering ground cover after you have removed the cows.

### **What is your advice to other producers?**

- It has been our experience that Puna chicory planted with lucerne helps to reduce the incidence of bloat.
- Letting weeds grow on your fallows and then grazing them is an under-utilisation of valuable nutrients and moisture. Do it properly and plant a much more productive pasture or forage species. It costs more, but you make much more. The other way is just a rear guard action!
- Pasture is better than forage. You have perennials that drink deep, all the benefits of biodiversity and they don't need planting rain to get up and go. We survived on lots of 5 mm rainfall events at the end of the drought. You can't plant anything on 5 mm. If you look after a pasture like you do a properly prepared and planted forage crop you surely would have a bulky pasture. Having said that, dual purpose and forage crops can pick up the slack during bloaty autumn periods and a dormant July period.
- We have found that a single electric wire on posts 20 m apart can keep even starving cattle where you want them.
- Electric fences are another living thing that you have to husband.
- Have a good system of electric fence erection and retrieval.
- Own a quad-cycle or horse to get cattle off lucerne fields in the wet.

- Let pastures and forage crops have good bulk and ground cover before spraying them out and don't graze them bare afterwards. Preferably do not graze them at all.
- We see grazing crop residue as a cost. Maybe it could cost us 4-times more than what we would make. However, there are opportunities and occasions when we have chosen to use sorghum crop residue as a feed source. On these occasions

the soil profile under the crop residue has been dry. Our practice has been to use it as a fibre source to accompany molasses and urea. The sorghum stalks were temporarily fenced out so that it took the cattle 7 days to eat the area before moving to the next fresh strip. This meant that they ate the good with the bad over a short period and we limited the area of potential damage.