

Is there a place for a legume in your forage rotation?

A closer look at lucerne



As the price of feeds like soyabean meal and brewers' grains keeps rising, growing a protein crop on farm is worth serious consideration. We spoke to an agronomist and a producer to find out more about an increasingly popular option.

text **Sara Gregson**

Lucerne is enjoying a bit of a renaissance, not least due to its high yields and a crude protein content of between 17 and 22%. It is also rich in minerals and vitamins and complements both maize and grass silages very well. And its structural fibre aids ruminant digestion, which reduces the risk of acidosis.

"Interest in this leafy, tall legume has waxed and waned during the past 50 years, in line with the weather," says Oliver Seeds' Rod Bonshor. "It is in droughty seasons, and areas where low summer rainfall is the norm, that lucerne really comes into its own. A long tap root,

reaching as far down as 15m, allows it to find water even in the driest conditions."

This main root stores nutrients, which helps the plant re-grow after defoliation, allowing multiple cuts or grazings. Like other legumes, nodules on the roots contain bacteria that can fix up to 250kg nitrogen per hectare per year. So the crop needs no additional nitrogen fertiliser. "It can, however, be hungry for phosphate and potash. There are currently no official recommended rates, but these are likely to be similar to red clover," he adds.

So at soil index 2, it is likely to need around 80kg of P/ha/year and

250kg of K/ha/year. But with fresh weight production, after the first year, of up to 40t/ha/year, this fertiliser yields a good return. Target annual dry matter yield, 30% dry matter for silage, should be around 12tDM/ha.

Lucerne likes to be grown on free-draining soils, and will not thrive in wet or waterlogged ground. Given good conditions, including a pH status of at least 6.2, it will generally keep on going for four to five years.

Which varieties?

"It can be grown on its own or in a mixture, but to maximise protein production per hectare a monoculture is best," says Mr Bonshor.

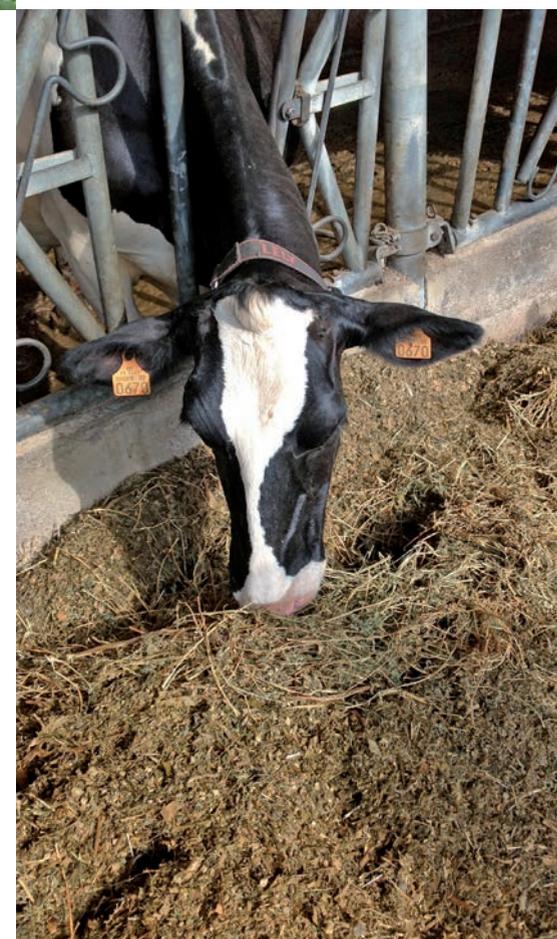
He adds that slow establishment can be one of the main downsides, and other sown plants and weeds can easily outcompete it in the first year. "Where it is grown as a mixture, cocksfoot, timothy and meadow fescue are better companions than faster growing hybrid or Italian rye grasses.

