

Make quality your priority

Gaining knowledge to help maximise metabolisable energy per hectare (ME/ha) from grassland is one objective at Field Options' long-term mixture trials in Shropshire, as Luke James discovered.

It's now over twelve years since Francis Dunne of Field Options first began his unique approach to grass mixture testing at Harper Adams University.

Since 2006, the company has monitored the performance of forage mixtures to assess how different combinations perform under conditions that are as close as possible to commercial reality.

The programme, now based at the Crop and Environment Research Centre, is into its third sequence of long-term trials, with the lessons from earlier research being used to shape the focus for the next tranche of activity.

"Our overriding objective is to challenge existing thinking and improve the performance possible from forage," explains Francis. "UK farmers tend to grow mixtures, not usually straight varieties, so our focus is on finding the best combinations of grasses, or grasses and legumes. And in the latest trials we're also including herbs such as plantain and perennial chicory.

"We're looking at dry matter yield and quality throughout the season, and we're also able to make a good assessment of sward persistency because our plots are monitored for five years' production beyond the establishment year."

Francis calculates that at 80% utilisation and a milk price of 26ppl, increasing forage production by just 0.5tDM/ha can boost dairy output by around £250/ha. Improving the ME of forage by 0.5MJ/kg would add a further £200/ha. With similar gains possible in beef and sheep scenarios, he's quite clear that generating sustained improvements in yield and quality should be the primary objective.

He highlights the following key lessons on maximising ME/ha from the 2013-2018 trials programme:

Italian ryegrass or hybrid ryegrass?

Traditionally a lot of silage leys have been designed to maximise the bulk

that can be achieved from a first cut and, with high yields and early growth as the priority, Italian ryegrasses have been widely used in this context. However, whilst early season quality may be acceptable in most Italian ryegrasses, D-value tends to fall away later in the season, potentially undermining the early season value.

"We found that the average ME of Italian ryegrass mixtures over the first two seasons of this trial period was 0.65MJ/kg lower than the hybrid ryegrass control," says Francis. "That's a significant shortfall in energy yield potential and should be taken into account when planning a quality focused forage production system."

Short or medium term leys?

The established knowledge is that short-term leys deliver dry matter yields in excess of that achievable by longer-term leys over their 2-3 year life, but with modern ryegrass

breeding moving perennials forward does this still apply? In fact, in the second year of Forage Options' 2013-18 trials, the best performing long-term mixtures equalled – or in some cases out yielded – the mixtures formulated for 2-3 year duration.

"The only exception to this result was in mixtures containing red clover," adds Francis. "What we found was little, if any, yield advantage from shorter-term leys. In addition, the longer-term leys were on average around 0.8MJ/kg better in terms of their quality."

Maintaining a cutting discipline

All the Field Options plots are cut on a 30 day rotation, reflecting the increasingly popular practice of multi-cut silage making. Over the course of the 2013-18 trials programme, the energy yield from all mixture plots averaged just under 12.9 MJ/kg ME.

"Samples are dried immediately after harvest, preserving the potential, so this figure is undoubtedly higher than what would be achieved through ensiling," explains Francis, "but there is a strong message here in the value of maintaining the discipline of cutting your crop at the optimum maturity."

Ultimately, the most successful forage production system will be a combination of selecting a mixture fit for purpose and then managing the crop to maximise its value, keeping quality as the main priority.

"We start by selecting varieties from all breeders, but only those performing in the top 20% on the Recommended Lists, and then try to ensure that their potential is fully realised," concludes Francis. "With different grass species, legumes and herbs all playing their part, it is possible to have quantity and quality, and the gains that are possible from finding the right combination are very significant." 

A photograph of Francis Dunne, a man with glasses and a beard, wearing a brown vest over a light-colored shirt, kneeling in a lush green grass field. He is surrounded by tall grass, and the background shows a flat landscape under a clear sky.

Selecting the right grass type and maintaining cutting discipline can help maximise metabolisable energy per hectare, says Francis Dunne.