



Large Seed

Growing vegetables using reduced tillage systems

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Why minimum or zero till?

Mulgowie agreed soil health principles



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1. Maximizing Soils Cover – Keeping living roots in the ground.
 2. Minimizing Soil Disturbance
 3. Increasing Organic Matter and Carbon

Increased soil biology = reduced chemical fertilisers = resilient strong cell wall and nutritionally dense plants / food

Why minimum or zero till?



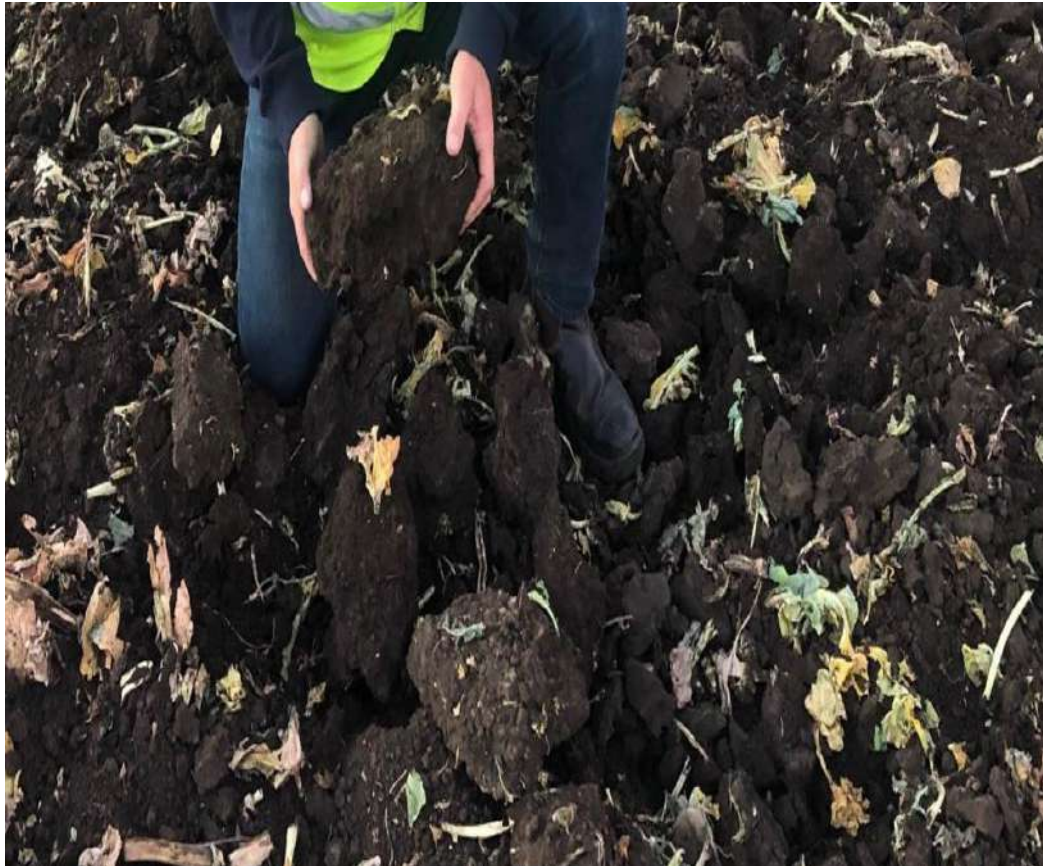
Why minimum or zero till?

Conventional Horticulture

Rip – **Bring up clods to dry out – loss of moisture, lots of diesel & tractor hours**

Offset – Destroy soil structure – **more diesel & tractor hours**

Rotary Hoe – “Carbon Disintegrator” **Finish off any life left in soil and seal off to avoid water infiltration... & more diesel & tractor hours**



Loosing Carbon



Destroying soil health and structure – Needed to stop

Why minimum or zero till?

Worms

**Less tillage = more
microbiology and more worms**

Worms are tilling the soil for us



How can we achieve minimum or zero till?

We agreed on soil health principles, but how can we implement “living roots” into our Horticultural farming systems?

Challenges of change in areas with different:

- soil types
- crop windows and climates
- irrigation systems
- Farm managers
- Secondary pests – earwigs, slugs
- available resources and equipment

No one solution fits all farms

- need to develop a system that works for your farming situation.



