

Reduced till in vegetable production

Cultivate less and improve your profits

Watch the new reduced till video



Cowra vegetable grower Ed Fagan explains how reduced till vegetable farming techniques improve his bottom line in a new soil wealth video available on YouTube.

Click this link to play the video:

[Reduced till vegetable production – Why?](#)

In the late 1990s a small number of progressive growers in Australia started experimenting with reduced till (or minimum till) for vegetable production. Reduced till is a system change that relies on keeping the soil in a healthy condition through the use of permanent beds, controlled traffic, cover cropping and crop rotations rather than frequent cultivation.

Benefits

Reduced till can deliver some significant benefits to growers. These include:

- Reduction in input costs save money and time.
- Fewer tractor passes are needed, saving labour, machinery and fuel cost.
- Less fertiliser is required because of improved root development.
- Fewer irrigations are needed because more water can be stored in the soil.
- Major improvements in soil health.
- Better soil biology leading to a reduction in soil-borne disease pressure.
- Better soil structure and stability leading to less compaction.
- More stable soil aggregates which improve air and water movement and can also results in less erosion.

Flowing from the above, growers can benefit from:

- A wider timeframe for completing farm activities.
- Marketable yields as good or better than via conventional tillage.

- Revenue as good or usually better than via conventional tillage.
- Ability to harvest or prepare soils sooner after rain events.
- Less time and horsepower needed for cultivation activities.



Ed Fagan, Mulyan Farm, Cowra

Challenges

There can also be some major challenges in implementing reduced tillage practices into vegetable cropping systems. These include:

- Capital costs of machinery modifications and new equipment.
- Harvesting systems may need to change.
- Possibility of new pest species (slugs, snails, earwigs due to more organic matter) and the need for integrated control.
- Possible changes to the crop protection system.

Background to reduced till

Reduced till has been used extensively in broadacre agriculture since the mid 1980s, with benefits including reduced input costs (especially tractor related), good soil moisture retention through retention of stubble, good water infiltration and better yields. The benefits over conventional tillage have been particularly clear in drought years.

Cropping soils that have been heavily worked with conventional tillage often become degraded, with poor structure, high bulk density, low water infiltration rates and rapid runoff. In summer, even heavy watering does not always allow sufficient water to soak in, and yields suffer.

Degraded soils require even more cultivation such as deep ripping to counteract these negative effects.

It's a vicious cycle!

Reduced till in vegetable production

- Decreased soil temperature which can lead to slower crop development and longer planting to harvest times.
- Paddock rotation planning needed.

Case study: Mulyan Farm, Cowra NSW

Ed and James Fagan began using permanent bedding, composting and cover cropping on their least productive vegetable block in 2008. The block was requiring high inputs— tillage, fertiliser and time and was still returning poor yields and low financial returns.

The Fagans set up permanent beds and sowed ryegrass. They killed off the ryegrass in the spring, incorporated the residue in the latter part of summer and prepared the beds for sowing onions in the autumn.

Within one year of implementing reduced till, the extra returns were outweighing the cost of the cover cropping and the compost. While input costs remained roughly the same, the yield was greater and returns improved.

Ed reported the resulting onion crop was phenomenal.

Spraying for weeds over summer wasn't required because the ryegrass left a thatch on top—a big saving. There was a good establishment of onions, nutrition was even, and roots were massive and vigorous.

Four years later, the brothers have seen a complete turnaround in the block. Onion crops are now as good as they could possibly be, and input costs are less—on a paddock that traditionally would have been a no-go for onions.

Economically, the extra margin, the extra yield and the slightly lower cost of growing the crop outweighed the margin that would have accrued by having a second cash crop in that block for the year.

Plus, there was a huge soil health benefit—improved structure, improved water infiltration, and improved uptake—largely due to the profusion of worms. A lot of the tillage that used to be required under conventional methods to break up compaction layers was now done by the worms and microbes in the soil.

The infiltration rate of water increased from 2 ml per hour to 10 ml per hour.

The more activity there is in the soil, the quicker the residue from the previous crop breaks down. So a lot of the breakdown of the cover crops is done by the soil itself.



Annual rye cover crop on permanent vegetable beds.



Implement to incorporate crop and cover crop residues with minimal soil disturbance.



James Fagan with planter designed to sow cover crops through crop residues without cultivation.

For more information

Watch the video: [Reduced till in vegetable production. Why?](#) On YouTube

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