



National Vegetable  
**Extension Network**  
 T A S M A N I A

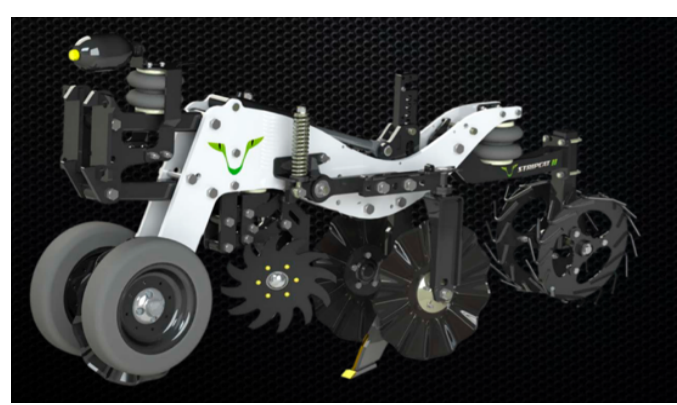
# Strip till

## in Tasmanian vegetable crops

**Strip till is a system of cultivation that works strips of soil where the crop will be planted or sown and leaves most of the soil covered and undisturbed.**

The strip till machine (see Figure 1) can, usually in a single pass, rake aside crop residue, work the soil around a ripper tine, accurately band fertiliser and plant or sow the crop.

Conventional cultivation involves multiple passes, often with more intensive use of tillage equipment to develop a fine tilth, eliminate or incorporate residues and till at depth for root penetration.



**Figure 1. A component of a strip till machine, showing the rakes, ripper tine and press wheel. Image from slyfrance.com**

### Benefits of strip till

- Compatibility with row crop planting equipment
- Reduced risk of soil erosion because more soil is covered and undisturbed
- Improved soil resilience to weather extremes
- Higher mineralisation in the row zone (for crop, not weeds)
- Fertiliser placement banded in row zone is not tied up on previous crop residues
- Better moisture infiltration and retention due to improved soil structure
- Water is stored more effectively and can be used by the emerging crop or young transplants, reducing stress and benefiting crop health
- Reduced fuel and labour costs because of fewer field operations to prepare the ground (reduced tillage)
- Reduced risk of soil compaction
- Soil health and biology may be improved through maintaining soil structure and soil carbon
- Less weed pressure due to residue cover and reduced soil disturbance
- Driving on firm ground gives a better GPS guidance performance
- For vegetable growers who have tried zero-till, strip till can overcome some of the known problems with poor establishment, cold soil and delayed maturity
- Reduced dirt splash onto some crops (cucurbits) which helps harvest efficiency
- Avoids side wall compaction problems associated with no-till
- Enables quicker access to marginally wet ground
- Efficiently handles large stubble trouble (crop residue) and doubles its benefit inter-row

### Key messages

- Strip tillage is currently used in Tasmania for brassica seedlings, fodder beet and carrot seed
- Benefits include *improved water infiltration and retention*, healthier crops, fuel savings, fertiliser placement & efficiency
- Think of strip tillage as a farming system, not just a tillage practice



## Challenges of strip till

- Crop residues require careful management, as bulky, wet or long material can disrupt the operation of the equipment
- The ground is less uniform than a conventionally prepared seedbed, leading to uneven sowing depths and potential problems with establishment and maturity
- Cost of machinery or contractors
- Soil temperature can be lower, slowing germination
- Difficult to undertake in wet soil conditions
- Nitrogen, weed and pest/disease management may become more complex due to the uncultivated strips. There are both negative and positive outcomes depending on the crop, the soil and the conditions. Monitoring and testing should be carefully carried out and integrated crop protection techniques employed to manage the system.

## On the ground

In Tasmania, the most widespread application of strip till is summer-planted broccoli (transplants) after peas (Figure 2). Transplants avoid the potential problems with seed depths, and the spacing of broccoli rows is usefully wide.

Anecdotally, strip tillage is increasing broccoli yield, uniformity and quality and opening up parts of Tasmania for broccoli cropping that have not been used before, especially on lighter, sandy soils. Strip tilling has also been used successfully for fodder beet, and there is some application in seed carrot crops, particularly where sand blast is an issue.

**It is important to think of strip till as a farming system, not just a tillage practice.**

Careful planning, preparation and whole farm co-ordination are crucial. It can be difficult to incorporate within diverse farming operations. Strip tillage can be usefully combined with controlled traffic, using GPS guidance, so that the cultivated strips and any chemical applications are placed accurately. If used over the long term, this can further improve soil health and biology and water infiltration and storage.



Figure 2. Young broccoli plants in a strip till system. Photos from Joe Cook

## Acknowledgements

Many thanks to Joe Cook, Kevin Temple, Greg Gibson, Robin Tait and Craig Soward for generous sharing of experience.

## References

Bottenberg, H., Masiunas, J., Eastman, C., 1999. Strip tillage reduces yield loss of snapbean planted in rye mulch. *Horttechnology* 9(2), 235-240.

Brainard, D.C., Peachey, R.E., Haramoto, E.R., Luna, J.M., 2013. Weed ecology and nonchemical management under strip-tillage: implications for northern U.S. vegetable cropping systems. *Weed Technology* 27, 218-230.

Hoyt, G.D., Monks, D.W., Monaco, T.J., 1994. Conservation tillage for vegetable production. *HortTechnology* 4, 129-135.

Header image courtesy of Joe Cook