

Media Release

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Trials improve understanding pasture cropping in CQ

The variability of central Queensland's seasons has caused a rethink of current principles of pasture cropping during a trial near Biloela.

A range of alternative management practices are being trialled through the Healthy Soils Project run by Fitzroy Basin Association Inc. (FBA) and the Department of Employment, Economic Development and Innovation (DEEDI).

FBA's Piers Harper said results so far indicate that growing pasture crops for grain would be challenging and that pasture cropping should be used initially to increase soil fertility levels, add species diversity to pastures and improve cattle performance.

"The lower winter rainfall, higher winter temperatures and tropical grass species that can grow year round mean producing a grain crop could be tricky. Our conditions may be best suited to growing cereals and legumes for forage," Mr Harper said.

"The Healthy Soils Project is about promoting soil, pasture and animal health, and pasture cropping does seem to provide landholders with another tool in their efforts to improve in these areas," he said.

Leading the pasture cropping trial is Noel and Marie Moretti who farm *Roselea*, half way between Monto and Biloela. The Moretti's have been experimenting with pasture cropping since 2007 and had some early success getting oats to germinate in dense stands of American Buffel and Gatton Panic.

"Even though the established pastures were actively growing and competing for soil water, the oats was able to grow within this medium without obvious signs of distress," Mr Moretti said.

In 2008, the Morettis trialled wheat during winter with the intention of taking it through to harvest but the majority of planted area failed to yield with early development hampered by low soil moisture levels and low in-crop rainfall.

The best yielding paddock also had higher soil carbon levels and based on this learning the Moretti's aimed to build soil fertility during 2009 by increasing the prevalence of green leaf plants with the aim of producing more food for micro-organisms in the soil.

"Our soil carbon testing program as part of the Soil Carbon Project in central Queensland has shown that we can improve soil carbon, and this can happen at depths of 90cm below the soil surface," Mr Moretti said.

Higher than average temperatures and low rainfall in 2009 meant that pasture cropping was not a feasible option, and then good rainfall through February and March this year produced abundant and sustained plant growth.

To maximise soil water retention for an autumn/winter pasture crop, the Morettis embarked on quicker cattle rotations and swathings to control pasture re-growth.

“Even with higher cattle numbers and less time between rest periods, we were unable to control the growth of established pastures. We even resorted to swathings paddocks but the tropical grasses still re-grew aggressively with high soil moisture and average daytime temperatures,” Mr Moretti said.

With the rain ending in March and little or no rainfall until August, the Morettis were forced to review current guiding principles used in pasture cropping and turned to local consultant Scott Stevens for assistance.

“We had to look at alternatives to the common principles and guidelines used in pasture cropping - with our more dominant summer rainfall, we had to use this to our advantage even though we would be in direct competition with established pastures,” Mr Stevens said.

With the unseasonal falls in August, a mix of legumes including varieties of beans and cowpea, millet and lucerne was planted into the pastures.

“The selection of annual/perennial legumes and pulses with appropriate on-going grazing management will improve soil fertility levels. Even though these species are warm season varieties, they will still benefit subsequent pasture cropping opportunities while providing high protein for cattle during times when grass nitrogen levels are low,” Mr Stevens said.

This approach has achieved good growth being sustained in line with that of the pastures, which has encouraged the Morettis, but it is clear there is still a lot to learn about the finer points of pasture cropping in Central Queensland.

Noel and Marie are looking to incorporate keyline cultivation techniques, swales and permaculture concepts to add to their existing management systems to continue pushing the boundaries of pasture cropping and soil fertility in the years to come.

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Pasture cropping management principles (from Scott Stevens, Farming and Beyond):

- Quick yielding cereal varieties for grain production will be most suited to Central Queensland conditions.
- Soil moisture at depth must be conserved and allowed to accumulate below the active root zone of pastures prior to establishment of cereal crops. Various strategies including grazing, machinery and herbicides to slow pasture crop will be part of a suite of management tools that will need to be implemented.

- Paddocks suited to growing cereals through to maturity will be dominated by annual summer grass species (i.e. Urochloa) or native grasses that are dormant through the autumn/winter period.
- Planter setup is crucial to assisting good germination and establishment. A tyne depth of 10cm with seed placement at 3-5cm followed by presswheel creates an ideal seedbed to promote root development, accumulate runoff in plant row due to less compaction in nearby areas and reduce established pasture competition from root shearing.
- Where possible, perform multiple operations with each pass to increase the rate of return per application. For example, apply nutrients if deficient in soil; apply biological foods and inoculants to aid seed germination and establishment; and rip below compaction zone to increase root development.

ENDS.