

Pewhe 2 summer harvest update

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Summary

Perennial wheat yield data is acceptable, averaging 2166 kg ha.

Winter wheat yield data is not acceptable due to bird damage and should be discarded.

Conversions

Quadrat dimensions were 20" x 20" for estimating yield. However, row spacing was 12", meaning a 20" x 20" quadrat only measured a single row for a length of 20". As a result, when computing yield on an area basis, use 12" x 20" as the area basis for yield.

Quality assurance and quality control of data

Summer harvest (12Jul2023) occurred after winter wheat checks reached maturity and before perennial wheat checks were in soft dough. Bird damage already occurred to winter wheat when it ripened in early July and we did not want to risk bird damage to the perennial wheat as it began to ripen in mid-July.

Table 1: Expected yield values of winter wheat and perennial wheat. Winter wheat estimates from University of Minnesota winter wheat variety trials (Wiersma and Anderson 2024). Perennial wheat estimates from Snapp (2014) which estimates 30-60% yields of annual wheat. These are approximate ranges.

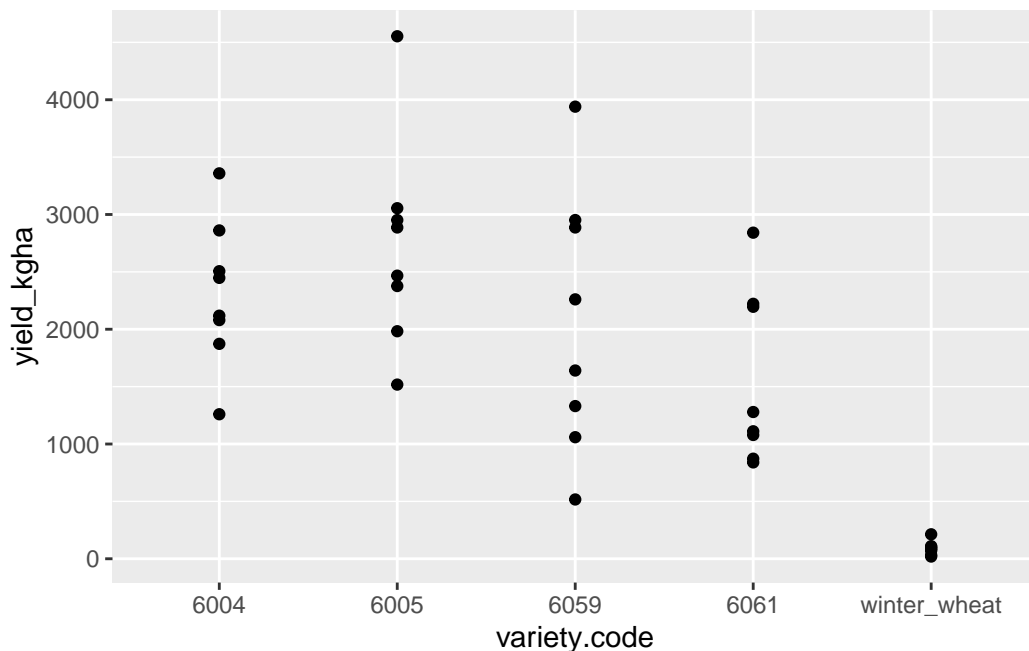
	quadrat (bu/a)	quadrat (kg/ha)
winter wheat	50 - 80	3362 - 5380
perennial wheat	25 - 40	1009 - 2017

Are yield estimates reasonable? Yes for perennial wheat, no for winter wheat

Perennial wheat yields range from 1000 - 2000 kg ha. These are values we expect and are somewhat surprising since they come from the summer harvest (12Jul2023) when it was unclear if seeds had fully left the milk stage. There was concern that this harvest was too early and the seeds had not yet achieved maximum dry matter content, yet these yield estimates suggest the seeds may not have been harvested too early.

No obvious outliers. Homogeneity of variance. Normally distributed.

