

CROPPING

Fertiliser inputs cut 75pc

By EMMA PARTRIDGE

SNOWTOWN cropper Brian Krieg has reduced his fertiliser inputs by up to 75 per cent and increased the organic matter in his soil by up to 1.2pc by using biological farming techniques.

Brian's move to a biological farming system has allowed him to apply 15pc of the nitrogen previously used – a potential reduction of 189 kilograms of N₂O emissions on his 400-hectare property.

Through continuous cropping and use of lignite-based biological fertilisers, he has also seen a remarkable return of soil biota – earthworms, beneficial bacteria and fungi to his soils.

His soils are crawling with millions of earthworms.

"I have never seen this many in my life – four years ago you would be hard-pressed to find any. It is just physical proof that what I am doing is good for my soil," Brian said.

"There is also a potential to increase yields but we have cut all our inputs without suffering any losses."

On top of his carbon sequestration and greenhouse gas reduction results, the system helps address problems with hard setting soils, weed resistance, soil compaction, insects and disease.

"It has decreased diseases significantly – there is no blotch in the barley this year and the screenings at harvest have been lower," Brian said.

BFS had reduced stripe rust pressure in wheat and abolished the need for fungicide on bean crops, which had previously been sprayed two to three times each season.



MIRACLE BREW: Brian has mastered the art of microbial brewing for use in foliar applications, which has helped to reduce his nitrogen inputs.

5 Critical Factors

- 1 Biological farming systems improve soil health
- 2 Reduces up to 85pc nitrogenous fertilisers
- 3 Minimises insecticides and reduces disease and pest risks
- 4 Increases natural soil biota
- 5 Increases soil water infiltration

Building up soil organic carbon also improves water retention and enhances vegetation's ability to soak-up nutrients. After "shocking" crop results in 2004, and concerned with the increasing fertiliser and chemical inputs without replacing trace elements, Brian decided he needed to make a drastic change.

"Every year I kept putting on fertilisers at higher and higher rates and it just got harder and harder to kill the weeds," he said.

"And in 2004 I had hardly any organic matter in the soil – it was about 1.2pc."

Soil tests from 1985 showed organic matter in the soil was about 4pc.

"But after using BFS I have got my organic soil levels up to 2.5-3pc in two years," he said.

After seeing the benefits of biological treatment on two of his paddocks in 2005, he was motivated to apply biological methods to his whole farm.

The process involves brewing beneficial bacteria and fungi which contain microbial species that stimulate plant growth. Brian uses BioLogic Micro Life, a product that contains microbial strains of Azotobacter, Bacillus, Pseudomonas, Trichoderma and other selected species. The microbes help increase nitrogen fixation, humus production, nutrient uptake and improves phosphorous availability.

The microbes are brewed at a rate of 2 litres for each 1000 litres of water for about 24 hours and sprayed at a rate of 50L a hectare.

It cost about \$7/ha, applying 50L/ha of the microbial brew.



Proof is in the ground

BRIAN Krieg (pictured), Snowtown, says LawrieCo's BioLogic farming system is working wonders for his soil organic matter. The amount of fungi and earthworms crawling through his ground proves that BFS is not all "snake oils and potions". "I really wanted to improve soil balances and decrease my inputs to have a more sustainable farming system – and this is working. The proof is in the ground," Brian said. "It's a holistic approach, trying to balance soils nutritionally, biologically and chemically." His property, run with his wife Stephanie, featured in a national biological farming system tour in May to highlight agriculture's ability to sequester greenhouse gases into soil. The Soil Carbon Tour, hosted by LawrieCo and Lignite Energy Resources, visited a number of farms in South Australia and Victoria to highlight BFS benefits of improved soil health.

Brian starts the process after harvest to digest stubble. "It helps to build the immune system of the plants – plants don't make minerals, they have to get them out of the ground," he said. Set-up costs were about \$10,000, which included two tanks, filters and everything needed to brew the microbes.

But fertiliser inputs are cut back from 80-100kg/ha of DAP to 25-50kg/ha. He puts out a biologic foliar spray at about five weeks, followed by a tissue test, before a second applica-

tion to check what the minerals the crops were lacking.

"Tissue tests in conjunction with soil tests have really helped me better understand what is lacking," he said.

With the dry finish of 2008, Brian says he would have been much worse-off without the BFS in place. "The system puts you in good stead for a dry season as you increase your water holding and nutrients so when you have a dry finish you don't end up crashing and burning," he said.

MyTake

with ANDREW VANDERSLUYS
LawrieCo BioLogic general manager



Overview:

BioLogic Farming Systems are designed to take the insecurity and uncertainty out of switching to sustainable farming. It is not about products, it's about the right plan to make your property work better. Quality assurance, scientific rigour and customer support are, unfortunately, still a mixed bag in this industry and that causes mixed outcomes. There are definitely no silver bullets. Nature is complex and it always takes time, effort and insight to get the best out of it.

The good:

Working together with farmers and achieving the impressive outcomes that only a living soil can deliver. BFS is a classic case of the whole being greater than the sum of the parts, especially when stress comes. The soil is the source of all nutrition and health and the better the soil we have the better we survive hard times.

The bad:

Many farmers experiment with biologic for a few years as they try various programs, products and companies to make sense of it all. It is new, complex information and hard at times to know what's what. All perfectly understandable but not good farm practice. Study first, buy later. Don't start until you have a firm plan for input, commitment and outcome.

The ugly:

Recently there has been terrible trouble in the market about humates. Anything from black coal straight out of the pit to composted council waste is being passed-off as equivalent to high potency, water-soluble humic acid granules. Technically, a lot of things are humates. Technically, Chihuahuas and Dobermanns are both dogs – know what I mean?

My top 5 tips:

1. BioLogic farming is a commitment to sustainability. It is profitable as well but the best operators do have that inner passion for nature and using less chemicals. Do you really have that desire too? Wait until you do.
2. Study first, buy later. Take your time to decide and make that decision a genuine business plan for the farm.
3. Spend on tests and know your soil and crops inside out. That knowledge is a plan for prosperity.
4. Study your own tests. Back yourself. Make farm advisers fully explain their reasons, and always stay in control of what goes on the farm and why.
5. Definitely be well into BioLogic before crude oil goes more than \$US100 a barrel again. BioLogic delivers much better gross margin compared with conventional when oil-based inputs rocket up.

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