How can we achieve min or zero till? Consider CTF

Step one – stop soil compaction = Control Traffic Farming



HARVEST



SPRAYING

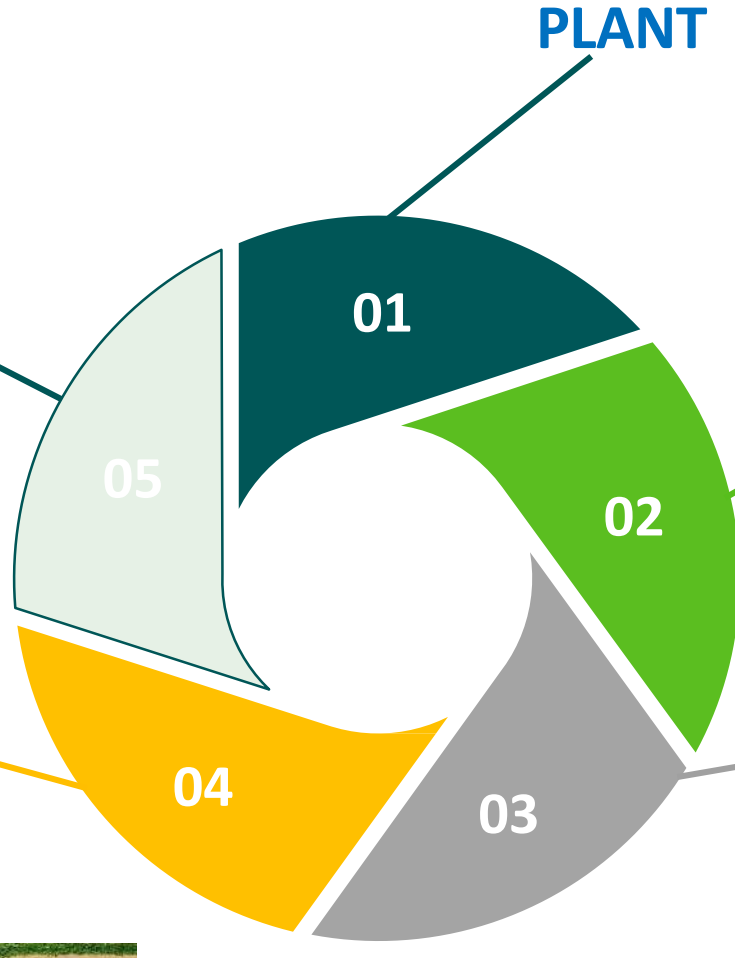


PLANT

FERTILISER

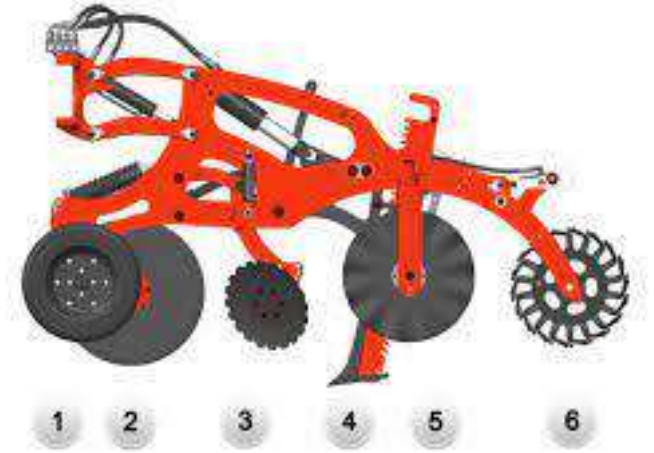


GROUND PREP



How - minimum or zero till equipment considerations

Strip till (min till) or direct seed (no till)