"It can be sown under spring cereals, as long as priority is given to the lucerne,



Rod Bonshor: "Lucerne can be grazed, but it's vital not to damage the crown of the plant"

Lucerne's protein content makes it ideal for replacing soya bean meal in dairy rations



and the wholecrop silage is harvested when the cereal grains are at the milky stage."

Two types are grown in Europe and the Northern Flemish ones are best suited to the UK.

The most important characteristic to consider is dormancy. This is a measure of winter hardiness on a scale of one (very dormant) to 12 (no dormancy). "For UK conditions, and to achieve three to four cuts a year, a dormancy rating of between four and five is about right."

Daisy is the top performer on the BSPB Descriptive List for England and Wales by virtue of its yield, protein content and persistency.

Faster regrowth

"A cotton-wool type ball develops at the point of cutting on the stem of most lucerne varieties, but this doesn't happen with Daisy," explains Mr Bonshor, "This means there is faster regrowth from the 'cleaner' cut. This variety also has a good dormancy score, so it can survive harsh winters, and it is particularly persistent and performs well in the field."

He adds that producers wishing to graze lucerne should consider Luzelle, the first variety to be bred specifically for grazing. "Most varieties do not tolerate animals eating them in situ because their growing points sit so high on the plant. If these are damaged by trampling or are bitten off, the plant will never regrow." In the UK it is most common to drill lucerne in the spring from late April onwards. The seed should always be inoculated with *Rhizobia meliloti* bacteria to ensure successful root nodulation and efficient nitrogen fixation.

Lucerne can be grazed, but great care is needed not to damage the crown of the plant as this is where the growing points sit. "Rotational grazing is much kinder than set stocking as it allows a recovery time. Never let sward height fall below 6cm."

Lucerne silage can be clamped or baled, but its low sugar content can make it difficult to ensile. So wilting is advisable to a minimum dry matter of at least 30%, as is the use of an additive.

"That said, up to 70% of the protein and 90% of the vitamins and minerals are in the leaf, so it is important to minimise leaf loss. The crop must not be over-wilted or roughly handled at harvest and pick-up," stresses Mr Bonshor.

Shropshire-based producer Ben Dixon feeds lucerne all year round, to his 70-cow herd of organic Jerseys, either as

silage or by strip or zero grazing. "Our oldest stand is five years old and still doing well," he says. "We tend to establish it in the spring with spring barley, which is taken off as wholecrop, and then we lightly graze it in the first autumn."

"When we make silage we cut it in the afternoon and then move it into six-metre swaths. It is picked up between 24 and 48 hours later and clamped. There is around five to six weeks between cuts."

"We have found that it can struggle in dry times, but does better than red clover. We have a dry farm and in the hot summer a few years back we lost fields of red clover, but the lucerne came back."

The high protein content of lucerne silages makes it a good replacement for soya bean meal in dairy diets. But caution should be taken when feeding it to dry cows as it has much higher calcium content than most other forages.

Feeding research

A review of research trials, which compared dairy cow performance when fed either lucerne or grass silage, has shown that lucerne can increase dry matter intake by as much as 2.2kg/day and milk yield by 1.7kg/day. But there was no difference in milk constituents. When compared to red clover, lucerne again increased dry matter intake by around 0.8kg/day, but there was no difference in milk yield.

That said, the lucerne increased milk protein content by an average of 0.8kg/day.

Researchers at Harper Adams University College, SRUC and the University of Reading are currently carrying out a large programme of research on growing and feeding lucerne, which is being funded by DairyCo.

They will be looking at establishing crops in the autumn and spring, the effect of crop maturity at harvest on the yield and quality of the silage, what the best chop length is, and different inclusion rates in TMRs when mixed with maize and grass silages. |

➔ For more information and case studies see the EBLEX BRP+ online document 'Growing and Feeding Lucerne' at www.eblex.org.uk/returns

A booklet 'Lucerne Growers' Guidelines' is available on request from Oliver Seeds. Call 0800 056 11 22.