CUSTOMER FORMULATED FERTILISER (CFF) DEMONSTRATION TRIALS

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AIM

The purpose of this trial is to determine if there are benefits from applications of a biological based product developed by Basic Environmental Systems and Technology (B.E.S.T) namely 'Customer Formulated Fertiliser' (CFF).

BACKGROUND

This trial is an on-farm demonstration for the Liebe Group's GRDC funded adoption project '**Growers critically analysing new technologies for improved farming systems**'. The site was selected by the farmer as it was reasonably flat with a consistent poor soil type.

The amount of organic matter in a soil (measured as organic carbon) is often used as an indicator of the potential sustainability of a system. Soil organic matter plays a key role in nutrient cycling and can help improve soil structure (Pluske *et al*, 2007).

Carbon makes up approximately 50% and nitrogen 0.5 to 10% (dependent on residue type) of the molecules in organic matter; some of which turns over rapidly (labile fraction) and is available to plants, whilst other more recalcitrant forms contribute to the stable (passive, slow turnover fractions) organic matter pools (Pluske *et al*, 2007).

Although significant amounts of organic carbon are present in soils, some of this is relatively inert. Soil organic matter is made up of different pools which vary in their turnover time or rate of decomposition. The labile pool which turns over relatively rapidly (< 5 years), results from the addition of fresh residues such as plant roots and living organisms, whilst resistant residues which are physically or chemically protected are slower to turn over (20-40 years). The protected humus and charcoal components make up the stable soil organic matter pool which can take hundreds to thousands of years to turnover (Murphy *et al,* 2007).

Soil microorganisms mineralise organic matter to obtain carbon, nitrogen and other nutrients for their own metabolism and growth (Murphy *et al,* 2007). Management practices influence microbial activity by altering carbon availability and conditions reflecting rapid changes in the biological function of the soil (Murphy *et al,* 2007).

Microbial activity is measured by carbon dioxide evolution and reflects a range of biological processes in the soil. This is dependent on soil moisture, temperature and labile carbon (Murphy *et al,* 2007).

The application of suitable food substrates (carbon) and/or introduction of beneficial microorganisms to soils is largely untested but provides an opportunity to identify alternate strategies to enhance crop production and possibly contribute to longer term soil health.

Customer Formulated Fertiliser (CFF) is a product developed by Basic Environmental Systems and Technology (B.E.S.T). BEST describe CFF is a 'biostimulant' which they claim aims to feed and increase the population of beneficial micro organisms in the soil.

TRIAL 1 DETAILS

Property	Colin and Ruth Cail, east Wubin
Plot size & replication	330m x 3 replications
Soil type	Sandy loam
Sowing date	29/6/07
Seeding rate	60 kg/ha Wyalkatchem
Fertiliser (kg/ha)	29/6/07: 60 kg/ha AgflowCZ Moly (75%) + Sulphate of Potash (25%) blend 8/8/07: 10 L/ha Flexi N
Paddock rotation	2005 = Wheat, 2006 = Pasture
Herbicides	28/6/07 1.2 L/ha Treflan, 30 g/ha Logran, 1 L/ha Sprayseed 8/8/07 550 mL/ha MCPA, 167g/ha Diuron, 5 g/ha Glean
Growing Season Rainfall	100mm

RESULTS

Table 1: Yield, quality and gross margins of Wyalkatchem wheat sown with and without CFF in 2007.

Variety	Yield (t/ha)	Protein (%)	Screenings (%)	Weight (g)	Gross Return ($/ha)	Variable Costs ($/ha)	Gross Margin ($/ha)
Control	0.385	12.03	5.69	416.2	162.85	120.1	42.75
CFF	0.359	12.33	6.95	411.7	151.86	170.1	-18.24
LSD (5%)	0.063	0.346					

Based on EPR for 27/12/2007 APW Base Price $423/tonne

There are no significant differences in yields between the control (no CFF applications) and the CFF plots (Table 1).

TRIAL 2 DETAILS

Property	Colin and Ruth Cail, east Wubin
Plot size & replication	330m x 3 replications
Soil type	Wodjil (Highly acidic sandy soil)
Sowing date	29/6/2007
Seeding rate	60 kg/ha Wyalkatchem
Fertiliser (kg/ha)	29/6/07 60 kg/ha Agflow CZ Moly (75%) + Sulphate of Potash (25%) blend 8/8/07 10 L/ha Flexi N
Paddock rotation	2005 = Wheat, 2006 = pasture
Herbicides	28/6/2007 1.5 L/ha Treflan, 30 g/ha Logran, 1 L/ha Sprayseed, 8/8/07 550 mL/ha MCPA 500, 167 g/ha Diuron 900, 5 g/ha Glean
Growing Season Rainfall	100mm

RESULTS

Table 1: Yield, quality and gross margins of Wyalkatchem wheat sown with and without CFF in 2007.

Variety	Yield (t/ha)	Protein (%)	Screenings (%)	Weight (g)	Gross Return ($/ha)	Variable Costs ($/ha)	Gross Margin ($/ha)
Control	0.388	13.7	5.31	410.9	164.1	120.1	44.0
CFF	0.344	14.1	5.25	412.2	145.5	170.1	-24.8
LSD (5%)	0.826						

Based on EPR for 27/12/2007 APW Base Price $423/tonne

There are no significant differences in yields between the control (no CFF applications) and the CFF plots on a wodjil soil type (Table 1).

The trials will be run again in 2008 to further investigate any potential yield differences between growing a crop with and without applications of CFF.

ACKNOWLEDGEMENTS

The Liebe Group would like to acknowledge GRDC for funding the project. Thanks also to Colin and Ruth Cail for hosting the trial site and assistance with seeding, harvesting and implementing the trial.

REFERENCES

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