AHDB BEEF & LAMB

Expert View

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Better Returns Programme

New tools for optimising grass production

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There is growing pressure on UK producers to use more home-grown forage and reduce the use of more expensive imports, such as soya bean meal, in order to become more economically and environmentally sustainable. Currently, the average UK grass yield is around 7 tonnes of dry matter per hectare (t/dm per ha). This is considerably lower than the potential yield, which is calculated to be over 20 t/DM per ha for lowland England. It is clear that there is great opportunity to increase the yield and quality of grass crops to reduce the cost of purchasing alternative feedstuffs and improve sustainability.

It is estimated that within the UK, over 3 million ha of the total land area is predominantly grazed by livestock and approximately 700,000ha of grassland is used to produce silage. Managing grassland and forage crops calls for the same level of precision as arable crops. However, very few precision farming technologies have been transferred from arable to grassland and forage crops.

Why are we interested?

- Precision farming technologies have the potential to help producers increase production efficiencies through several mechanisms
- Regular monitoring of grass yield and quality to optimise grazing performance or silage harvest
- Yield mapping to identify fields or part-fields that are underperforming and require different management
- Identify the crop husbandry and management changes required to improve yield or quality
- Enable variable rate application of inputs, such as seed, fertiliser and crop protection products

Review of tools for measuring grass growth

It is recognised that relatively few producers measure and record grass growth or set pasture cover targets for various times of the year. This results in many not understanding the maximum potential of their grassland or livestock growth rates. AHDB funded ADAS to review available tools for measuring and managing grassland as well as working with a small group of producers to develop a blueprint for managing grass for beef cattle.

There are a number of hardware tools available to measure grass growth or pasture cover. Traditionally visual assessment, rising plate meters or electronic probes have been used. These methods are relatively skilled, time-consuming and can quickly become monotonous when done with the frequency required to inform effective management decisions. The frequency of pasture assessment required is farm specific, but during the peak growing season is recommended to be at least every 7-10 days. The review was based on current tools used in grazing systems in the United Kingdom, Republic of Ireland, mainland Europe, Australia and New Zealand and included the sward stick, GrassOmeter or Automatic Pasture Reader for measuring grass and online or app-based tools for managing the grazing wedge (e.g. farmGRAZE).

You can read the final report of this review here.

Grass Sense – Tractor-mounted sensors

An Innovate UK project involving Yara, ADAS, Precision Decisions and ForFarmers investigated how to develop the tractor mounted Yara N-sensor to estimate grass biomass and nitrogen (N) content from the spectral reflectance of grass crops. The N-Sensor was tested across different:

- Grass species and varieties
- Clover contents
- Amounts of lodging
- Farm systems (with and without history of manure)
- Cutting/grazing strategies
- Grass growth class

Results were very promising and indicate that the sensor can detect differences in grass biomass and N content in different parts of a field across several grass species. Ultimately, it is anticipated that the sensor could provide a precise method of calculating the N fertiliser required on a field-by-field, and metre-by-metre basis. Precision application of N fertiliser could help optimise N fertiliser inputs and increase grassland productivity.

Satellite technologies

Current technologies for measuring grass yield are either labour intensive or not well developed. An Innovate UK-funded project is developing novel satellite sensing technology that will provide an inexpensive method of remotely sensing grass yield and quality. ADAS and Precision Decisions are developing techniques to exploit optical and radar remote sensing technologies to estimate grass yield and quality. An allied project funded by AHDB is investigating the potential for developing existing grass growth models to make use of remote sensing information acquired by satellites. So far the project has shown there is great potential for remotely sensing grass growth using optical satellite data.