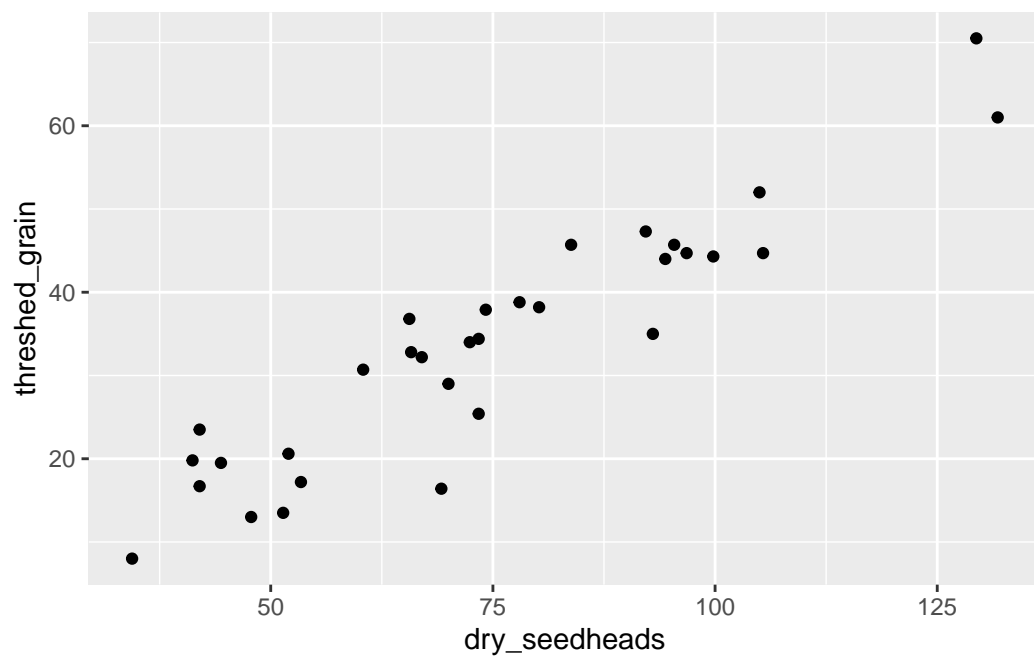
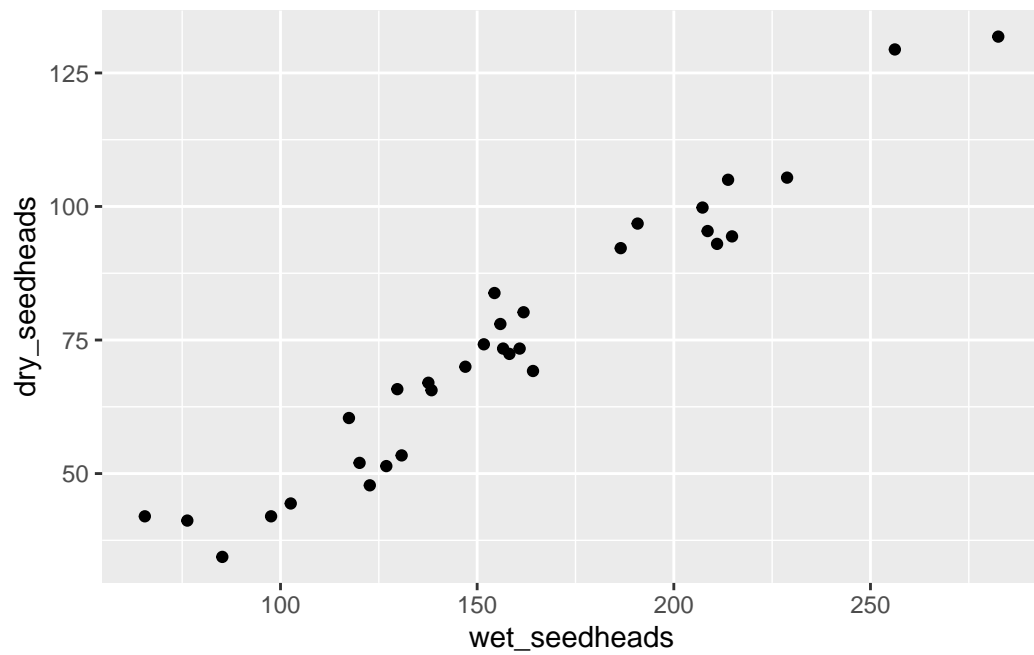
Winter wheat yields average around 90 kg ha because birds damaged the plots and removed seed prior to harvest. This data should be discarded.



