

## **Integrate or separate – the debate: separation case study 1**

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### **Outline of property and objectives**

I manage a 2700 ha family farming and grazing operation 30 km west of Quirindi on the Liverpool Plains. This is in a 625 mm rainfall area with black earth plains and sedimentary ridges.

Our goals are to enjoy and profit from our farm while endeavouring to improve the natural resources for future generations.

### **How long and why have we been separating cropping and pastures?**

We began separating the livestock from the farming areas in 1980 when we saw the need to implement some erosion control. We had experienced several flood events during the 1970s, which had begun some serious gully erosion and also taken topsoil from paddocks in sheet erosion. This brought about the introduction of strip cropping and the beginning of excluding livestock. This was a successful start, which then developed into no-till and ultimately the abolition of strip farming and the total exclusion of livestock from grain-growing areas of the farm. Our farming operation has been fully no-till since 1992.

### **What are the advantages?**

Since separation we have been watching, smelling and feeling our soils (and we have not gone mad!) to see what changes have been occurring. We have certainly been able to protect our topsoil from erosion loss, but more importantly have noticed many other changes. We have reduced compaction to a large extent, and earthworms and other beneficial “bugs” have returned to our soils. Heavy rainfall no longer lies on the surface for days and we are able to fill our soil profile with water much more quickly. Therefore, we have more planting opportunities and the topsoil holds its moisture longer, allowing a longer planting time and the soil now feels soft to walk on as the organic matter levels have been restored to their pre-cultivation levels (around 1.5%).

### **Livestock or cropping – identify the key enterprise?**

Although we run a mixed farm of both cattle and cropping we have determined that our key enterprise is cropping. There are many reasons for this including the type of country, skills, climate etc, but the key driver is profit. A recent Holmes and Sackett benchmarking comparison that we participated in showed average grain returns for wheat of \$348/ha and sorghum of \$362/ha. This contrasts with the livestock average returns of \$152/ha for beef breeding and \$162 for beef trading enterprises. So, why would you compromise your key enterprise?

### **Less compaction**

Compaction is the greatest yield retardant in our cropping system. It does not matter how much rainfall you receive or fertiliser you apply, if there is compacted soil yields will be reduced in relation to an adjacent uncompacted soil. There is no doubt that livestock run on paddocks during wet periods cause significant compaction. Why else would the road makers have developed what was called the “sheep’s foot roller?” I believe that this compaction is also occurring in the drier periods due to constant foot impact. This then limits rainfall infiltration and retrieval, and therefore our cropping opportunities and yields.

### **Stubble has value**

The sight of a paddock of stubble in a dry time seems like a good way out of a feed shortage, but there is a cost. It is a cost to the livestock enterprise and should be treated as such, but also a cost to the cropping enterprise as you are severely compromising profitability. It is essential to maintain ground cover on our cropping paddocks to shade the soil surface and reduce evaporation wind velocity near the soil surface, saving water that can then be converted into yield. The stubble is then broken down to organic matter which eventually feed our crops. If you continually remove both the grain and the stubble

where are the future nutrients going to come from to maintain our yields?

### **Keeping options open**

In our cropping enterprise, we are geared to take advantage of a full profile of moisture when it occurs by planting either a summer or a winter crop. This could be double crop, short fallow or long fallow depending on the moisture to give us the planting opportunity. By running livestock on the cropping country we would be limiting these cropping opportunities and therefore limiting our profitability.

### **Small but significant benefits**

By totally excluding livestock the need for fences and water is removed and therefore the cost of maintenance is saved. By removing fences

approximately 2% extra land is utilised (depending on previous paddock size). At a cropping average return of \$355/ha this is an extra return of \$7.10/ha.

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

The only disadvantages are those perceived by mindset. If profit is a key driver disadvantages disappear!

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

Have a good look at what your objectives are and where your profits are generated and then make an informed decision whether to run livestock on the cropping country or not. In our case there is no decision. Livestock and cropping must be separated.