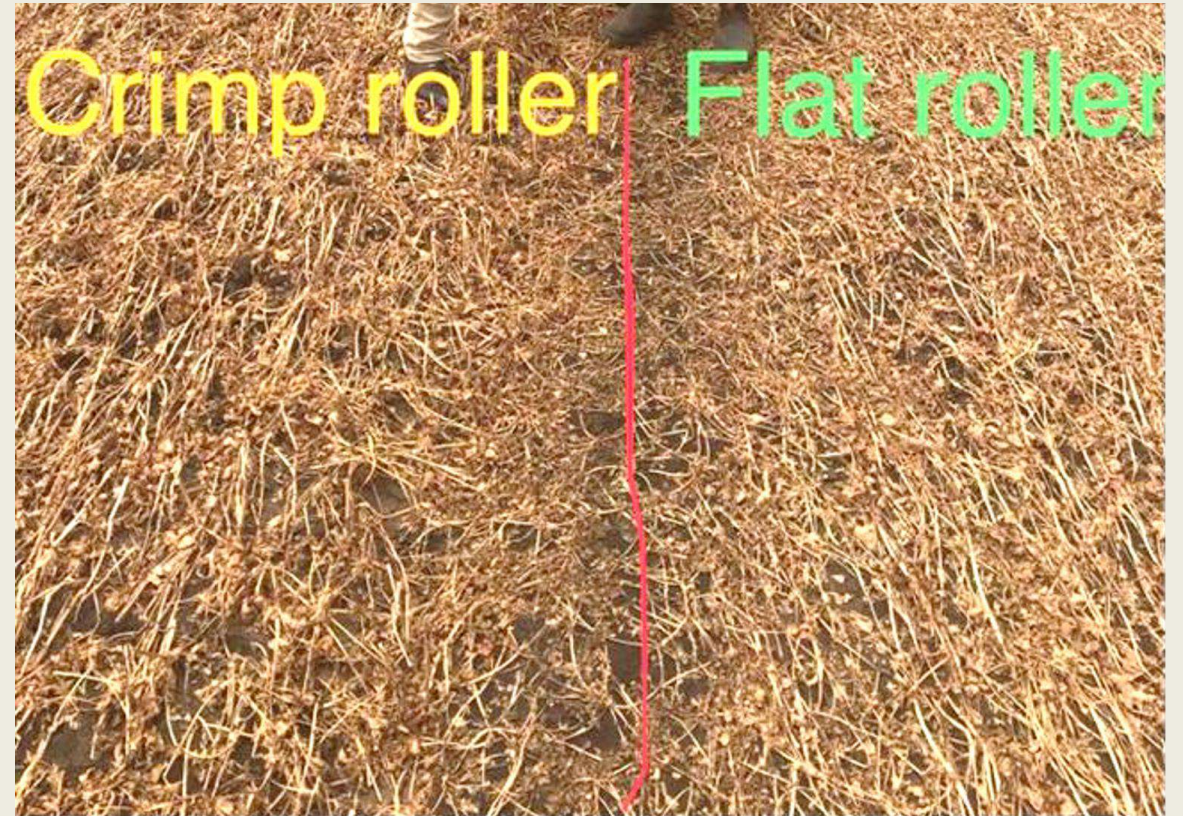
Cover Crop considerations

- What is the next crop? Rotation of crop species
- Soil Health requirements ? Clay breaker, Miner? Biofumigant? Organic matter
- Cost seed – does it make commercial sense
- Weed management – broadleaf or grass etc
- Termination options – crimp rolling, herbicide
- Cover crop planting method
- Zero till planting – how hard is it to plant into?
- Cash crop options?

