



Halm til det hele - Straw for all 2023

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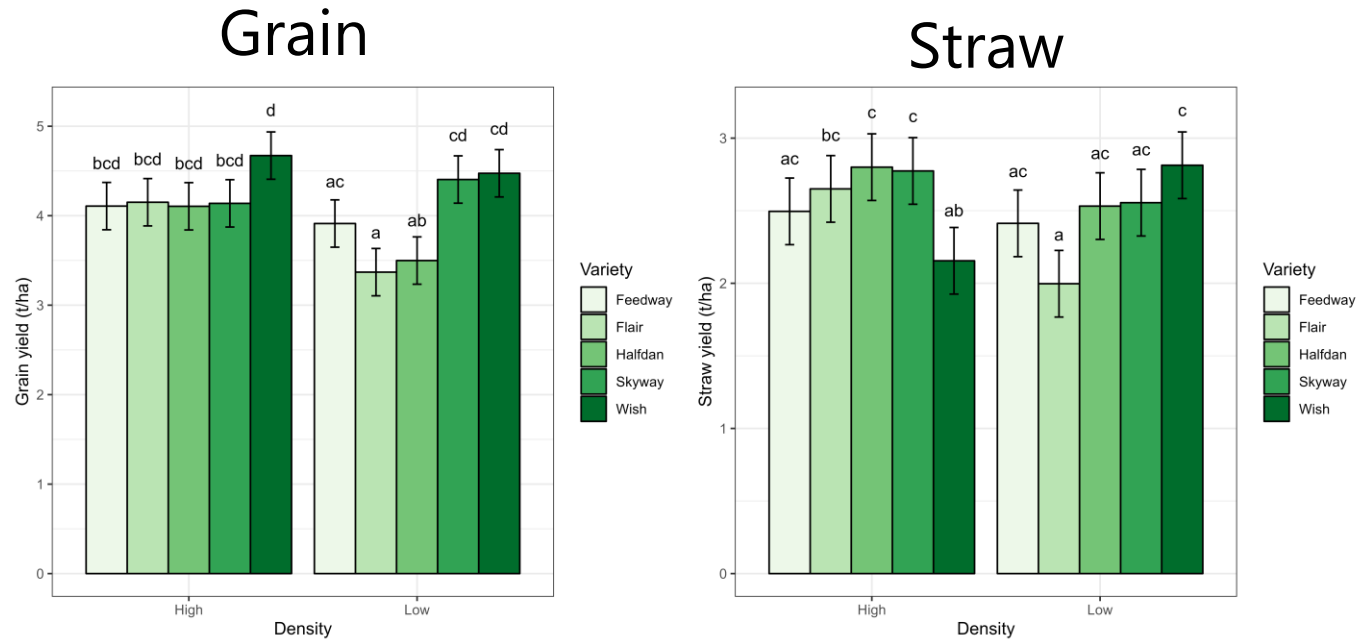
STØTTET AF

