COWRA CASE STUDY

COVER CROP + ROLLED GROUND COVER + STRIP TILL = RECORD FARM CUCUMBER YIELD

Cover crops + roller crimper + strip tillage have proven a winning combination for a partnership between Mulyan Farms' Ed Fagan and AHR's Marc Hinderager from the Soil Wealth Project.

Cucumber yield and gross income more than doubled, with many soil and weed control benefits adding up to produce impressive yield and quality results.

Ed Fagan is passionate about reducing, even eliminating, plastic on his farm - "You never recover 100% of the plastic mulch and it becomes a major pollutant for years. We have fantastic results from a "grow your own mulch" for cucumbers this year."

Ed needs to minimise costs and be efficient with his labour and equipment. Strategically managing cover crops, crop residues and reducing tillage with strip till is a current focus on Mulyan Farms.

The business end of cucumber production

In the 7 ha operational trial, the ryecorn cover crop area produced an outstanding cucumber yield, well above farm averages. Direct seeded cucumbers established better and produced more marketable fruit per plant and overall marketable yield per hectare.

For Ed, the standout result was the combination of **higher overall yields** and **higher marketable yields** in the ryecorn cover crop areas, where 80% of the crop was marketable, compared to 62% in the fallow area. The gross income dollars speak for themselves!

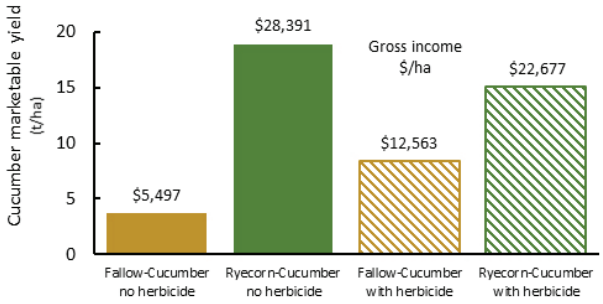

Figure 1. Cucumber yield and gross income following either a fallow or rolled ryecorn cover crop, with and without the herbicide clomazone.

How Ed and Marc managed the crops

A ryecorn cover crop was sown (120 kg/ha) in July 2018 across 7 ha with two strips left fallow. The ryecorn outcompeted weeds, providing full ground cover despite the dry, cold, winter conditions, with no fertiliser, herbicides, or irrigation costs. Ryecorn was chosen for its high carbon to nitrogen ratio and high lignin content, slowing residue break down and providing longer ground cover.

The cover crop was terminated (using glyphosate) at the flowering stage and **rolled down 7 days later**, providing a single direction for the ryecorn stubble. This produced a 6 t/ha dry matter ground cover still

Hort Innovation Strategic levy investment | VEGETABLE FUND

This project has been funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

attached to the soil, which was not blown away or rained off beds over the summer months.

Mid-February, beds were prepared using **one pass strip tillage** in the same direction the cover crop had been rolled. The row cleaners on the strip till gear easily cleared the trash away while leaving the cover crop between the rows to protect the soil. The strip tilled rows made the sowing operation **trouble free**. A standout observation was the even crop establishment in the ryecorn cover crop area, significantly better than the fallow area.

The herbicide clomazone was applied post sowing, pre-emergence to part of the ryecorn cover crop and fallow areas. The fallow area was dependent on this herbicide for weed control, while the ryecorn cover crop area yielded best where no herbicide was applied.

Many soil and weed control benefits produced the big yield differences

Details of the soil and weed benefits will be explained in a separate case study. Briefly, the cover crop left on the surface captured most of the winter rainfall, recycled 150 kg/ha of nitrogen and slowed soil acidification.

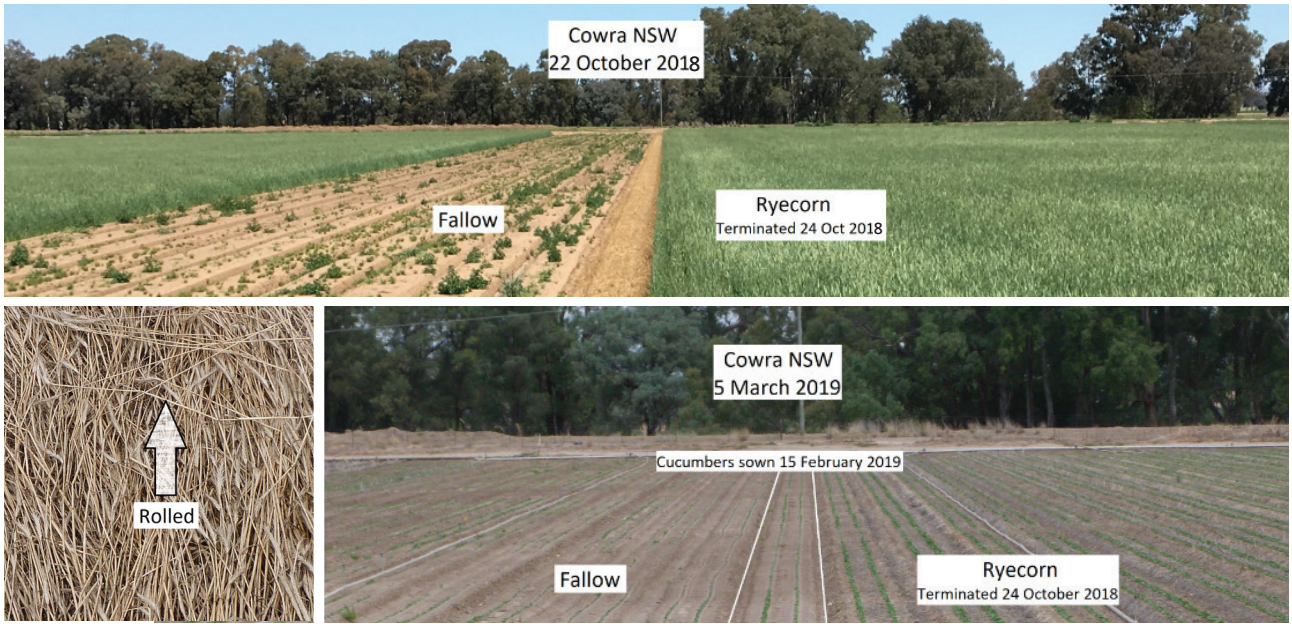

Figure 2. Ryecorn cover crop and fallow area (top). The cucumber crop in the same area 18 days after sowing (bottom). The rolled cover crop (bottom left).

The bottom line...

For the cucumber crop, the cover crop reduced soil crusting and compaction, increased water infiltration rates and moisture retention, reduced the upper soil temperatures during the mid-summer heat, and reduced weed germination and competition. Overall, this allowed the cucumbers to establish, grow better and produce an outstanding yield.

*For more pictures and details of the operational trial visit **Soil Wealth Cowra** on Facebook.*

https://www.facebook.com/SoilWealthCowra