

Effecting nodulation of legumes on Upper Eyre Peninsula

Location: Upper Eyre Peninsula, South Australia

Industry: Grain and pasture

Group: Sticky Beak Days

Topic: Effective rhizobia on legumes

Key Outcome: Monitoring nodulation on medics and pulses allows for better decision making to improve nitrogen fixation in break crops for cereal production.

Background

Skeletal soil on Upper Eyre Peninsula (UEP) are deficient predominately in phosphorus and nitrogen, and there is concern amongst farmers that medic pastures are no longer constantly fixing nitrogen for the following season's crop.

Upper Eyre Peninsula farmers' rotation is predominantly wheat, barley and sheep for wool and prime lambs. With an average of 240mm of growing season rainfall, farmer's inputs are watched carefully. Often spring rainfall is not reliable and crop yields suffer, hence the reluctance of farmers using high nitrogen inputs to maximise yields.

Historically, farmers rely heavily on medic based pastures to provide nitrogen input and organic matter for subsequent crops however, deep soil nitrogen testing after a pasture phase has indicated many poor performing pastures.

Often in a good season farmers saw high dry matter production but sometimes poor residual soil nitrogen and also the amount of fixed nitrogen from medic based pastures can vary in different paddocks.

Concerns were raised about the effect of herbicides reducing nodulation in the pasture phase.

In 2013 at the Sticky Beak Days or Spring Crop Walks across UEP, questions were being asked about the effectiveness of old stands of medic pastures and their ability to fix nitrogen.



Franklin Harbour Sticky Beak Day



Minnipa Agriculture Centre nodulation trials at Piednippie



Examination of faba bean roots for nodulation.



The Project

The Regional Landcare Facilitator Linden Masters took UEP farmers concerns to researcher Maarten Ryder who was working on a GRDC legume nodulation project, at Waite campus, Adelaide University.

In 2014 Maarten gathered preliminary information of grain legume nodulation from three UEP properties and visited three Eastern Eyre Peninsula groups to share his knowledge on legume inoculation.

It was felt that little recent extension has been available to farmers to understand the activity of rhizobia in the system and the need for inoculation. As a result of Maarten's visit, a knowledge gap and the need for further information was identified.

In 2015 the Minnipa Agriculture Centre trialled inoculating into established pastures and a second trial on the effect of using addition Phosphorus and chemicals on nodulation.

Outcomes

During September 2015 Sticky Beak Days Maarten Ryder travelled to share his research findings with another four groups. The Minnipa and Piednippie trials were visited by local farmer groups.

The 'nodulation theme' continued through the Sticky Beak and Spring Walk days held during 2015.

Matt Lewis from Free Eyre picked up on the theme holding a 'Show us your nods' competition which encouraged farmers to dig up plants, photograph the root system and send in the photos.

The Regional Landcare Facilitator led discussion at these events aimed at increasing the local knowledge of how rhizobia works and what to look for. "The correct soil rhizobia is needed by alternative legume break crops; such as peas, vetch and lupins," said Linden. These events were appreciated by the farmers.

The Future

In 2016 a factsheet will be produced for Upper Eyre Peninsula farmers showing nodulation for medics, peas, lupins and vetch. Many farmers are looking at alternative break crops with some sowing vetch, lentils and chick peas for the first or second time. This information has been timely to get maximum benefit from rhizobia fixing nitrogen.

Results of the SARDI Minnipa Agricultural Centre trials can be found in the pasture section of the Eyre Peninsula Farming Systems Summary 2015. GRDC publications "inoculating legumes: A practical guide" and "Inoculating legumes a back pocket guide" are available. This is another great example of a Regional Landcare Facilitator working with the farming and research community to facilitate and drive information flow of value to the community.



Healthy nodulation on faba bean roots.



Elliston Sticky Beak Day.



Government of South Australia
Eyre Peninsula Natural Resources
Management Board



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