

Farming Systems North

– Winter 2011

INTRODUCTION

The Farming Systems North (FSN) research program provides management options for primary producers to increase productivity and food security while protecting the natural resource base of the northern grains region, mixed farming zone and north coast. Production in the region covered by the FSN unit varies from permanent temperate pastures on the northern tablelands, mixed farming enterprises consisting of tropical pastures, lucerne and winter cropping on the slopes and winter and summer cropping rotations on the plains.

Options to improve productivity are provided through a range of approaches. These include; agronomic research, feedbase management research, plant breeding and genetics research, crop quality research and economic research.

RESEARCH CAPABILITIES

- » 17 research officers supported by 47 highly skilled technical staff.
- » Key facilities include land (dry-land and irrigated), glasshouses and growth rooms, grain quality laboratories along with expert pathology, entomology, and biometry support.
- » We work in close partnership with other organisations through alliances such as the Primary Industries Innovation Centre, Pulse Breeding Australia, Future Farm Industries CRC and Australian Durum Wheat Improvement Program. We also have research collaborations with various Farming Groups, CMAs, RDCs, ACIAR, CSIRO and Universities.
- » Our researchers work in close cooperation with extension colleagues and primary producers to ensure our work is relevant, addressing high priorities and is adopted quickly.

CONTACT US

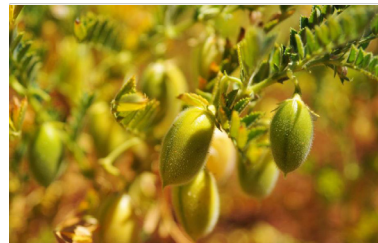
For more information on our full portfolio please contact Guy McMullen (02) 6763 1155 or guy.mcmullen@industry.nsw.gov.au

PROJECT UPDATES

AUSTRALIAN CHICKPEA BREEDING PROGRAM (2011–2016)

INTRODUCTION: For northern NSW and southern Queensland, chickpea production is compromised by two main diseases; Ascochyta blight and Phytophthora root rot. This project is investigating disease resistant varieties that will increase yield potential and stability.

FINDINGS: The recently released PBA HatTrickA is an ascochyta resistant desi chickpea that is well suited to all current chickpea growing areas in northern NSW and southern Qld. PBA HatTrickA combines moderate to high levels of resistance to the two key diseases (ascochyta blight and phytophthora root rot).



CONTACT: Dr Ted Knights, Calala (02) 6763 1179 & Dr Kristy Hobson

PARTNERS: Pulse Breeding Australia, GRDC.

AUSTRALIAN DURUM WHEAT IMPROVEMENT PROGRAM (2009–2012)

INTRODUCTION: The Australian durum wheat industry internationally competitive and quality is amongst the world's best. NSW is the largest producer with approx. 55% of national production. Domestic durum requirement is approx. 300,000 tonnes. Marketers would like a consistent supply of 1 million tonnes for export. This will require considerable expansion in area and/or productivity.

FINDINGS: NSW DPI have been involved in durum breeding for more than 60 years and its cultivars continue to dominate the Australian industry. Recently the varieties Caparoi, Jandaroi and Bellaroi were bred by NSW DPI Tamworth as part of the National Program. These are now industry benchmarks for yield and grain quality.

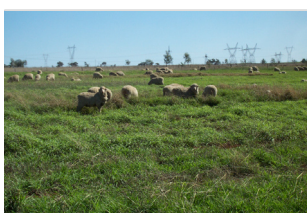
CONTACT: Dr Gururaj Kadkol, Tamworth (02) 6763 1232

PARTNERS: University of Adelaide

PRODUCTIVE, PERSISTENT TROPICAL GRASSES IN FARMING SYSTEMS(2007–2010)

INTRODUCTION: The ability of tropical perennial pastures to be responsive, productive and persistent in our highly variable climate has been highlighted over the last 10 years. This project represents a combined effort by I&I NSW the NNSW research and extension team to address issues relating to the establishment of tropical grasses and how best to meet their basic agronomic and hydrologic needs.

FINDINGS: A range of legumes have been identified as being potentially compatible in mixtures with tropical grass, in particular tropical legumes that have not previously been tested in NSW. Studies of soil water dynamics have shown it is important to consider antagonistic and complimentary water use among grass-legume mixtures in order to achieve long lived stands.



CONTACT: Dr Suzanne Boschma, Calala (02) 6763 1202

PARTNERS: DAFWA and FFI CRC

IMPROVING PRODUCTIVITY WITH VARIETY SPECIFIC AGRONOMY PACKAGES

(2009-2012)

INTRODUCTION: By providing up-to-date information on the responses of new varieties to agronomy, farmers can make the most appropriate decisions for their enterprise and improve productivity through appropriate adoption and management of new crop varieties. This project is conducted across the cropping belt in NSW with nodes based at WWAI, Condobolin ARAS and Tamworth AI.

FINDINGS: Varieties have been characterised for their relative maturity. Responses to row spacing, stubble and seeding rate have differed between the wet and dry seasons. Wide row spacing reduces yield in high yielding wet seasons and had minimal or no effect in lower yielding dry seasons. Retaining stubble increased yield in a dry season and reduced yield in wet a season. Interactions with key foliar and root diseases have also been assessed in multidisciplinary research.



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PARTNERS: Grains RDC

PBA AUSTRALIAN FABA BEAN BREEDING PROGRAM (NORTHERN MODULE)(2011–2015)

INTRODUCTION: The Australian faba bean breeding program aims at lowering the vulnerability to diseases and abiotic stresses of new varieties by improving genetic resistance. The northern breeding program focuses on stress factors that are of particular importance in our region; rust, viruses and frost.

FINDINGS: Two faba bean varieties, Cairo and Doza, have been released for the northern region. They represent a major improvement on earlier grown faba bean lines in terms of disease resistance and yield stability. During the past season the superior performance of Doza in a highly disease favourable season was demonstrated. Several new breeding lines with better seed quality and equally or higher resistance to diseases and viruses are in advanced yield testing and will be released during the project.



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PARTNERS: Pulse Breeding Australia, University of Adelaide, Sydney University

ENHANCING PRODUCTION AND MARKETING OF MAIZE AND SOYBEAN IN NORTH-WESTERN CAMBODIA AND PRODUCTION OF SUMMER CROPS IN NORTH-EASTERN AUSTRALIA: ASEM/2006/130 (2009– 2011)

INTRODUCTION: The aim in north-western NSW is to address low adoption of conservation farming practices, increase summer crop diversity and to develop strategies for adaptation of farming systems to climate change. In the short term climate change scenario to 2030, we considered that farmers in north-west NSW could exploit existing strategies developed to cope with the variable climate in the region. The increased use of zero tillage and retaining crop residues is of particular interest.

FINDINGS: Overall the results show that the choice of row configuration, plant population and planting time and maturity can make a large difference in gross margin returns in either climate scenario. Retaining crop residues (i.e. using a zero-till system) was one of the most beneficial strategies.

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PARTNERS: PIIC, Cambodian Agricultural Research and Development Institute, University of Melbourne, University of Canberra, CARE Cambodia, Maddox Jolie-Pitt Foundation

PIS&R PROJECT UPDATES