



Lucerne and chicory – when opposites attract

To Don Price, lucerne and chicory seemed like the perfect match. A nitrogen-soaking non-legume, chicory had all traits of being the right mate for nitrogen-producing perennial legume, lucerne. But even with the science behind him Don Price was amazed at how well the pair hit it off. Today, on his southern Victorian property, Don is reaping the rewards of the couple's fruitful relationship enjoying more productive pastures, less weeds and better soil structure.

"We first started to sow lucerne and chicory together about 8-9 years ago," Don said.

"Today, the paddocks boasting the combination are as profitable as our cropping paddocks. During 2007-08 our best lucerne and chicory paddock yielded \$2000 per hectare as a result of the profit derived from silage and the lambs turned off it.

A lucerne paddock that was unable to maintain pasture production was the catalyst for the trialing of the combination. We decided to combine the lucerne and chicory as a possible remedy.

Now that paddock is probably one of our best pasture paddocks.

It is also of benefit that both species have a similar growth pattern.

Some paddocks have had sub-surface pipes installed in areas normally too wet to grow lucerne. However, we are finding the lucerne is drying the soil out so much that the pipes have almost nothing in them. Adjoining paddocks without lucerne and chicory still run.

All up about 21 per cent of the property's grazing land is sown to lucerne and chicory and we intend to expand that amount.

key points

- Lucerne and chicory work well as a mixture with complementary growth habits
- While lucerne puts nitrogen into the soil, chicory is a non-legume, which is a can use the extra nitrogen
- A lucerne/chicory mixture supports lamb growth rates.

farm info.

Case study: Don Price

Location: Cavendish, Victoria

Property size: 1000 ha

Mean annual rainfall: 650 mm

Soils: Sand over clay, heavy cracking clay, redgum podzol

Enterprises: Cereals, sheep (meat and wool)



Photo: Don Price

The combination of lucerne with chicory has proven to be a success for Don Price's lamb enterprise. Don sells heavier lambs early, leaving the following 60-70% to graze the lucerne, chicory pastures until they reach a target carcass weight of 20 kg.

During the past, in all paddocks, lucerne had tended to do better than the chicory. However, in 2007 the chicory did just as well, even six years after sowing.

The process

There was a degree of trial and error when we first started but to me it was also a common sense thing. Lucerne is a legume that puts nitrogen in the soil. Chicory is a non-legume that likes to take nitrogen from the soil. It just seemed sensible.

I also went on a study tour of New Zealand where producers were raving about chicory. The farmers there were reporting on how it was a great tool for balancing a sheep's diet.

Lambs tend to do poorly on lucerne alone due to the excess ammonia it puts in the rumen. It has a bit of a reputation for causing 'red gut'. However by mixing

lucerne with chicory this problem seems to be solved. Lambs do fantastically on the combination.

We lamb during July and wean early, running weaners on a combination of clover, ryegrass and phalaris. During that time we cut the lucerne for silage. When the initial weaning paddock has dried off, the lucerne paddock already shows signs of regrowth.

A portion of the heavier lambs are sold early. The remaining weaners, about 60-70% of the original number, are grazed on the lucerne and chicory combination. They are weighed regularly and when they make the weight are sold. We like to sell lambs at about 20 kilograms.

All lambs are sold over the hooks. They are weighed and fat scored by our agent before they leave the property.



We tailor our lambs to suit the market they are destined for. For example lambs of fat score 1-2 scores are sold to Castricum Bros and the better-rounded lambs are sold to Coles.

Marketing is very important – you can't just send a semi-trailer load of lamb to saleyards and hope for the best. That's just like taking a bundle of money to the casino and hoping you will come out on top.

Weed problems solved

The combination of lucerne and chicory is also a great weed control tool. It tends to fill in the gaps in and provides a handy groundcover.

We used to spray a lot but found it was resulting in too much bare area around the plants and as a result there was too much soil movement, which left soil mounds on the lucerne.

Another option is to combine oats, lucerne and chicory. This will increase winter feed and increase summer groundcover.



Photo: Malcolm McCaskill

Local interest in Don's lucerne and chicory combination is high with a strong turnout at a recent EverGraze™ field day.

Cutting the lucerne for silage also helps with weed control. All-in-all, weeds just aren't a problem anymore.

Thinking laterally

As members of the Southern Farming System Group we recently hosted an EverGraze™ field day focusing specifically on the combination of lucerne and chicory. I think

most of the participants were suitably impressed with the success of the pairing.

It gave people food for thought and demonstrated the benefits of looking outside the square. It was a pretty dry autumn here but the lucerne and chicory held up well.

We really need a wet winter now to refill the soil profile – otherwise, I believe, the lucerne might be drying the soil out too much.” 🌱

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By Dr Malcolm McCaskill

science behind the story

• Don Price is a producer who is often ahead of researchers in trying innovations. Our most recent experience with lucerne and chicory started four years ago. We sowed these species onto the well-drained crest areas of the EverGraze™ Proof Site at Hamilton. We didn't mix lucerne and chicory together, as we wanted to measure their production and water use separately. Instead, we sowed sub-clover into both the lucerne and chicory, to provide a legume for the chicory.

The initial stands were not as dense as we would like. We thickened the lucerne with a second sowing the following autumn. The chicory was thickened by allowing it to set seed during summer. Since then, new chicory plants have appeared each year through hard seed from the initial summer self seeding. This ability to self-thicken is an advantage chicory has over lucerne, whereas mature lucerne plants exude chemicals that restrict the establishment of new lucerne seedlings.

Our measurements of pasture growth and soil moisture started two years ago.

Growth of the lucerne-based pastures has averaged 12 tonnes/ha each year, of which 18 per cent grew between January and April when perennial ryegrass-based pastures lack quality and respond poorly to out-of-season rainfall. We were particularly pleased with the winter production of our SARDI7 lucerne, which averaged 53 kg/ha/day, compared with 44 kg/ha/day from perennial ryegrass. Previous varieties grew well during summer, but were poor during winter.

Chicory growth averaged 9 t/ha per year, of which 16% was between January and April. Its winter growth rate was relatively low at 28 kg/ha/day. Chicory is not a direct replacement for perennial ryegrass or phalaris, but a specialist high-quality forage to continue lamb weight gains into December and January, when the traditional pasture species have insufficient quality for animal growth.

Soil moisture measurements showed that both lucerne and chicory dried the soil out to a similar extent. Both species developed a dry soil buffer down to at least 3 metres, which can absorb excess soil moisture that penetrates the top

metre of soil explored by the root systems of annual plants. The dry soil buffer protects the soil from recharge to groundwater, reducing the threat of dryland salinity.

Lucerne grows poorly below a pH in calcium chloride of 4.8. While topsoil acidity is correctable by liming, subsoil acidity is too expensive to correct for agricultural purposes. Chicory has a greater tolerance of acid soils and is better able to cope with short-term waterlogging than lucerne. This means a pasture based on both lucerne and chicory is more resilient than one based on lucerne alone.

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