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Farm location: Essex

Trial type: Drill comparison
Crop: Winter wheat

This trial was part of the AICC Crop Nutrition Club 2023, which has been run in conjunction with the Farm-PEP project led by ADAS. This report contains the results of a winter wheat trial testing the effects of using two different drills.

Treatments

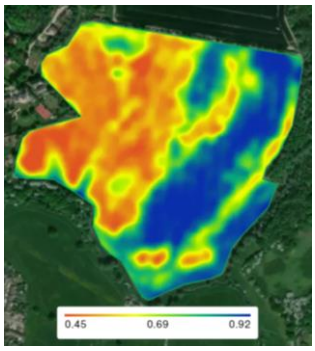
1. Väderstad Rapid drill
2. Horsch Sprinter drill

The central section of the field was drilled with the Horsch Sprinter and the rest of the field with the Vaderstad Rapid drill.

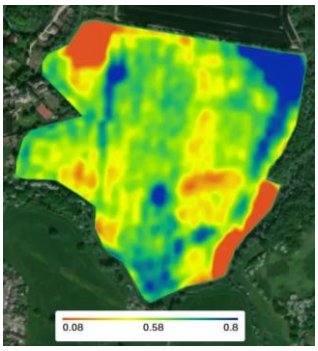
Satellite imagery

NDVI (normalized difference vegetation index) is a spectral reflectance index which shows a combination of canopy size and greenness, on a scale from 0 to 1. NDVI images were sourced from www.datafarming.com.au, based on freely available 10m resolution data from the Sentinel 2 satellites. The scale varies between images but always runs from red (low) through orange, yellow and green to blue (high). The availability of imagery is constrained by the need for cloudless conditions.

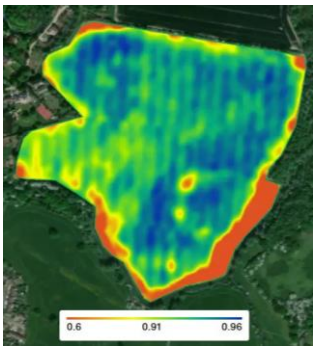
Across multiple years, the field shows a consistent pattern of variation with the western half of the field senescing earlier than the eastern side, probably due to difference in soil moisture. However, the block drilled by the Horsch demo drill spanned both sides of this divide, which is helpful for the trial. There were no visible differences in NDVI between treatments.



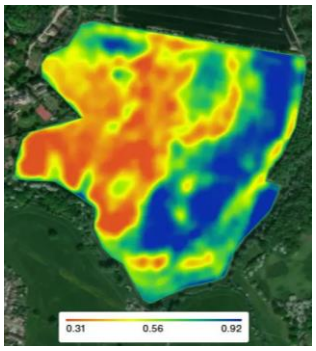
NDVI previous season
(22 Jun 2022)



NDVI early season
(11 Jan 2023)



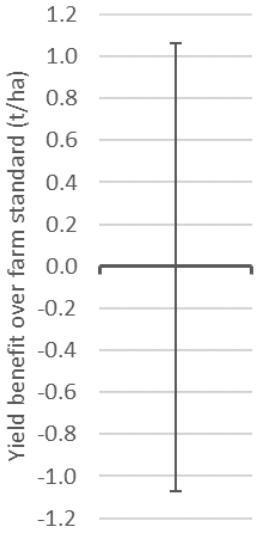
NDVI late season
(10 Jun 2023)



NDVI pre-harvest
(07 Jul 2023)

Agronomics analysis

The yield data were analysed using the ADAS Agronomics approach. First the data were cleaned to remove headlands, anomalous combine runs (header not full or spanning two treatment areas), runs close to or on treatment boundaries, and locally extreme data points, and to correct any offset created by changes in combine direction. Then a model of underlying variation was applied to the data to account for spatial variation across rows and along rows, and for the effect of the treatment. The statistical analysis led to estimates of the treatment effects and the associated standard errors. Thus, subject to the assumptions of the underlying statistical model, it was possible to calculate 95% confidence limits for the yield effects and the % probability that the yield effect was greater than any chosen threshold.



Error bar shows 95% confidence intervals

Yield results

The average measured yield of the area drilled with the Väderstad Rapid drill was **8.09 t/ha**, according to yield map data. This is likely to be a little higher than the true average due to the exclusion of headlands from the analysis.

Using the Agronomics analysis to fit a statistical model to the data, we found no yield difference between the treatments: the modelled effect of the Horsch Sprinter drill was to decrease yield by just **0.01 t/ha ± 1.03 t/ha** (95% confidence interval), relative to the Väderstad Rapid drill.

The precision on the trial was lower than in many Agronomics trials (i.e. the confidence interval was larger) because the test treatment was not replicated and part of the yield map was missing, perhaps due to harvest by a different combine.