

Regenerating soil through additives and ameliorants

Trialling inputs to improve soil health through the Farming for Sustainable Soils Project

“It’s something that’s crucial to our business. Without dirt, I can’t grow anything.” (participating farmer)



Gypsum trial on David Poole’s property. Gypsum on the foreground, no gypsum in the background

Every input costs time and money - precious resources for any farmer. The Farming for Sustainable Soils (FSS) Project assisted landholders in north central Victoria to better understand their soils and the various additives and ameliorants they use in soil management. Through soil testing and assessments, capacity building and knowledge sharing, as well as trials and demonstrations, the FSS Project enabled farmers to regenerate their soils by changing some of their inputs practices, for example:

- Using additives to restore lacking trace elements in soils
- Variable rate fertilising and prioritising fertiliser usage within and across paddocks
- Testing ameliorants to improve productivity and soil structure

Restoring trace elements

James Allen owns and manages a cropping enterprise in the Wycheproof/Glenloth East area, with wheat, barley and canola crops. He explains that it’s a no till operation and “we try to look after the soil as much as possible”. Soils on James’s property range from fertile self-mulching clays to sandy loam, which is harder to manage. Through soil testing undertaken as part of the FSS Project, James says, “the scientist pointed out that the soil was lacking in organic matter and trace elements - zinc was the main one”.

With this information, James was then able to test the value of various inputs and ameliorants to increase soil health:

“[On our property] we tried a few products and biological additives to help encourage root growth - we tried those at sowing time. [They were] biological and trace element mixes. Some were custom blends, mainly zinc, but also a few combinations, three or four different ones - copper, manganese, boron.”

The results of the trials helped James decide which inputs he would continue using, for example, he found that input combinations with boron weren’t much use: “What I found useful was the trials with the zinc, which influenced our decision-making with what to use and what not to use.”



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Managing fertiliser use for productivity

The FSS Project also helped James to make changes to his fertiliser practices:

“We made a few tweaks to our fertilising - I got a fair bit out of the soil pits. It really highlighted that there’s subsoil issues with certain soil types. It really opened up my eyes to see that there’s not much you can do on those types of soil [...] Knowing that has saved a lot of time and money for us. We would now concentrate our fertiliser on the more productive soils.”

James says that his understanding has improved a lot through the Project, and “we do make fertiliser decisions based on the results of the trials. You can identify an issue and try an approach [knowing which approach is likely to work better than others].” Now with an understanding of the diversity of soil types and soil constraints on his property, James has identified further changes to his fertiliser practices to improve productivity in future:

“A priority for us is that we’re going towards variable rate fertiliser. That means within one paddock you concentrate more fertiliser on some areas and less on others.”



Using ameliorants to improve soil structure

David Poole was involved in the Pyramid Hill FSS Group. He runs a dairy farm in the area, with some cropping to ensure that his enterprise is self-sufficient. While David does have some variation in soil types, his soils are predominantly self-mulching clays. Through the FSS Project David came to understand that most of his paddocks only have six to eight inches of top soil. Shallow root zones are also a common soil health challenge for other farmers throughout the Pyramid Hill area. David also has other soil constraints including sodicity, poor soil structure and water logging.

David initially got involved in the FSS Project as an “opportunity to learn a few things”. He could see that some of his paddocks were not producing as much as they could have been. Through the Project, David had a gypsum trial undertaken on his property with the aim of improving soil structure:

“Putting the gypsum on there just showed me how much that adds structure [...] It’s only been three years, but you can notice with the use of gypsum - you notice how easy the ground is to work with now. When we sow the seeds, you can certainly see the difference.”

Manure and compost are other beneficial soil ameliorants that David is using to continue improving the health of his soils following on from the FSS Project: “the more we do with compost and organic matter, the more changes we’ll see”. David reflects on a couple of examples of how these ameliorants and additives have improved soil structure and saved resources:

“You don’t have to change the picks so often because the soils are easier to work with. [...] I can see the difference with germination rates - the pastures are more densely populated, which is a big saving because you don’t need as many seeds.”

In future, David wants to keep increasing his production, and emphasises the importance of continuing to improve knowledge about soil management:

“You could probably learn stuff about soil for your whole life and still not know everything.”



Gypsum trial on David Poole’s property Gypsum on the left paddock, no gypsum on the right