

501 Chicory - farm value adds up

Summary **501 Chicory** value comes from adding up all the ways it helps deliver milksolids in summer - high crude protein, feed quality and utilisation - fast establishing, high yielding - less facial eczema, worms, N leaching - all delivered along with pasture renewal.

Crude protein (CP)

Chicory stays green and leafy through summer, with a typical CP of 20-26%. In dry conditions it can provide animals the CP they need.

For example, lactating cows in summer have a dietary CP requirement of around 16%. In summer the level of CP drops due to the higher temperatures. In wet summers pastures may stay greener and have 16% CP. In dry conditions pasture CP levels can fall to 10-12%.

Feed composition (From: DairyNZ Facts & Figures)

Feed	DM (%)	ME (MJ/kgDM)	Crude protein (%DM)	NDF (%DM)
Pasture Summer leafy	15-20	10.5-11.5	14-22	42-52
Summer dry	20-30	9.0-10.0	10-15	50-65
Chicory	8-19	12.5-13.0	20-26	30-38

Feed value (ME)

Chicory also has a very high metabolisable energy (ME) level in summer, helping maintain milksolids production.

ME has a double effect. Firstly, with a high ME feed cows get more ME per kgDM they eat. Secondly, it passes through the rumen quicker, so cows eat more. An example of how this multiplication effect works is shown in the table below.

Potential milk production from summer pasture (Adapted from: Milk production from Pasture - Holmes & Wilson 1987)

Factor	High feed quality	Low feed quality	Increase
ME pasture	12 ME	9.3 ME	
DM intake of cow	14 kgDM/day	9.3 kgDM/day	Low ME slows rumen passage
ME intake of cow	168 MJ/day	83 MJ/day	Multiplying ME x kgDM intake
Maintenance energy of cow	54 MJ/day	54 MJ/day	Same whether cow well/poorly fed
Energy above maintenance	114 MJ/day	29 MJ/day	ME intake minus maintenance
Potential milk production	23 litres milk/day	6 litres milk/day	290%



Utilisation

A good chicory crop, with a good weed control programme, is very well utilised by stock,. They typically harvest 85-90% of what's grown.

Leaving an old weedy, pasture in place - instead of sowing it into chicory - will have a much lower utilisation. This will vary, but maybe 50-70% is eaten.

Fast establishment

501 Chicory is an annual-type so it jumps out of the ground faster than perennial cultivars, and is ready to graze sooner. It's like the difference between an annual ryegrass, and a perennial.

That gives up to one more full grazing than other chicories, or as much as 550 kg extra dry matter per ha.

High yield

Like all summer crops, chicory yields vary depending on the good establishment - which is critical - nutrient supply, management and weather, particularly summer rainfall.

Typically yields vary between 7 - 10.5 t DM/ha. This is based on 4-6 grazings over the season, with a grazing being 1.75 t DM/ha.

Plus pasture renewal

Chicory is typically a key part in a pasture renewal programme, where an old, weedy pasture is sprayed out in spring, and the paddock resown into a new pasture in autumn.

And chicory is a great break crop to help eliminate likes of summer grasses, yellow bristle grass and black beetle.

Stock health

As well as being highly nutritious chicory is safe to graze when facial eczema makes grass, particularly older, thatchy paddocks, a high risk. It's packed with macro and micro-nutrients. And you don't have to worry so much about young animals ingesting worm larvae with every mouthful, either.

Environmental plus

501 Chicory can mean less greenhouse gas emissions. When cows can go to a paddock and eat a feed, it always has a better footprint than importing anything on a truck.

And chicory has a very high water content, which dilutes cow urine N concentration. It works the same way as plantain, but chicory is better!

Plus no need for insecticide spray application for diamond back moth or cabbage white butterfly (unlike brassica crops).