Are weights of wet seedheads, dry seedheads and threshed grain correlated? Yes.

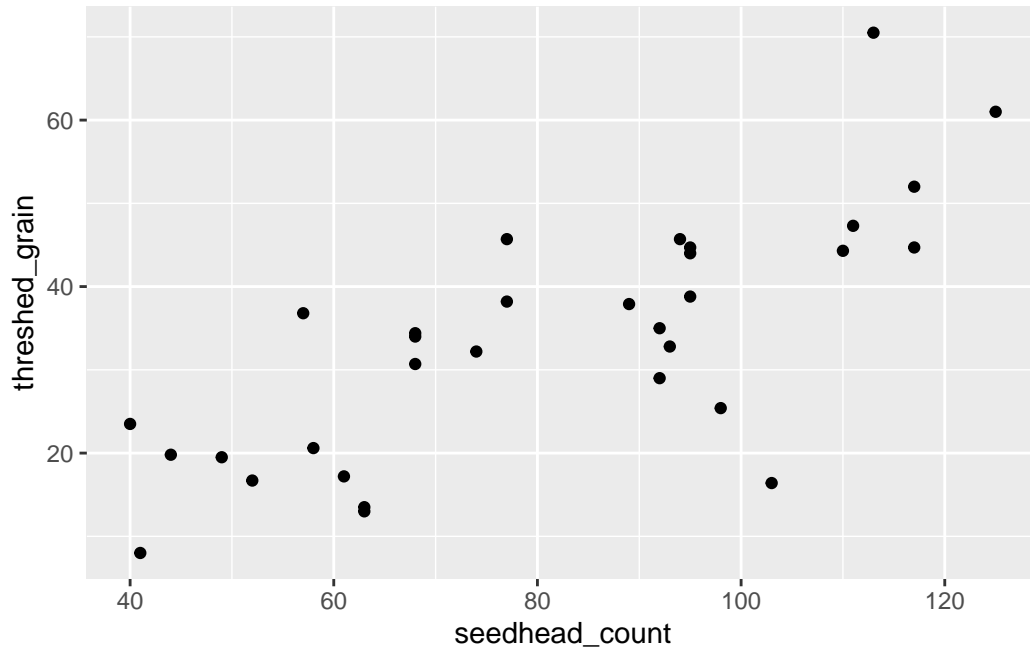
We expect weights of wet seedheads to be correlated with dry seedheads and threshed grain. If there is not a correlation, then we expect an issue with processing or data entry.

Strong positive correlation is good and provides support for collecting this data during processing. If threshed grain data was lost, we could predict that value based off wet or dry seedhead weight.



Does seedhead count correlate with threshed grain weight? No.

We also collected seedhead count data prior to threshing. Seedhead count does not correlate strongly with threshed grain weight.



References

- Snapp, Sieg. 2014. "Perennial Wheat E3208." [https://www.canr.msu.edu/wheat/uploads/files/Perennial_Wheat_\(E3208\).pdf](https://www.canr.msu.edu/wheat/uploads/files/Perennial_Wheat_(E3208).pdf).
- Wiersma, Jochum, and Jim Anderson. 2024. "Winter Wheat Field Crop Variety Trials." <https://varietytrials.umn.edu/winter-wheat>.