

Pushing sustainable high production on better performing areas

SNAPSHOT

Owners: Englefield Plains, Viridis Ag

Farm Manager: Andrew Wilson

Location: Junee, New South Wales

Farm size: 7400 hectares

Annual average rainfall: 520mm

Soil types: mostly red loam with areas of heavier basalt

Enterprise mix: dryland broadacre cropping

Crop program (2020): Cereals 47% (Beckom[®], DS Bennett[®], Rockstar and Lancer[®] wheat, RGT Planet[®] barley), canola 36% (43Y92 CL, HyTTec Trophy[®], 44Y94 CL and Hyola 530XT), legumes 17% (PBA Samira[®] faba beans, PBA HatTrick[®] chickpeas).

Typical rotation: legume-canola-wheat-legume or canola-wheat-barley

Pushing sustainable high production on better performing areas is at the heart of Andrew Wilson's cropping strategy at Englefield Plains, north-east of Junee.

With the assistance of a permanent team of three, Andrew manages the 7400ha farm at Illabo, one of 11 broadacre operations in the Viridis Ag portfolio.

Changes include switching from sheep, wheat and canola to 100 per cent winter cropping on a 12m controlled traffic system, beginning in 2018. They also added barley and legume break crops to the rotation, working closely with Greg and Kiri Condon of Grassroots Agronomy on ways to tackle ryegrass issues and improve sustainability.

"A lot of this country has been continuously cropped for the last 20 years," Andrew said. "It hasn't had a pasture or lucerne phase in it. The country needs a rest and we're already starting to see some positive results from growing pulses and in the crops following pulses."

Photo: Andrew Wilson



Andrew and Louise Wilson at Englefield Plains Illabo.

Like many farms in central and southern NSW, Englefield Plains experienced what Andrew describes as an "incredible season" in 2020.

"We budget on an average of 3.5t/ha for our wheat, 3.8t/ha for barley, 1.8t/ha for canola, 1.5t/ha for chickpeas and about 2t/ha for faba beans," he said. "Last year was our biggest year by a long way. We averaged 6.3t/ha for our barley, 5.5t/ha for wheat, canola was 2.5t/ha, faba beans 4t/ha and chickpeas about 2t/ha. It was an unbelievable season for us, as it was for a lot of people, but after a couple of dry years it was really great to get a good one under the belt."

But along with big crops come big challenges and Andrew said 2021 will test their controlled traffic farming (CTF) system.

CTF started at 18m in 2013 and changed in 2018 when the seeders began running on 12m tracks and 12-inch (30.5cm) row spacings. The sprayers and spreaders work on 36m.

"We don't burn stubble – we haven't had to – and we try to interrow sow," he said. "The 12-inch rows make it

a bit easier for us, but this year is going to be a challenge because of some massive stubble loads from last year's crop. We try and manage that by cutting as low as we can, and then inter-row sow. Our DBS bars work pretty well in between the old rows, but this year will be a real test for us."

How it started

Englefield was created in 2012 through the aggregation of nine farms. Andrew arrived as assistant manager in 2013 and was promoted to manager in 2017. Early moves into precision agriculture (PA) included EM and gamma surveys to identify soil types and assign them to management zones. Used in combination with yield data they have been important investments for getting the farm to where it is today.

About 7025ha of the farm is arable, with soils ranging from red loam to areas of heavier basalt over mostly undulating country.

To identify the variability issues in greater detail, almost the entire farm was soil-tested in 2ha grids at 0-10cm to produce a pH map. That informed variable rate lime



Spraying crops at Englefield Plains.

Photo: Viridis Ag

application to try to bring pH up to at least 5.5.

Andrew said they then strategically tested some spots at 0-5cm, 5-10cm, 10-15cm and 15-20cm to quantify the effects of the lime at different depths.

“We found areas that were quite acidic on top and okay underneath, and vice versa where it’s quite good on the top and acid underneath,” he said. “After 20cm it seems to be all right. We’ve been doing a fair bit of work on that and we’ve got a lot more to do.”

Andrew said the team was kept busy during what might have otherwise been quieter periods spreading more than 12,000 tonnes of lime in the past two years. They used variable rate spreading then incorporated the lime as part of the soil amelioration plan.

Yield data is the basis for variable rate starter mono-ammonium phosphate (MAP) fertiliser at sowing to top up areas that are traditionally more productive, rather than trying to reduce rates and costs. Last year they used normalised difference vegetation index (NDVI) imagery and yield data collected in 2019 to do some variable rate nitrogen spreading towards the end of the season.

“We want to push those areas that are traditionally our higher-earning parts of the paddock,” he said. “And

then we look at certain areas that are traditionally poorer performers, to see whether it’s worth cutting back a bit in those areas, whether there might be excess phosphorus or nitrogen already in that soil. First, we try to identify why those areas perform less. A lot of it is due to elevation; we’re fairly frost sensitive here and trying to manage those zones.”

The benefits

Andrew said PA had helped considerably with crop monitoring and NDVI can quickly identify sections of a crop that aren’t doing as well. Shortcomings in satellite imagery – such as delays due to prolonged cloudy weather – mean

he will utilise drone imagery as an alternative to improve the timeliness of feedback at critical stages of crop development. The photos can also then be used to guide camera spraying, identify weeds in fallow conditions and develop variable rate fertiliser maps.

All machinery at Englefield Plains is John Deere and Andrew swears by the GreenStar Gen 4 system which he said works really well.

“We can see instant yield data remotely,” he said. “I’m supported by a team of analysts and a senior agronomist based in Albury who can log in remotely and can see what’s going on in real time. It’s a great tool.”

Photo: Andrew Wilson



Scott Cullen (from left), Steve O'Brien and Andrew Wilson with the awards won by the Englefield Plains team for best barley crop and Viridis Ag farm of the year.



Crops at Englefield Plains are inter-row sown.

Photo: Viridis Ag

The John Deere S790 headers are equipped with chaff decks that concentrate ryegrass seed onto the wheel tracks instead of spreading it across the whole paddock. The next step could be a seed destructor, so Andrew is closely watching how the different types perform on other farms.

The Croplands 36m WEED-IT is in line to be upgraded and a 12m SwarmFarm spraybot will be tested at Englefield Plains this year.

“It’s definitely an interesting concept,” Andrew said.

Also known as swarm bots, the units are expected to bring greater efficiency to operations such as fallow spraying of weeds. They use optical sensors to precisely target weeds and can work as a coordinated team using two-way radio signalling. Costing and weighing much less than a conventional spray rig, they also have the potential to reduce soil compaction.

The autonomous nature of the bots is particularly appealing to Andrew.

“Hopefully, it will ease the burden on our key operators, especially at harvest when we would ideally like to be commencing the summer spraying program. As long as the weather conditions are right, based

on the parameters you set, it can operate around the clock. And if there’s no wind and there’s an inversion, it can pull up. If you had a couple of bots going around the clock you’d certainly cover some country.”

What’s next

Andrew said he’s been amazed by the rapid pace of improvements in farm technology.

“The thing that’s really exciting for us is green-on-green spraying,” he said. “Being able to identify and target spray wild radish in a wheat crop and reduce our herbicide inputs. That’s a massive thing, not only for cost savings, but for the environment. The less we have to use some of these chemicals the better.”

There are numerous companies working to develop green-on-green spot spraying technology, using different types of cameras and algorithms.

Once the tech becomes affordable, Andrew said it will be a “game changer for the industry”.

MORE INFORMATION

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