Promilleafgiftsfonden for landbrug

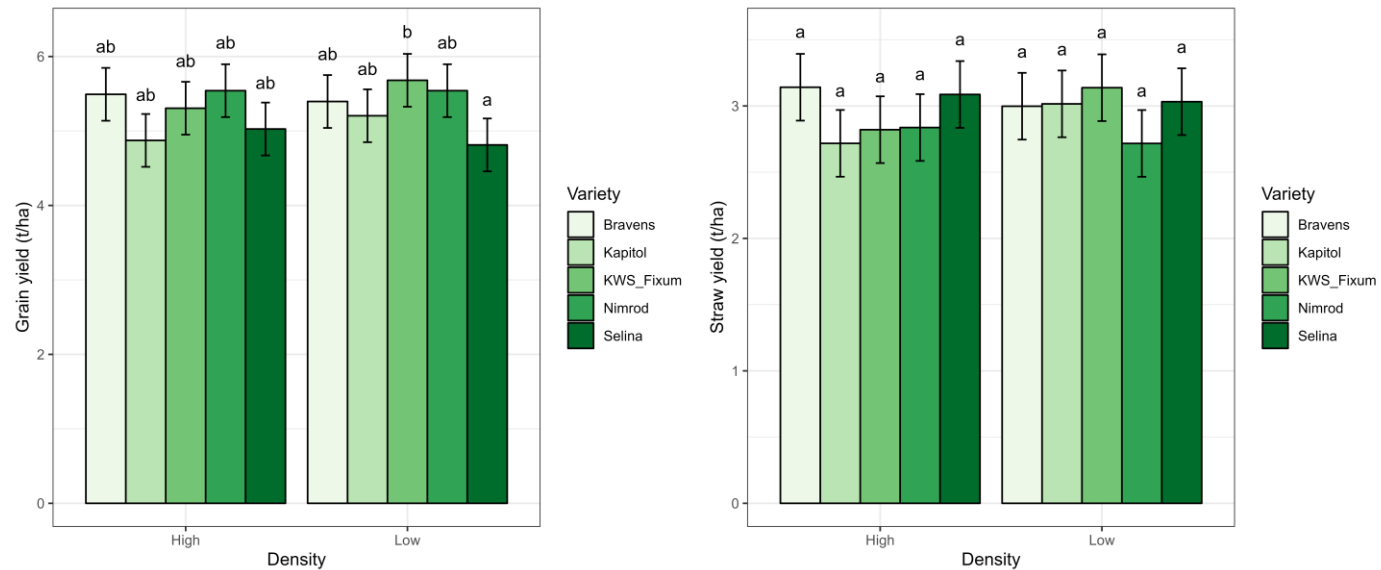


Yield 2023

Barley

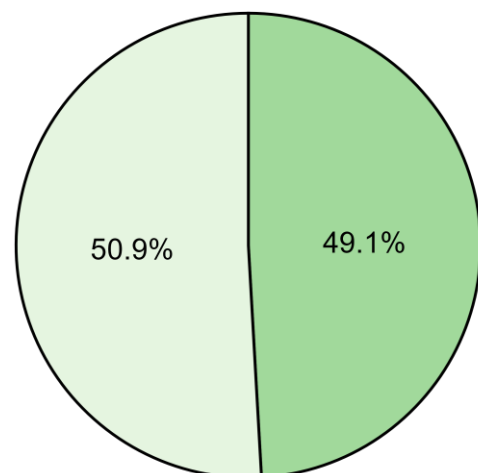


Wheat



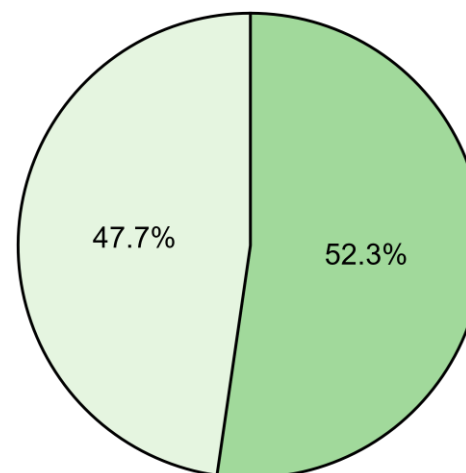
Straw fractions in wheat

Nimrod



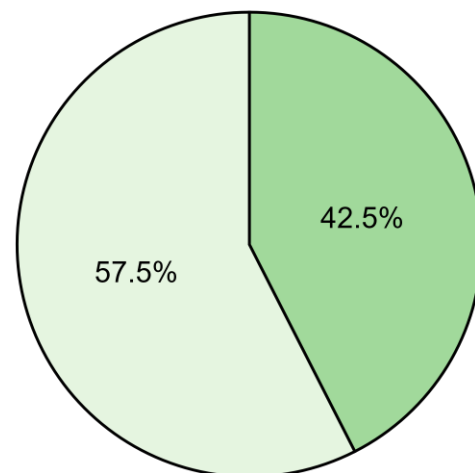
Fraction
Rest
Straw/Leaf

Kapitol



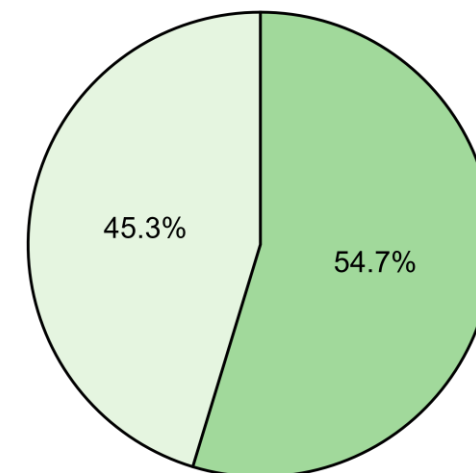
Fraction
Rest
Straw/Leaf

Selina



Fraction
Rest
Straw/Leaf

Bravens



Fraction
Rest
Straw/Leaf

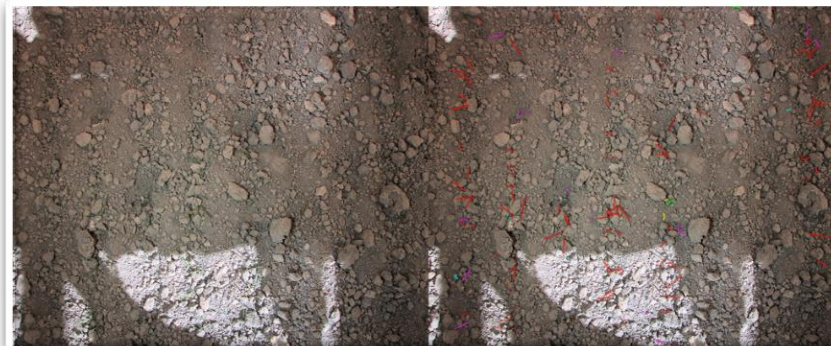
Digital plant counting

Type	Ground Truth	Predicted	Error %
<i>Wheat</i>	122	129	5%
<i>Barley</i>	317	319	0.6%
<i>Wheat</i>	309	276	10%
<i>Wheat</i>	125	128	2%
<i>Barley</i>	183	204	11%

