LINCOLN AGRITECH LTD

Optical Sensors for Dairy Pastures

Lincoln Agritech is working with dairy farmers to investigate how commercial optical sensors that are traditionally used in arable cropping can be customised to optimise nitrogen (N) fertiliser applications for New Zealand dairy pastures.

This project is developing best practice techniques by testing available sensors for N-fertiliser application under New Zealand dairy farming conditions to obtain the best pasture response, while showing economic and environmental benefits, such as reduced nitrate leaching and fertiliser runoff.

Variable Rate Application (VRA) of N-fertiliser trials are being conducted on-farm in South Canterbury. The optical sensors are mounted onto tractors and measure pasture nitrogen demand by looking at pasture colour and density of pasture cover (biomass). The sensors work by emitting short light pulses onto the crop canopy and measuring the reflectance of specific wavelengths. A console translates the data and calculates the amount of fertiliser required for application. A VRA fertiliser spreader, towed behind the tractor, then applies the fertiliser onto the pasture accordingly. Our researchers are measuring pasture biomass (kg DM/Ha) throughout the grazing season in order to track pasture performance.

This three-year research programme is funded by the Ministry for Primary Industries Sustainable Farming Fund and in collaboration with the following research and industry partners: AgResearch, Plant & Food Research, DairyNZ, Environment Canterbury (ECan), Ballance Agri-Nutrients, Irrigo Centre, Barrhill Chertsey Irrigation MHV Water, Stratford Farms, Topcon Agriculture and Advanced GPS Ag.

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