

# Converting water to grain and meat

Through the Northern Victoria Grain & Graze 2 program, a project looking at how to efficiently convert irrigation water to grain and meat by grazing winter crops is occurring. The project aims to increase the knowledge and skills of farmers engaging in, or considering, grazing crops by providing them with information about varieties, crop agronomy, grazing management and the effects on livestock and crop production.

**Location:** Nathalia

**Farming operation:** cropping and sheep

**Livestock:** 700-800 first cross ewes

**Crops:** wheat, barley, canola, field peas, soya beans and lucerne

**Mean annual rainfall:** 400mm

**Soil type:** mostly clay

Mackenzie Craig, who operates a mixed farm at Nathalia with his wife Robin, is not afraid to graze his cereals to meet the nutritional demands of his sheep.

But beyond this, Mackenzie says the grain and graze system has benefited more than just his livestock. He credits it with helping his business to survive the challenges of the past 15 years, including prolonged drought and reduced water allocations.

Prior to the Millennium Drought, when water was plentiful, the Craig farm carried no stock and was purely a cropping enterprise.

"We basically got sheep to get us through the drought," Mackenzie said.

"I bought a mob of Merinos in 2002 and because I didn't think any of our crops would finish I grazed everything."

As predicted, harvest 2002-03 was dismal. Mackenzie harvested only enough grain from their irrigated crops to keep for seed.



But, thanks to income generated from wool and prime lamb sales, the business survived and the sheep were there to stay.

## The system

From its somewhat desperate beginnings, Mackenzie's grain and graze system has evolved so that it now encompasses crops, varieties and farm practices specifically suited to it.

But while he is moving ever-closer towards a system that delivers the maximum benefits to both livestock and cropping enterprises, Mackenzie has no qualms about sowing a crop purely to feed his sheep.

In fact, each season he identifies early which crops (generally wheat) can be kept purely for grazing if the need arises.

To cater for increasing livestock numbers, changes have been made to the cropping regime to reduce long

season wheat varieties that can be heavily grazed (such as Wedgetail and Mackellar). More recently, lucerne was included in the rotation.

"We lamb at the end of March/early April, so the ewes usually don't go into the paddocks until two to three weeks later, with lambs at foot," Mackenzie said.

"I'll put the twinning ewes onto the 2012 sown lucerne this year. It will be the first time we will have our ewes lamb down on green feed."

Over summer, Mackenzie's sheep graze stubble and then are supplementary fed (grain/hay) until the cereals are about 30cm tall (4-5 leaf stage).

"They are hanging out by then," he said.

"We never have too much feed so our wheat crops are often grazed back to the white, even so, I've never completely killed a crop from grazing."



Mackenzie's approach is flexible, with some paddocks locked up early, while others are grazed right through.

This system allows decisions to be made during the season, based on expected crop yields, climate forecasts and the health of stock.

"Our priority is to finish our lambs without damaging the crop, but for both enterprises there is some disadvantage," Mackenzie said.

"If we graze a crop for three to four months we will have to apply more nitrogen to get more vegetative growth. But we do get both grain and meat from the one crop, so I think that outweighs any compromise."

## Challenges

Nitrate poisoning is a big challenge to the Craigs' system, particularly when crops are drought stressed or frosted and nitrate concentrates within the plant increase.

For this reason, Mackenzie avoids grazing canola, unless there is a drought or other such crisis.

"We try to keep a close eye on stock when we think they are at risk. We will supplementary feed them hay or straw and treat sick animals early," he said.

The nitrate issue also influences the timing of top-dressing, and working around grazing sheep can sometimes be logistically hard to navigate.

In-crop spraying is also more difficult when grazing sheep are present. This was very evident during a leaf rust outbreak in 2011 which Mackenzie described as "an agronomic challenge".

In terms of weeds, sheep can be beneficial, but finding a balance (between chemical and non-chemical control) is important.



## Benefits

Mackenzie cites the ability to respond to the season and markets as the major benefit of his system.

"In farming I think it's important to have several tools in your box," he said.

"I like being able to farm according to what the season, or particular situation, dictates, and not to be tied down to one strict practice or system."

Mackenzie said grazing crops might be a compromise in terms of soil compaction (more of an issue with cattle) and weed spread, but there were also clear benefits such as lighter stubble loads, diversity and risk spread.

"My system has allowed me to integrate stock into the cropping enterprise," he said.

"I don't look at my crops and stock as two separate businesses but as one: they dovetail into one another."

## The future

Mackenzie said the sustainability of his farm has benefited from his grain and graze system and he would continue to refine it in the years ahead.

"The hardest thing was having the confidence to give it a go," he said.

"We got the sheep to get us out of trouble and then, once we had them, we had to work out how to change the system so we could feed them.

"We are always looking for varieties that suit grazing and we still agonise over things like how long and hard to graze. But we're getting better."

With support from ICC, his agronomist, industry experts and agricultural research organisations such as DEPI, Mackenzie is focusing on improving stock growth rates, implementing better recording practices, selecting the best cultivars, getting the weed/nutrition balance right, filling the feed gap and reducing the number of 'sacrificial' paddocks in his rotation.

"We're still learning as much now as we did at the beginning ... but we're confident the grain and graze system is here to stay," he said.

## Find out more

For further information about the Northern Victoria Grain & Graze 2 program, including opportunities to get involved, contact:

**BCG**

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