Type	Ground Truth	Predicted	Error
<i>Barley</i>	183	204	11%



Type	Ground Truth	Predicted	Error
<i>Wheat</i>	122	129	5%

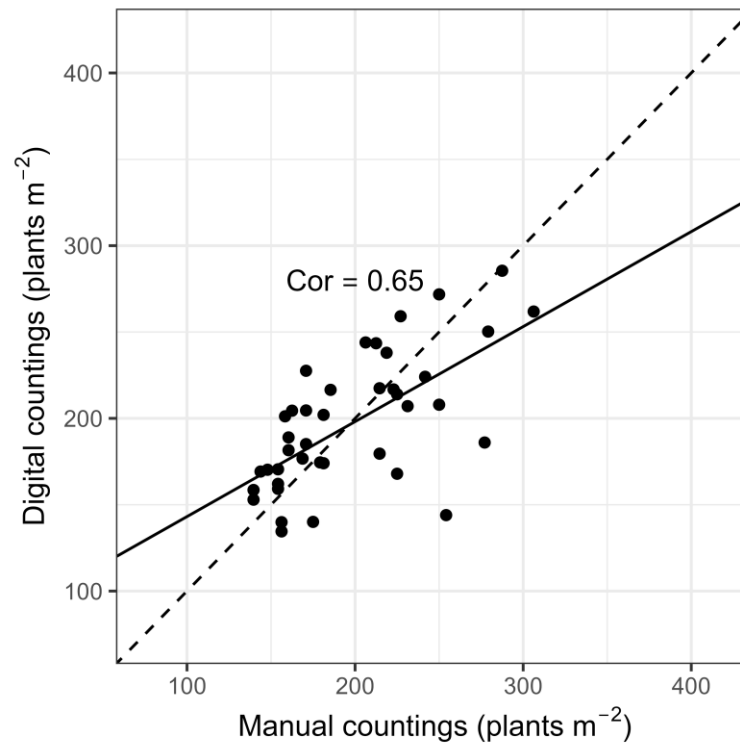


Type	Ground Truth	Predicted	Error
<i>Barley</i>	317	319	0.6%

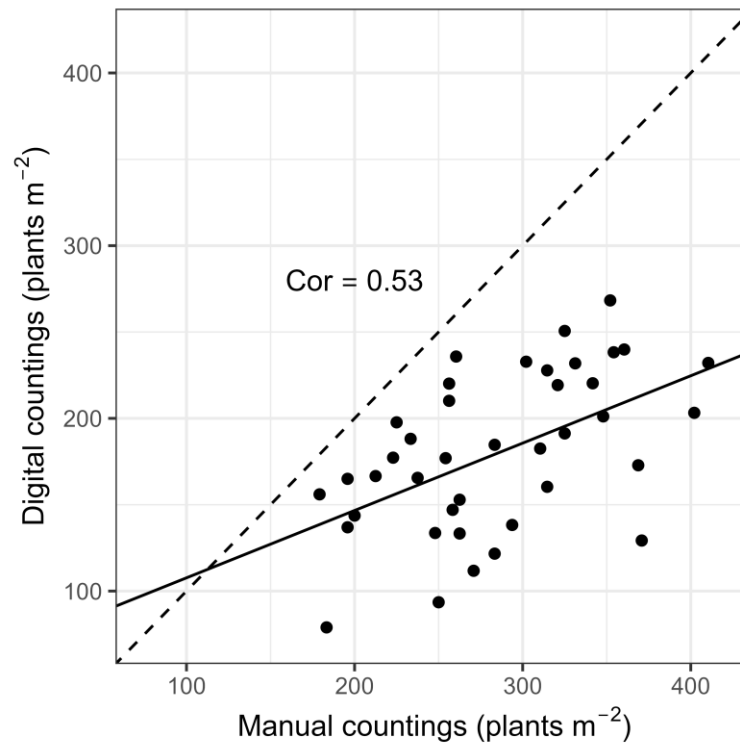


Correlations between manual and digital counts

Barley

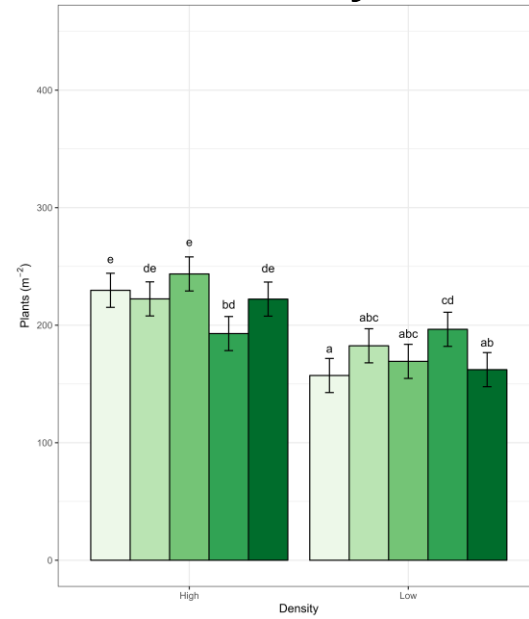


Wheat

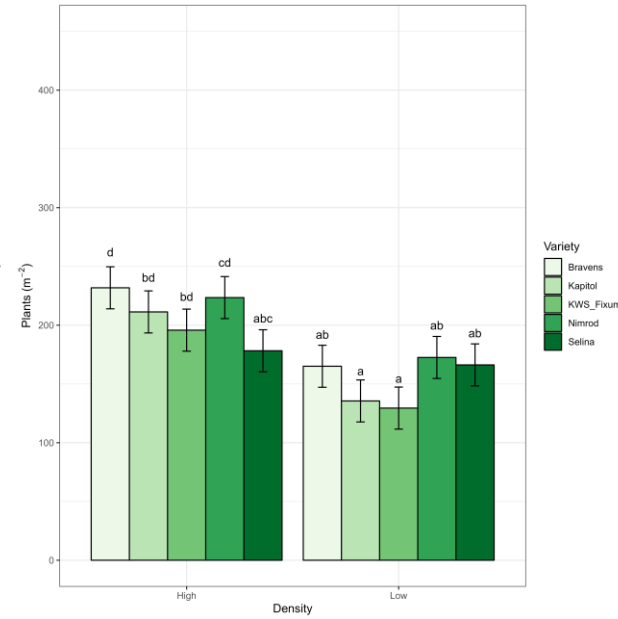


Digital counting

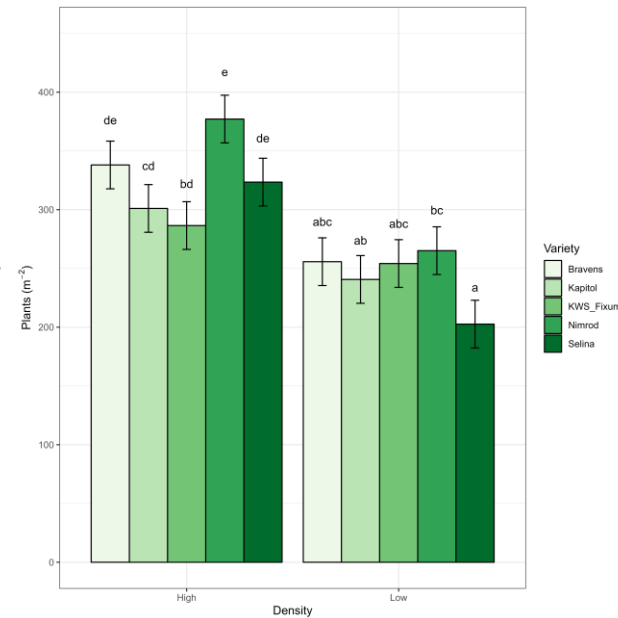
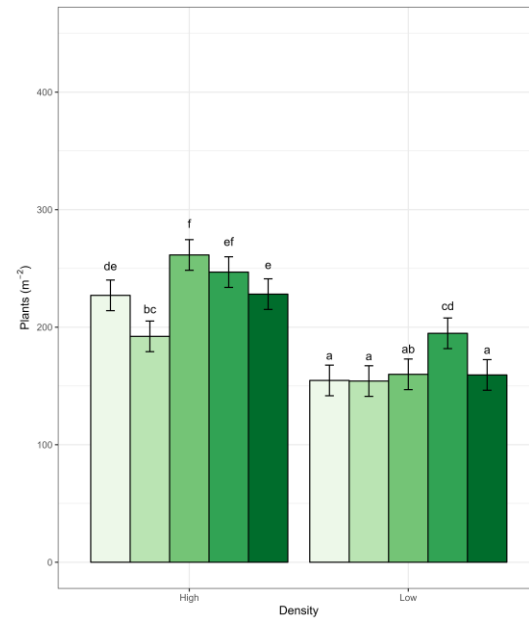
Barley



