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Legume vs synthetic nitrogen, top researcher gives insight at Hart

How legume break crops can reduce the need for nitrogen (N) application and improve productivity will be among the topics at the upcoming Hart Field Day on Tuesday, September 16.

CSIRO Agriculture Flagship research director Dr Mark Peoples will discuss break crops versus synthetic N – how they fare and what impact they have on productivity.

He will be among the guest presenters, who together will host 21 rolling sessions throughout the field day, giving growers direct access to some of the country's top researchers and industry professionals.

Dr Peoples will speak about his research into the effect of legume or canola break crops on N dynamics and productivity in subsequent cereal crops.

Hart Field-Site Group research and extension manager Sarah Noack says Dr Peoples' research shows some interesting results for South Australia.

"Using legumes as a break crop, he found that in SA paddocks, there were changes in soil mineral N concentrations ranging from 25-35 kilograms of N per hectare above that following a cereal paddock, and in general across South East Australia he found much larger differences," she says.

"Another notable finding when comparing legumes as a break crop with the application of synthetic N was the amount of N retained in the soil in subsequent years.

"He found that 60 per cent of the legume N remains in the soil compared to 30pc from fertiliser N, so less N tends to be lost from the system by denitrification and leaching following legumes than from synthetic fertilisers."

The Hart Field-Site Group also has its own trial, now in its second year, looking at whether legume crops allow for lower inputs of synthetic N in the following year, resulting in a more reliable system for the subsequent cereal crop.

"Farmers are still going to need to apply N, but it comes down to crunching the numbers and looking at whether legumes act as a buffer in being more reliable than not having something in the soil system," Ms Noack says.

The Hart Field-Site Group trial will be on show during Dr Peoples' sessions at the Hart Field Day on September 16.

He will also be involved in a Q&A session for Partners in Grain (PinG) during the field day, addressing the topic "Break crops in your rotation – why do we use them, can we use less synthetic N the following year and which ones gives the most benefit?".

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