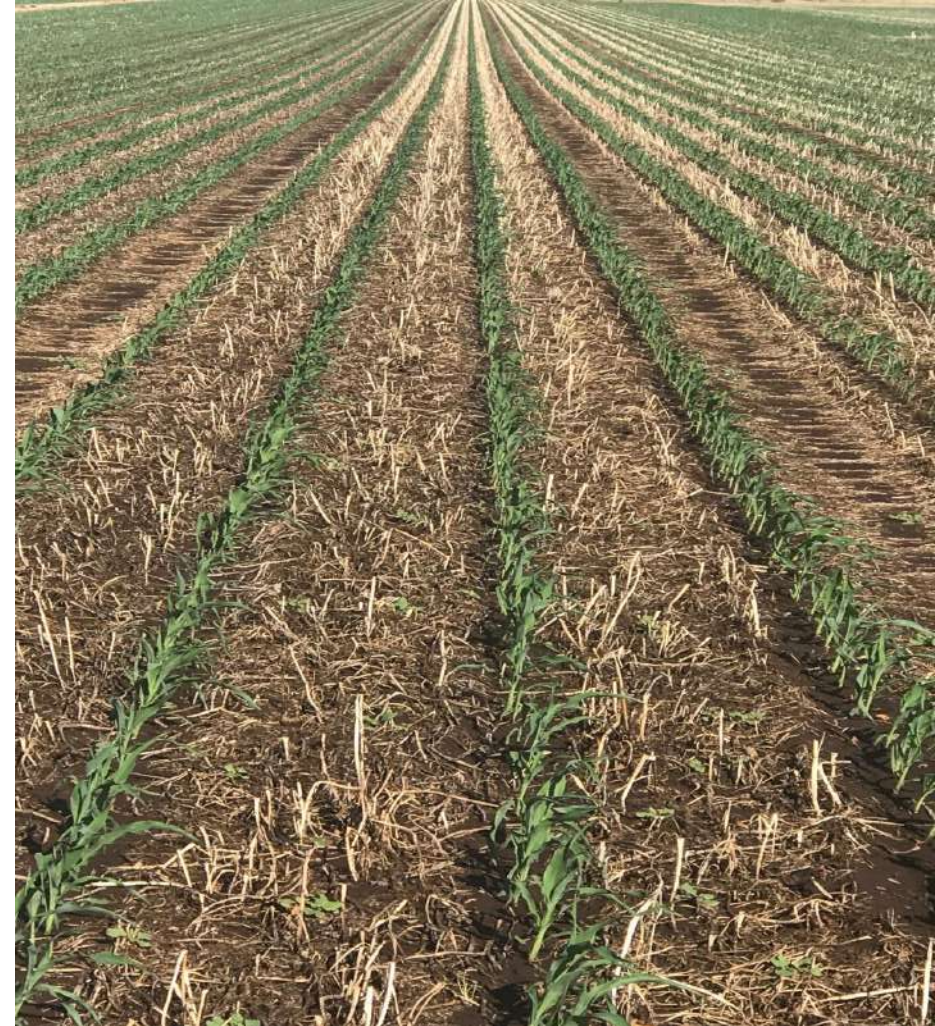


How - Minimum or zero till considerations - Cover crops

25 day old Buck Wheat Lockyer Jan 19



What's worked for us- Cover crops



Sweetcorn planted directly into Buckwheat had less weed pressure and yielded 11% higher than std. next to it

Planting into trash.... What works? Bowen summer fallow below



Colter cut



Planting into trash.... What works?

Doesn't look pretty, but plant stand counts were not effected & yields increased on average