Wheat

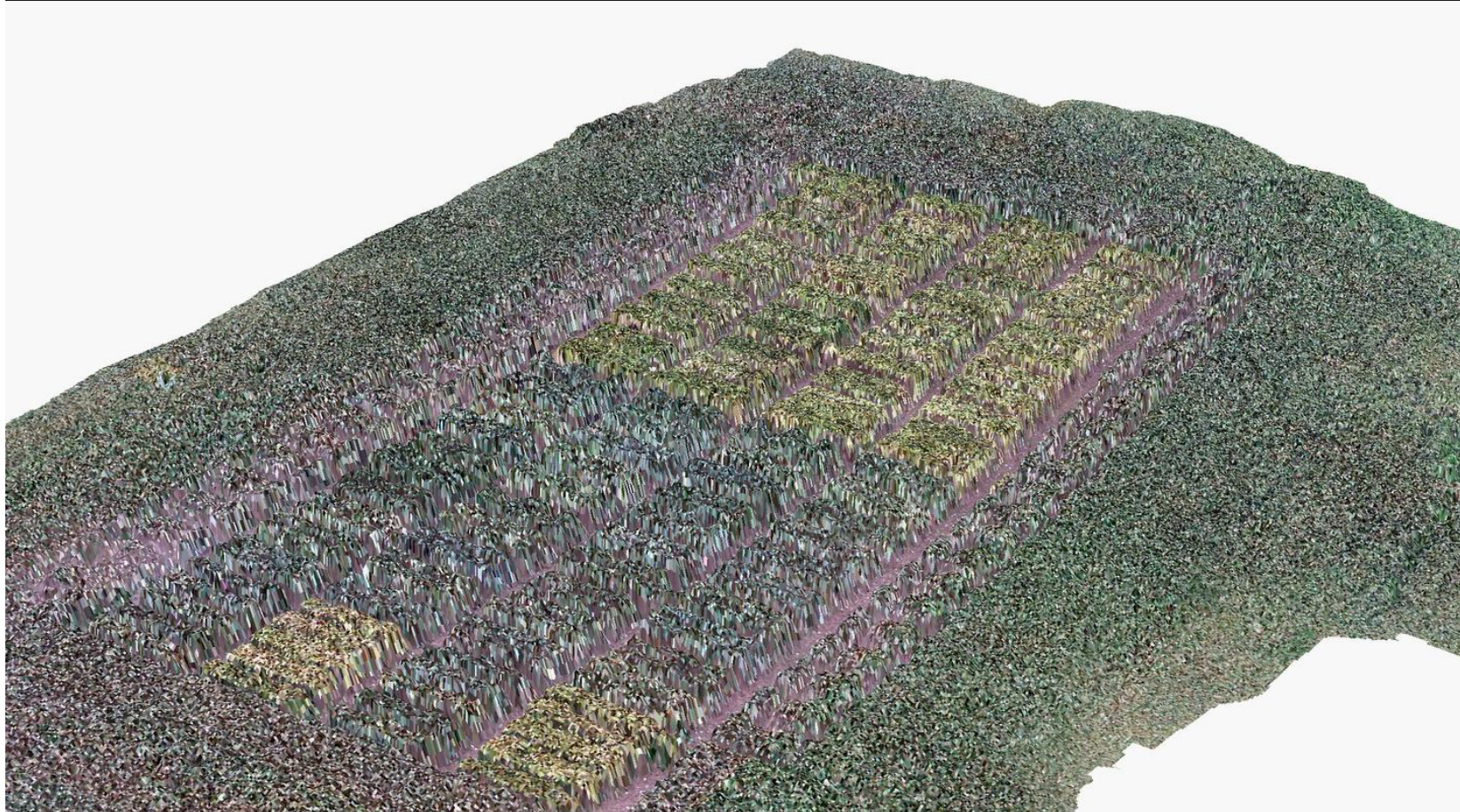


Manual counting



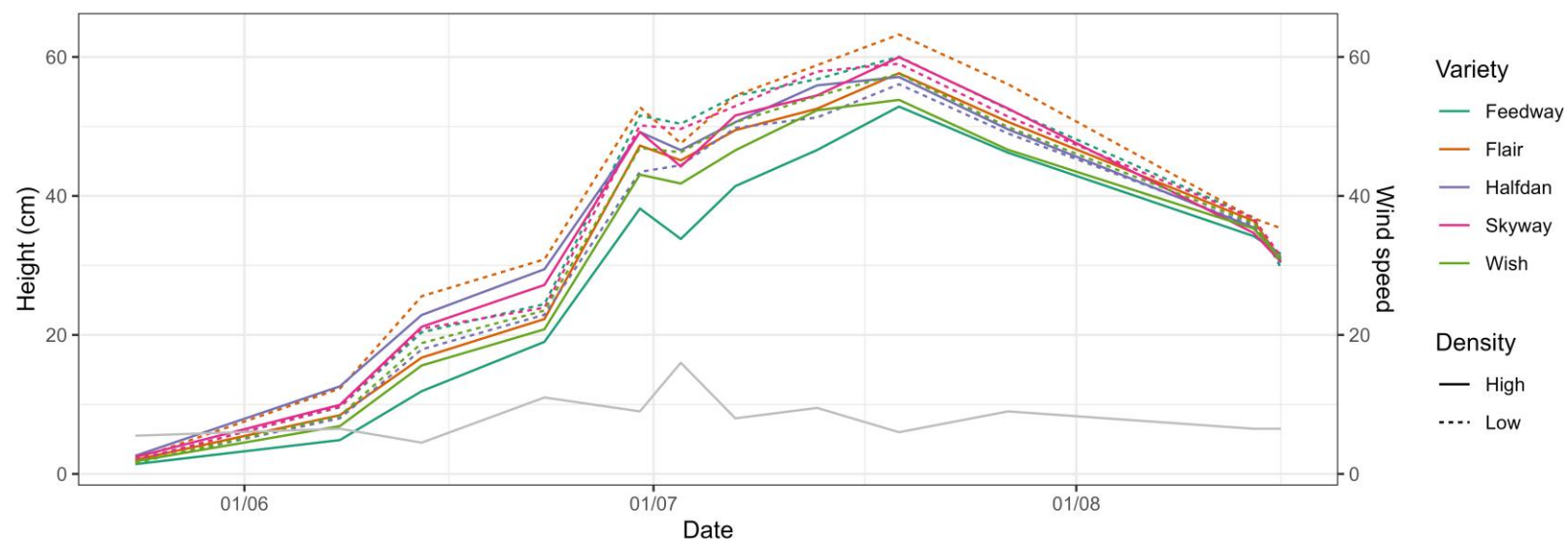
Digital height measurements

HalmTDH

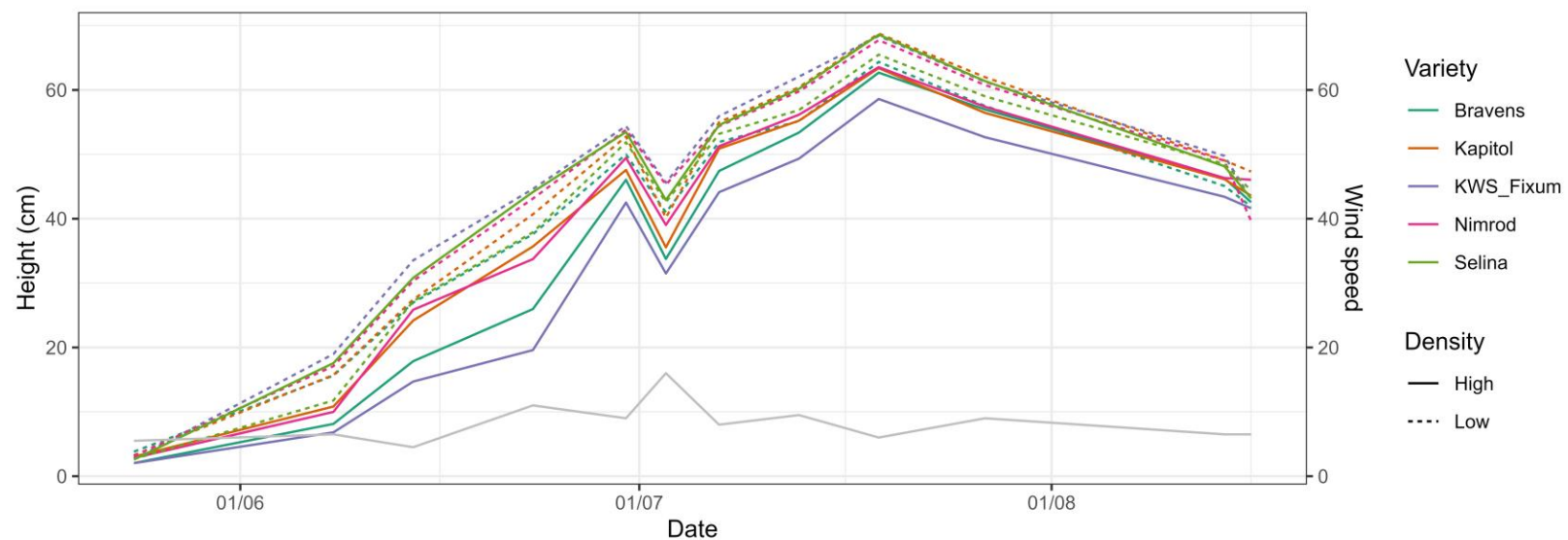


Height growth curves

Barley

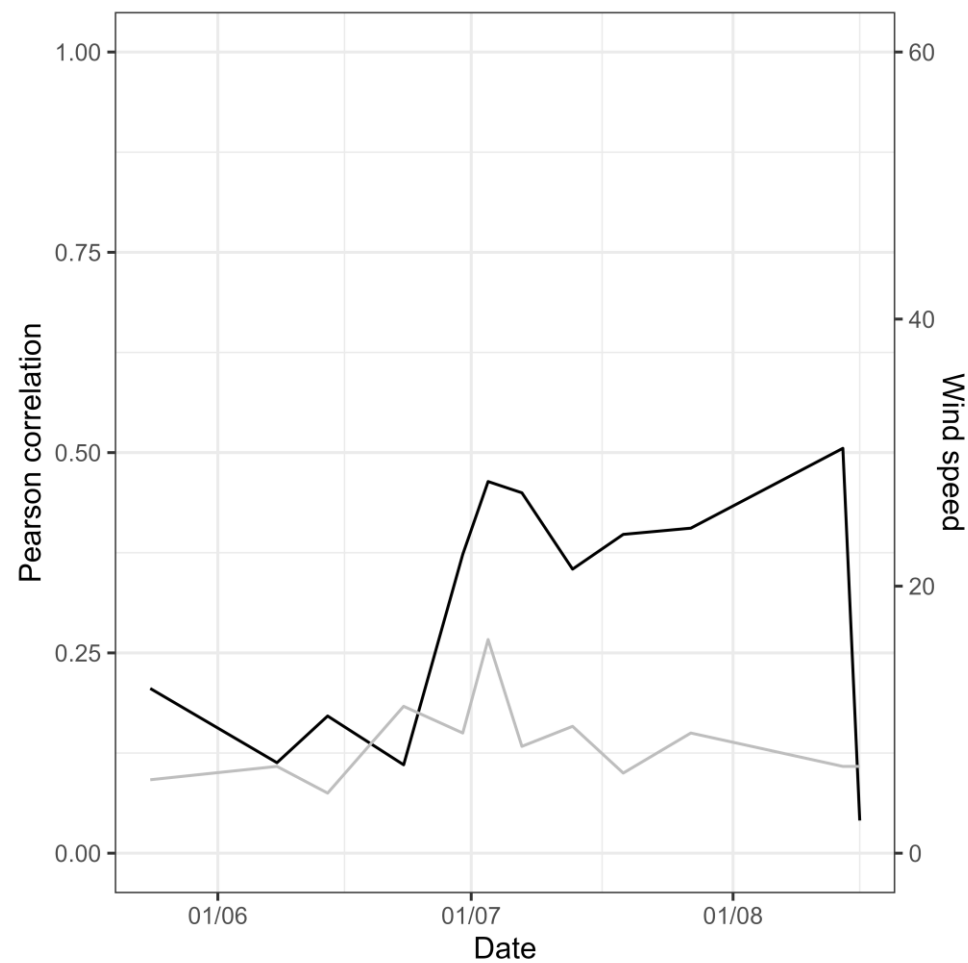


Wheat

