FINAL REPORT

GRDC
GRAINS RESEARCH & DEVELOPMENT CORPORATION

DAS296

Development of 'Best Practice' demonstrations and decision support systems for annual pasture legumes for cropping rotations

PROJECT DETAILS

PROJECT CODE:	DAS296
PROJECT TITLE:	DEVELOPMENT OF 'BEST PRACTICE' DEMONSTRATIONS AND DECISION SUPPORT SYSTEMS FOR ANNUAL PASTURE LEGUMES FOR CROPPING ROTATIONS
START DATE:	01.07.1999
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Summary

Growers are increasing the intensity of cropping in the cereal-livestock zone and investing in the cropping phase. The pasture phase is receiving insufficient attention and often 'pastures' between crops are low in legume content, unproductive and most importantly, contributing poorly to building soil fertility through nitrogen (N) fixation, thereby missing opportunities to improve crop yields and quality. As a result, more artificial N is being used to compensate for the lack of N fixed by pasture legumes.

Report Disclaimer

Conclusions

Improving medic content of pasture through sowing medic can increase wheat yields and protein. In addition, manipulating medic pastures can improve dry matter, seed set and N fixation. Producing medic based pastures with high proportions of medic by manipulating existing pastures with grass control was shown to be more cost effective than sowing medic at some sites. Early weed (broad spectrum) control prior to sowing a new medic pasture can have beneficial long term effects. Two years may not be a long enough timeframe to show the benefits of sown legume pastures to subsequent cereal crops in some environments (e.g. Wynarka and Minnipa).

Recommendations

- Resow low pasture legume content pastures with new varieties adapted to the region's soil type and rainfall.
- A mixture of varieties and/or species can be beneficial if the soil type is highly variable within a paddock.
- Provide fertiliser if the soil test shows deficiencies.
- Where possible (early seasonal break), spray with a knockdown herbicide prior to sowing the new pasture.

Current pastures with high pasture legume content can have their legume content enhanced by spraying with selective grass herbicides. This can be a cost effective alternative to resowing pasture.

Outcomes

Economic Outcomes

Increased cereal grain yield and protein content.

Environmental Outcomes

High pasture legume based pasture provides a break crop (for root diseases) in low rainfall regions, increasing the sustainability of cropping. In addition, high legume based pastures can increase the soil fertility via fixed N, thereby reducing the dependence on mineral N sources.

Other research

The benefits of sown improved legume pasture on cereal yield and protein need to be monitored for longer than just one

crop year. Fixed N from a sown legume pasture may not be available to the subsequent cereal crop in the second year. There may be variation in availability of fixed N, depending on soil type and seasonal conditions.

There are opportunities to further examine low cost improvements to current pastures which have high pasture legume content. For example, the Wynarka group of growers identified the possibility of adding fertiliser to current pasture. Spray graze herbicides to manipulate the broadleaf weeds in some pastures may be another option to increase pasture legume content.

There are some anecdotal reports of poor cereal yields following good quality legume based pastures. Possible causes (e.g. root diseases and *Pratylenchus*) for this observation need to be examined.