Zero tillage corn – reused tape



Zero till sweetcorn – healthy crop





Bowen zero till beans



Mulching – Homehill



Green Beans planted into Mulched Sweetcorn Stubble



Wavy Disc - Plant straight into Bean stubble



Planting into freshly picked Green Beans mulched stubble



Sothern Victoria Rye Corn ready to mulch



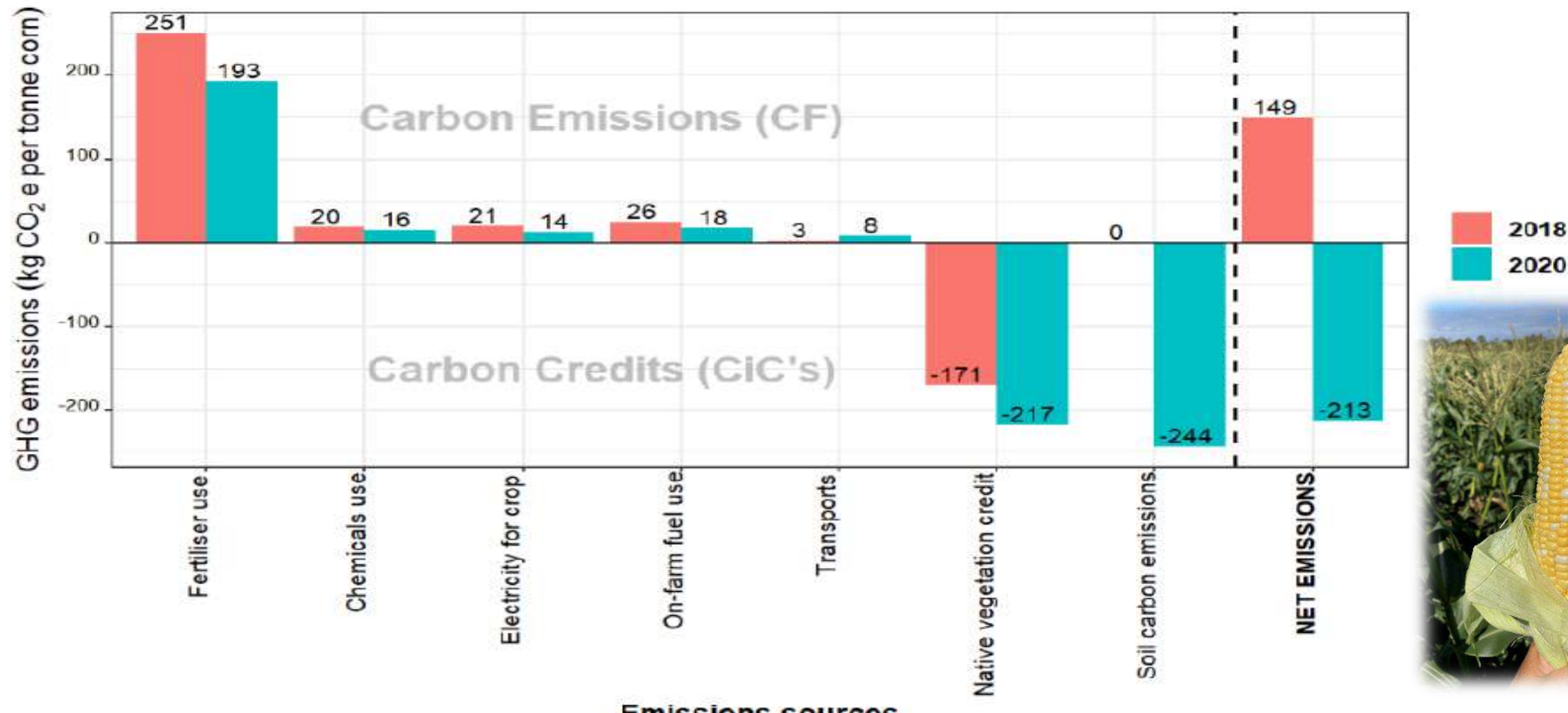


Strip tillage – MFC Victoria farm



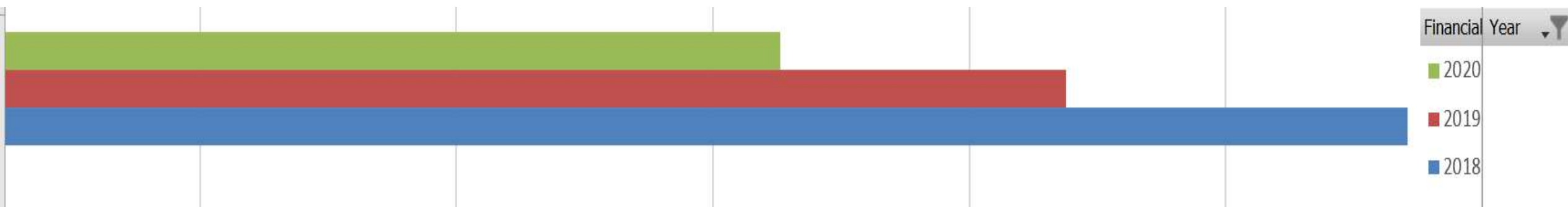
Carbon Friendly Certification

Net emissions of sweet corn produced from Bowen Farms declined from 149 to -213 kg CO₂-eq per tonne in the assessment year of 2018 and 2020, respectively (Figure 1). For both assessed years, emissions from fertilisers use were identified as the largest contributor to climate changes impacts in the production system, following by emissions from energy use (e.g., fuel and electricity), chemical use and transport of farm inputs relevant to the crop. Native vegetation areas and soil carbon emissions were two sources of GHG emissions mitigation for Bowen Farms' sweet corn system. While the contribution of VEG improvement to the reduction of emissions intensity was less profound (~21%), from 171 to -217 kg CO₂-eq (Figure 1), SOC improvement during this period resulted in a large carbon credit (CiC's) which substantially reduced the Net emissions intensity of the product.



By adopting minimum and zero tillage methods when possible, and not ripping, offsetting, rotary hoeing etc, we have seen a considerable saving in tractor hours and fuel consumption =.

Total tractor fuel consumption has dropped 43% in 3 years



As soils become healthier, zero till becomes easier



Enjoy the new “Green Therapy”

Thankyou