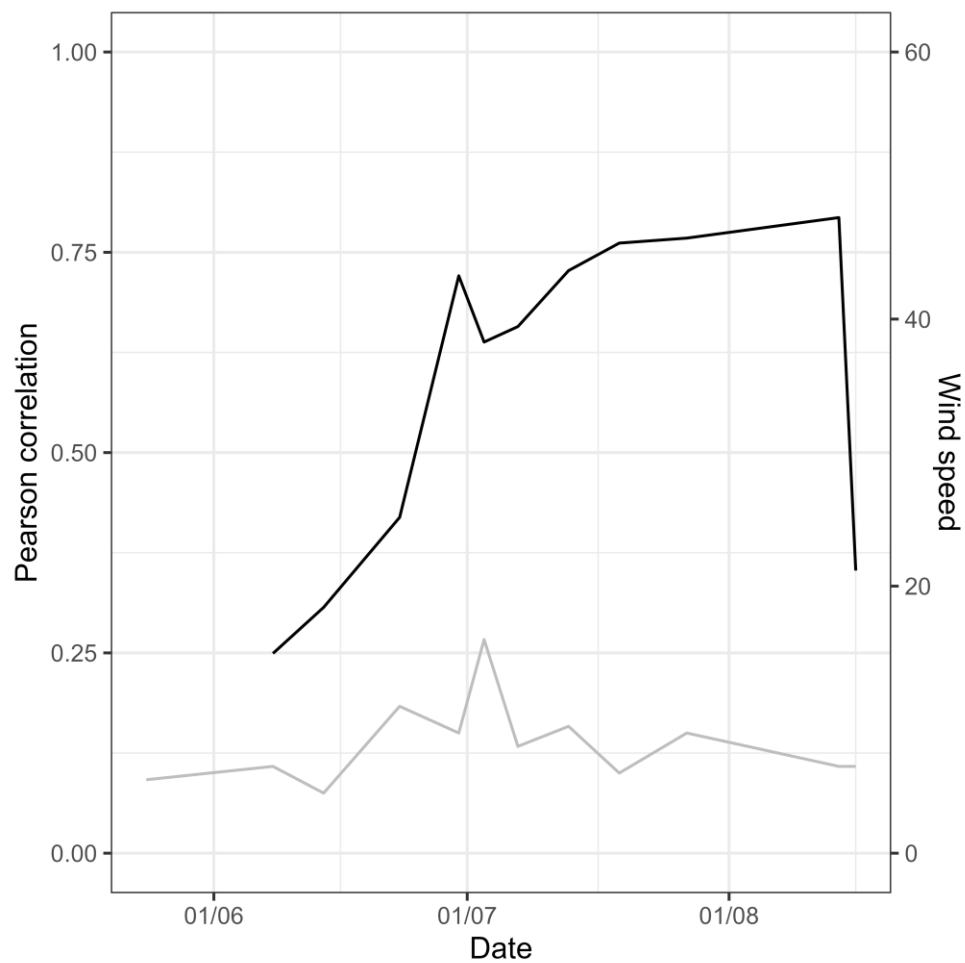


Correlations to straw yield

Barley



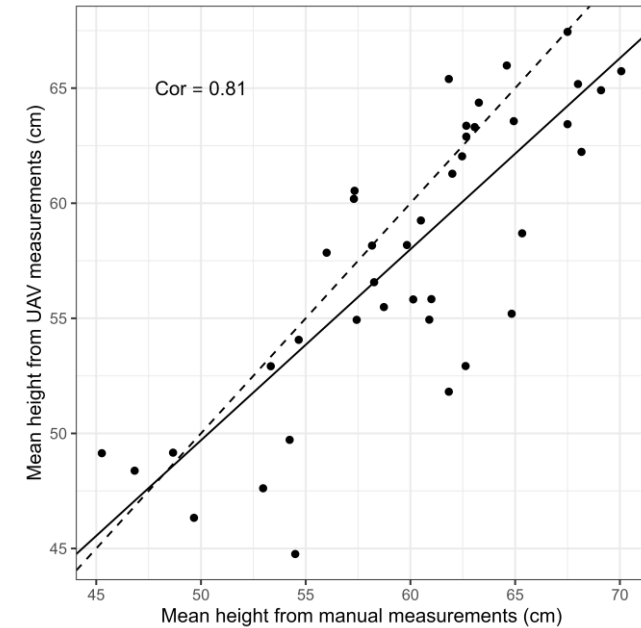
Wheat



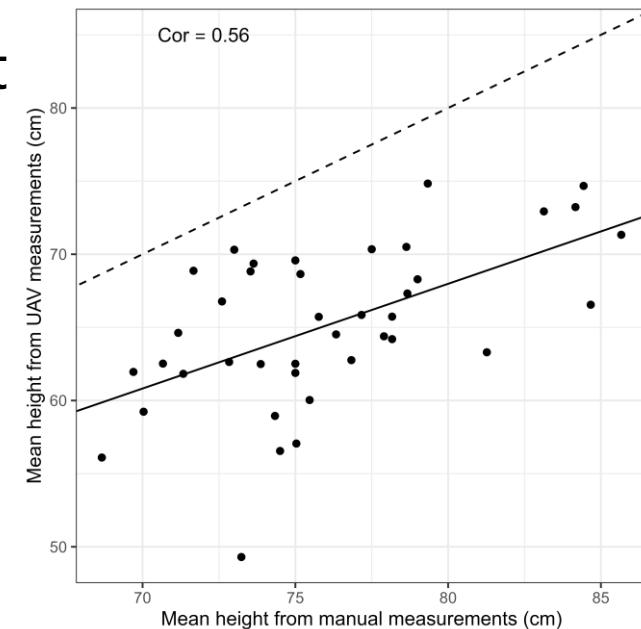
Correlations to manual counts

Date	Barley	Wheat
9/6 – 2023	0.81	0.56
24/6 – 2023	0.12	0.59
7/7 – 2023	0.80	0.76
14/8 – 2023	0.68	0.81

