

Impact of Controlled Traffic Raised Beds on our Property: “STRUAN” - in High Rainfall South West Victoria

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Our farm is located in the south west of Victoria which for the last 50 years has predominately been a grazing area. The only cropping done in the area was done conventionally and primarily to provide grain and forage for stock feed. Where we are situated in the southwest has an annual average rainfall of 550-600mm.

Being at the higher end of rainfall occurrence, has made cropping difficult to sustain a viable income from crop production. Crops were sown and then waterlogged or even washed away in the winter, therefore giving the farmer no option but to sow crops in the spring, which would greatly reduce yield.

In the last 10 years things have changed dramatically with the introduction of raised beds for broad acre crop production. When we introduced raised beds to our business we did not expect the introduction of everything that an intensified cropping program would include. We were now given a chance to sow a range of crops that we had not previously been able to grow. Our rotation is generally a canola-wheat-barley continuously, and has proven viable and productive. We have not reduced our sheep numbers but have expanded our cropping enterprise because of the confidence we have in raised beds. We call them our insurance policy and we sleep a lot better at night if a large rain event occurs. With the introduction of raised beds to our farm we are now cropping parts of the farm that we never thought to crop before. Producing very productive areas that were not being used to the grounds ability. Without raised beds we could not reliably produce a crop on our farm.

Some of the challenges that we identified with the raised beds was getting the correct depth in the furrows, matching the machinery so that the wheels were running in the furrows. Also using a dump level to obtain the highest and lowest points in the paddock to determine the most efficient way to run the beds and the water run off.

WATER LOGGING

Our top soil depth is around 10-20cm, followed by a heavy impervious blue-black sodic clay. After consistent rainfall of 30-50mm a water logging situation occurs because the water builds up in the top soil above the slow draining subsoil. In the long term this drastically reduces crop yield and in the worst case, kills the plants.

The introduction of raised beds to our cropping practices has reduced this problem by at least 80%. We first put in some beds in 2001 in a 90ha paddock, 44ha was put into beds and the rest was left as flat ground. The entire paddock was sown with barley and the result was better than expected. The 44ha of beds yielded 4.8ton/ha while the flat area yielded 2.5ton/ha. So with that, we then started to bed the rest of the farm's ground that was susceptible to these water logging issues. Since 2001 dryer conditions have developed but with 02 and 03 being wet winters the beds still proved their viability.

Since 03, with the dryer conditions we have experienced in south west Victoria, raised beds have not had an effect on yield loss on our farm.

CONTROLLED TRAFFIC

Controlled traffic did not exist on our farm until we started using raised beds. We began constructing beds conventionally and sowing with a combine, sowing three beds at a time but the wheel marks were not in the ideal position.

We then moved into getting our paddocks marked out with 2cm auto steer. We would then bed the paddocks using a centre to centre bed width of 2 metres, and this would be successful. We moved to a 10m seeder which fitted compatibly over five, 2-metre beds with no overlapping and wheel placement was a lot better.

Our 18m boom spray tank runs with its wheels in the furrows of the 2 metre beds and covers 9 beds without overlapping. Since marking out our paddocks overlapping has been eliminated and running the machinery wheels in the furrows has greatly reduced compaction. For example pulling out a plant on top of the bed can be done with ease, while previously you would snap the plant in half while trying to pull it out.

Our soil textures consist of a brown light/medium clay loam, with our pH ranging from 5-7.

The clay component of our soil impacts greatly on structure, and compaction can occur very easily.

Before raised beds the ground would become hard and crusted making it difficult for plant roots to descend.

Porosity in the soil was limited and it showed with plant growth being quite slow. Forming beds would aerate extra top soil, making a friendly environment for plant growth without the clay present until deeper down.

The soil structure in the bedded paddocks has now changed dramatically, going from hard to penetrate, to being able to stick a screwdriver into the soil down to the top of the handle. It would also appear that after a while, the heavy clay subsoil that was very close to the surface becomes less dense, perhaps due to some sort of breakdown occurring with improved drainage and the absence of compaction.

With less machinery disturbing plant growth, the soil and all wheels confined to the furrows between the beds, compaction is virtually eliminated from most of the soil in the paddock. The well structured soil in the raised beds promotes rapid plant growth, and makes it considerably easier for plants to access nutrients.

Drainage plays an important factor in beds as well, because of the intense amount of run off. The end drains have to be able to handle a high volume of water. With the limited amount of rainfall in the past, water catching from these beds has been particularly valuable. Catching the water and running it to dams for storage which has been able to be used for stock during the drought.

CONCLUSION

Moving forward using innovative, diverse and new technology is the future of our farm. As a young farmer it is incredibly exciting to be able to enter the future, and what it has to offer in this particular area of agriculture.

Being able to use controlled traffic/raised beds on our farm is a big step into refining our cropping enterprise and the whole farm, year after year. Using water more efficiently is what we intend to do in the future, with the previous years being dry it makes you more aware of how important it is to utilise

water saving procedures. So every little aspect on our farm has to incorporate water saving as its number one priority.

Controlled traffic is one of these procedures and so the task is there for myself to introduce it to the farm more intensively and effectively.

In the future I hope to have created a cost effective, productive cropping program using relevant information and the best technology available.