



# Koo Wee Rup Demonstration Site

## Practice Change Case Study

### Overview

The Schreurs family have been farming on the Koo Wee Rup swamps in Gippsland, Victoria since 1963. After noticing a decline in soil condition, resulting in waterlogging and an increase in weed and disease pressure, the Schreurs partnered with the Soil Wealth and ICP team to trial a range of different cover crops to improve the overall quality and productivity of the farm from 2014 to 2017. Schreurs & Sons farm run by Adam, Ben and Chris produces a variety of different products including celery, leeks and baby leaf spinach.

### What was demonstrated?

The Schreurs and the Soil Wealth and ICP team trialled Caliente mustard, Rye Corn and Sorghum as summer cover crops in the farm rotation to act as soil conditioners. These crops were compared with a fallow period (control) to observe differences in production quality. Crops were sown in early summer and then macerated and incorporated into the soil at maturity (Figure 1). The soil at the trial site was former swamp and contains high organic carbon levels over heavy clay.

Cover crops were sown at the following rates:

- Sorghum: 50 kg/ha
- Rye Corn: 25 kg/ha
- Caliente: 25 kg/ha.

At maturity, samples of crops were removed and root and shoot length analysed. After growth analysis, all crops were macerated and incorporated into the soil and were left for three weeks to decompose. Following decomposition of cover crops the ground was lightly chisel ploughed and beds were formed.

*“The soil did break up better than usual and it reverted back to more of its original colour.”*

### Key messages

- The Schreurs farm trialled three different cover crops to improve soil quality
- Crops were grown and incorporated into the soil at maturity
- Observations at bed formation showed positive results in plots treated with various cover crops
- Leeks harvested from plots treated with cover crops showed a decrease in the prevalence of disease and a 35% increase in size



Figure 1: Caliente crop being macerated and incorporated into the soil



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## Results and lessons learnt

At the point of bed formation, differences in the soil composition and colour were already noticed by Adam (Figure 2).

After bed formation, leeks were planted and grown under normal conditions.



**Figure 2: Bed formation after decomposition of cover crops**

Prior to harvest, samples of leeks were collected and assessed to observe differences in growth patterns. Leeks grown after sorghum appeared to have thicker and larger shoots and had more established and vigorous root systems when compared to leeks grown in the control (Table 1).

**Table 1: Root and shoot analysis from demonstration site**

COVER CROP	FRESH WEIGHT (G)		ROOT:SHOOT
	Shoot	Root	Ratio
Control	447	61	0.14
Sorghum	758	87	0.11
Caliente	634	71	0.11
Rye corn	427	66	0.15

At harvest, leeks were taken and observed in the packing sheds. A sample of 200 was randomly selected and inspected for disease levels. Adam estimated that generally 40% or more of his leeks are affected by soil borne diseases. Generally the number of leeks showing rot around the base of the stem and unhealthy, weak and often brown roots was fairly high. Cover crop trial results showed that only 6% of the sample leeks had symptoms of soil borne diseases.

With cover crops, more leeks appeared to have healthy, strong white roots and leaves that peel back easily and neatly – a quality that is highly desirable as it makes

trimming and cleaning much easier and faster with less harvested product going to waste (Figure 3).

After the initial trial Adam continued to use cover crops at the Koo Wee Rup site. The next season he noticed even further changes.

*“Our leek crop has just been harvested and it’s one of the best we’ve ever seen... the biggest thing we’ve noticed is about a 35% increase in boxes of large leeks.”*



**Figure 3: Comparison of leek crops grown in beds with sorghum cover crops and those grown in control**

Adam opted for rye corn at the start of a leek and double spinach rotation. This resulted in a shift of small, medium and large leeks from 30:60:10 to 10:50:40, which was also coupled with an earlier harvest of about two weeks.

## Next steps

The second phase of the Soil Wealth and ICP program from 2017-2022 is currently under development. Phase 2 aims to focus on a range of issues to increase the productivity and sustainability of Australian vegetable farms.

We intend to continue demonstration sites like Adam’s and investigate various cover crop mixes, soil borne disease and weed management, as well as other key production-related issues around the country.