Barley
7/7

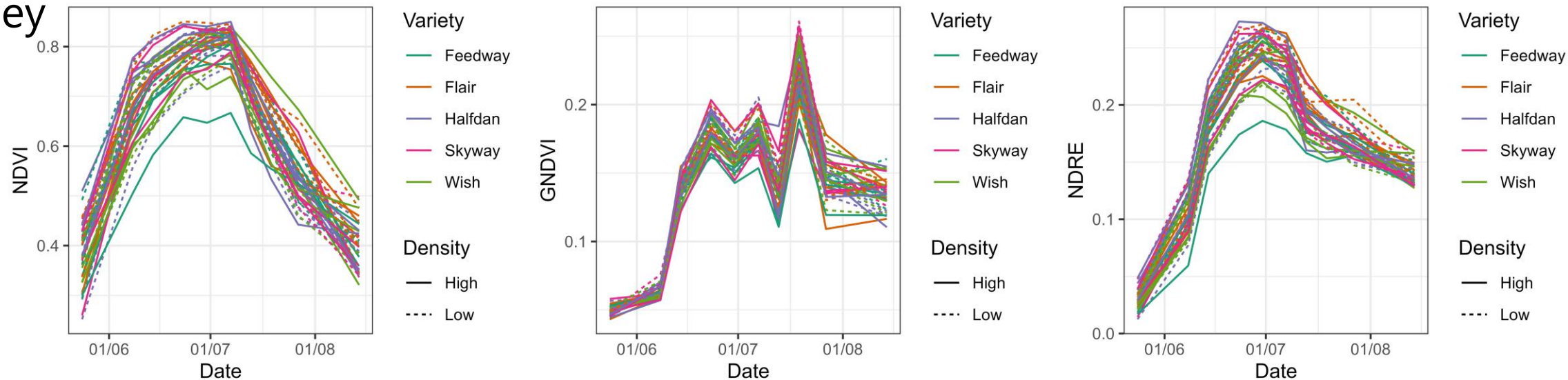


Wheat
7/7

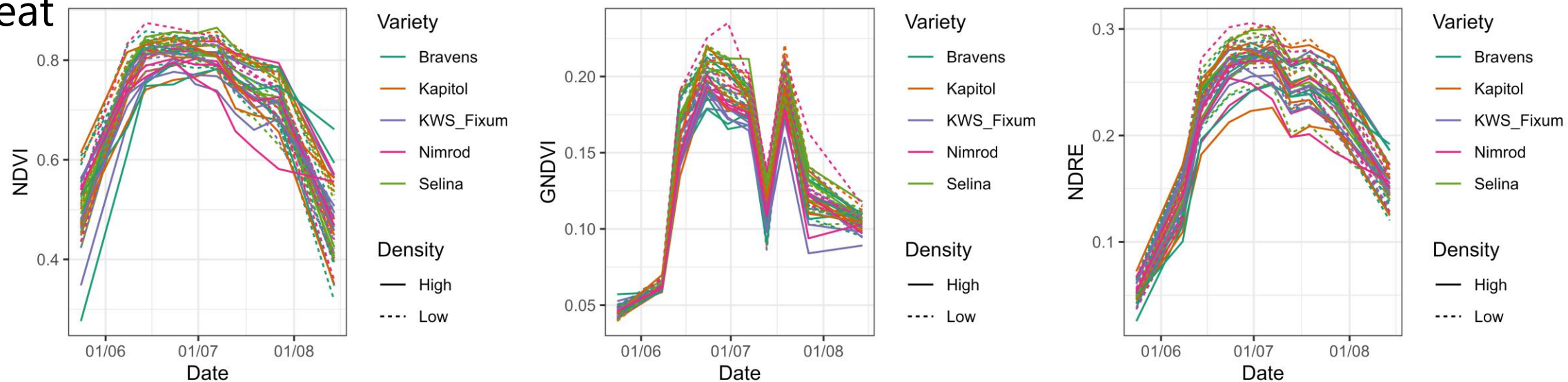


Multispectral data

Barley

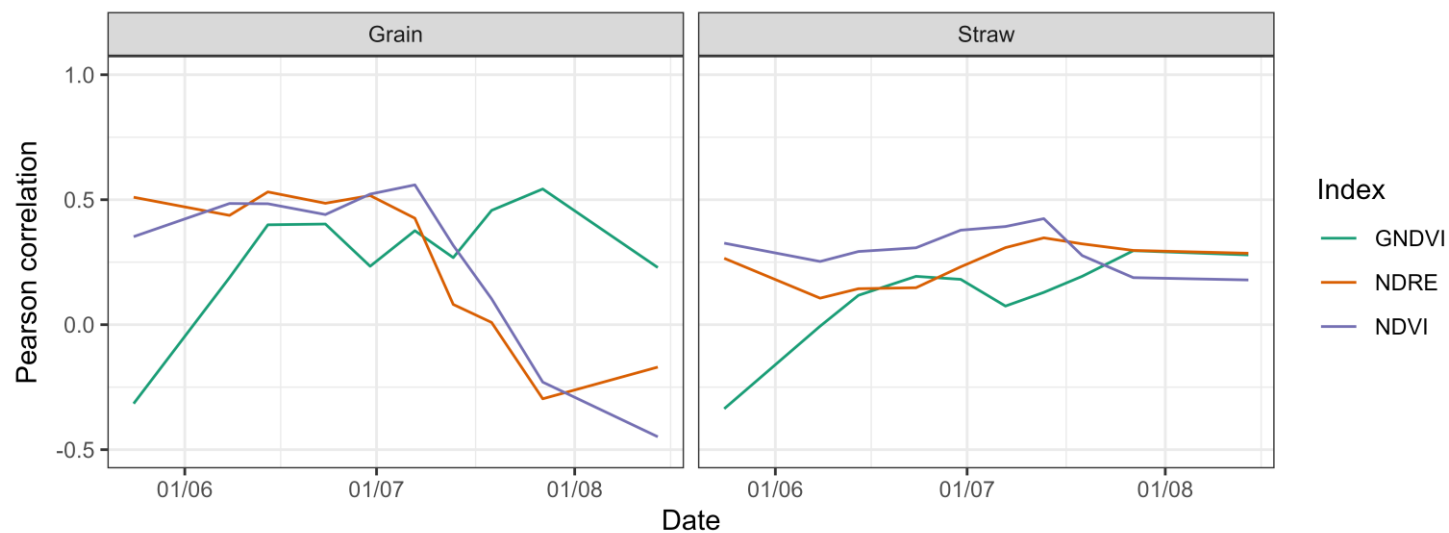


Wheat

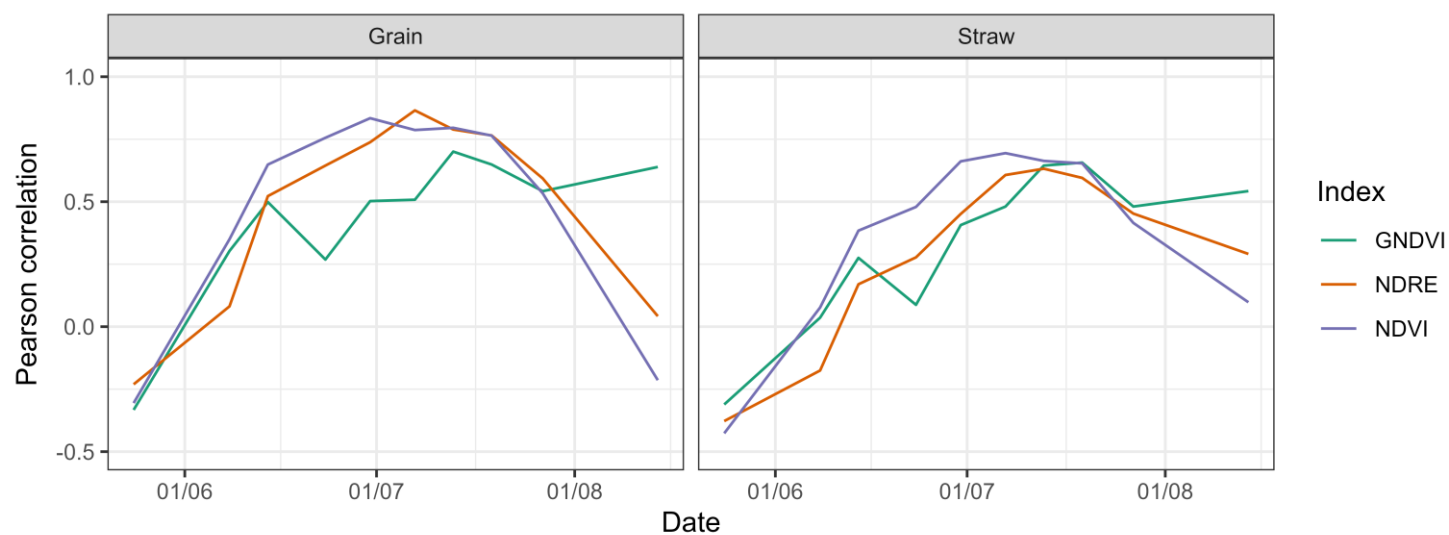


Correlations to yield

Barley

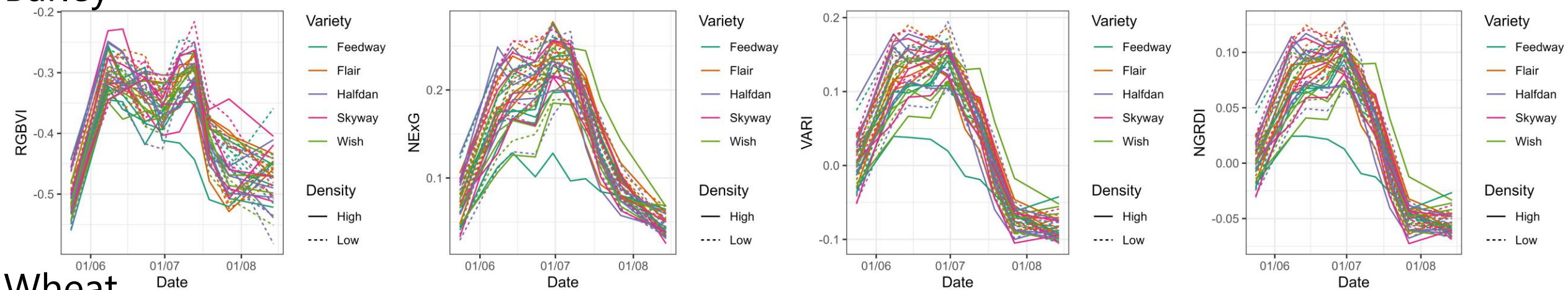


Wheat

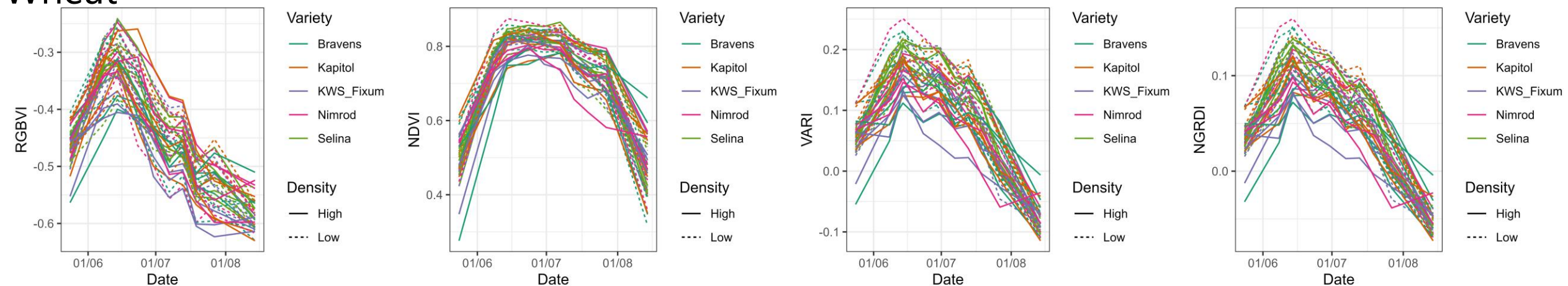


RGB data

Barley

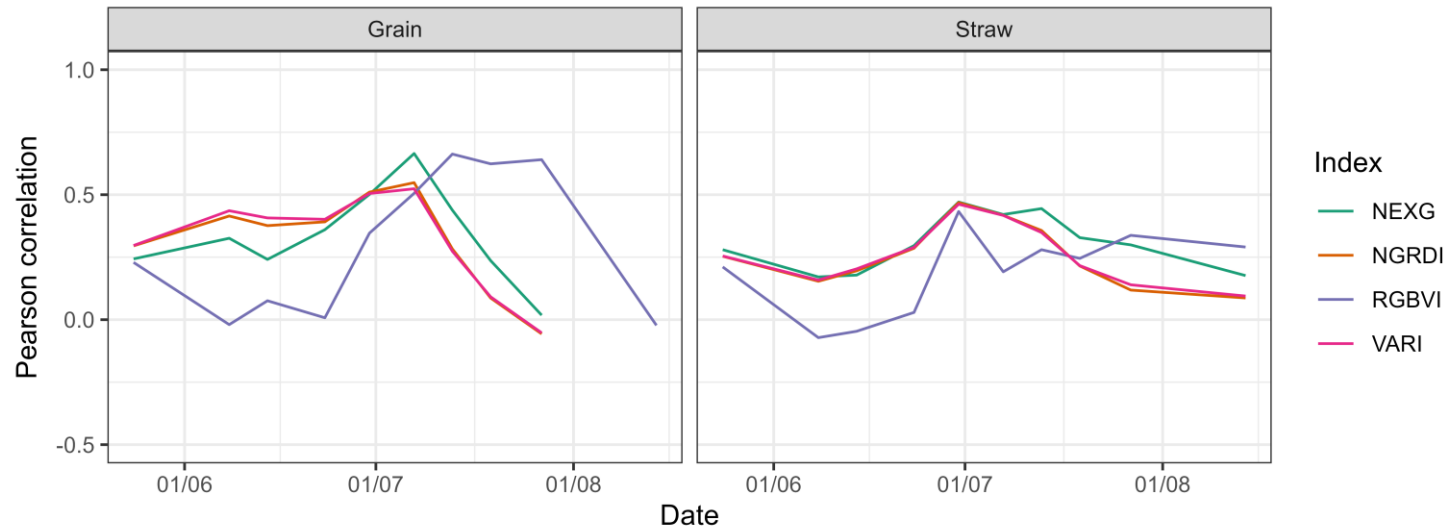


Wheat

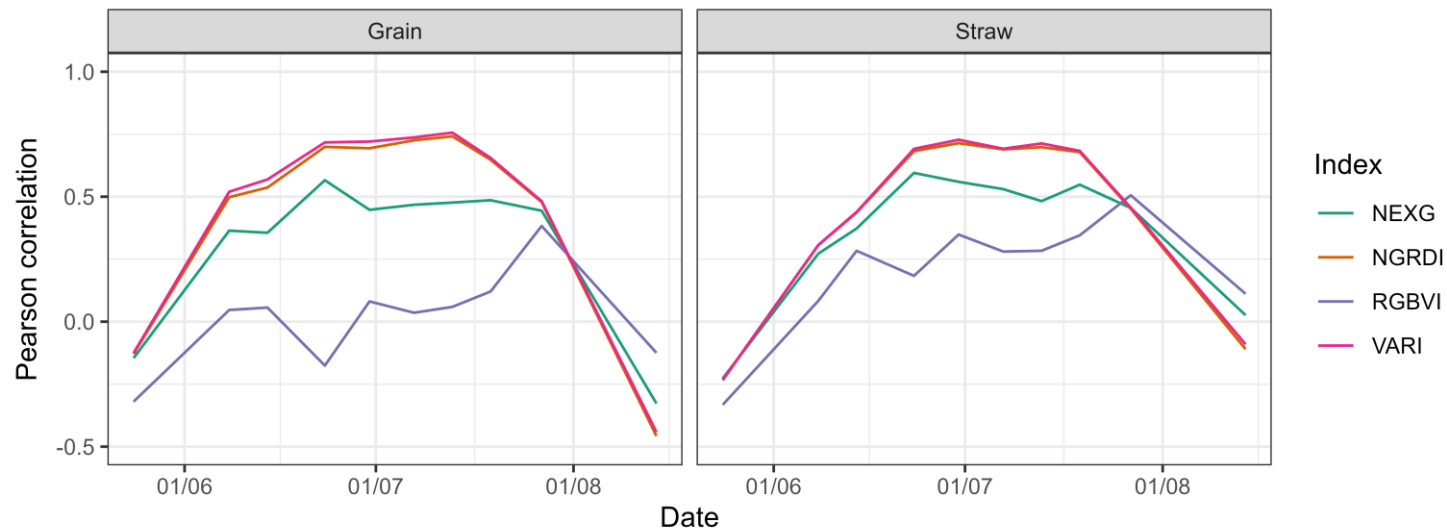


Correlations to yield

Barley



Wheat



Prediction models, Barley

Correlations (Pearson) between predicted and measured straw yield

Model	Predictions for a new block	Mean prediction for new blocks	Predictions for a new variety	Mean prediction for new varieties
Plant height	0.595, 0.545, 0.279, 0.377	0.449	0.806, 0.566, 0.229, 0.354, 0.466	0.484
Plant height + NDVI	0.281, 0.614, 0.324, 0.415	0.409	0.846, 0.258, 0.273, 0.373, 0.521	0.454
Plant height + NExG	0.219, 0.587, 0.317, 0.409	0.383	0.858, 0.312, 0.232, 0.411, 0.529	0.468
Plant height + GNDVI + NDVI	0.279, 0.571, 0.294, 0.370	0.379	0.818, 0.225, 0.227, 0.235, 0.664	0.434

- Plant height (right before harvest, 14/8)
- GNDVI (right before harvest, 14/8)
- NDVI (13/7)
- NExG (13/7)

Prediction models, Wheat

Correlation (Pearson) between predicted and measured straw yield

Model	Predictions for a new block	Mean prediction for new blocks	Predictions for a new variety	Mean prediction for new varieties
Plant height	0.790, 0.855, 0.740, 0.688	0.768	0.888, 0.560, 0.943, 0.781, 0.952	0.825
Plant height + NDVI	0.791, 0.924, 0.782, 0.591	0.772	0.918, 0.597, 0.959, 0.699, 0.918	0.818
Plant height + NExG	0.796, 0.800, 0.742, 0.673	0.753	0.879, 0.551, 0.959, 0.790, 0.951	0.826
Plant height + GNDVI + NDVI	0.790, 0.925, 0.765, 0.549	0.757	0.904, 0.586, 0.961, 0.665, 0.904	0.804

- Plant height (right before harvest, 14/8)
- GNDVI (right before harvest, 14/8)
- NDVI (13/7)
- NExG (13/7)