



Autoplanter internal validation method

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Why?

Benefits

Efficiency/Speed

Standardization

Consistency

Cost effectiveness overtime

Pay off

Traditional planting rely on people – high turnaround and hard to retain

If it is possible to obtain the same or better results using technology, why not?

Draw back

It is not perfect!

Large upfront cost

Demands specialized knowledge and expertise

Large footprint

Machine process map

Corteva Autoplanter



Validation method

- It was done a head-to-head comparison between hand and machine planted with two different autoplanters (i.e., 3 “treatments”).
- 4 replicates of 50 seeds each, for 120 batches selected considering different germplasm, treatment and seed size, treating each observation as a replication for measuring variability.
- Between paper planting method used.

Data analysis

The Seed Quality Testing Technology Lead took the data and analyzed it in a couple of different ways.

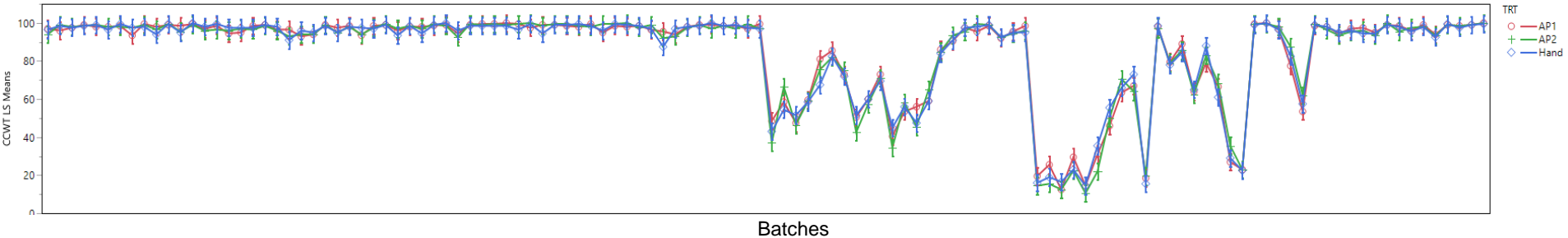
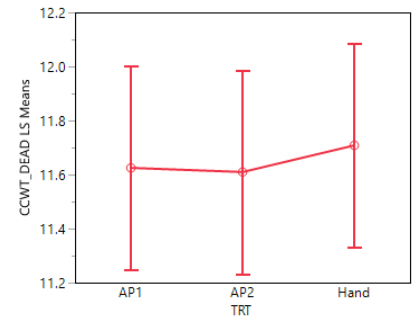
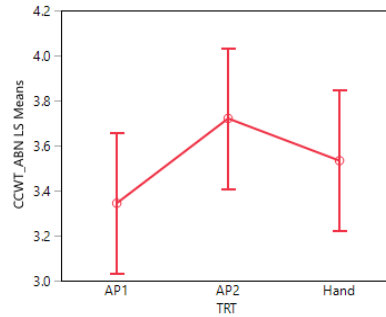
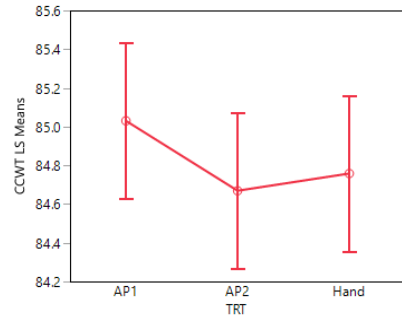
ANOVA

First using an ANOVA looking at effects of batch, treatment and batch*treatment.

ANOVA (Prob > F)				
Source	DF	Germination	Germ abn	Germ dead
Batch	119	<.0001	<.0001	<.0001
TRT	2	0.4347	0.2500	0.9264
Batch*TRT	238	0.2970	0.5719	0.4658

ANOVA

Treatment and batch*treatment effects



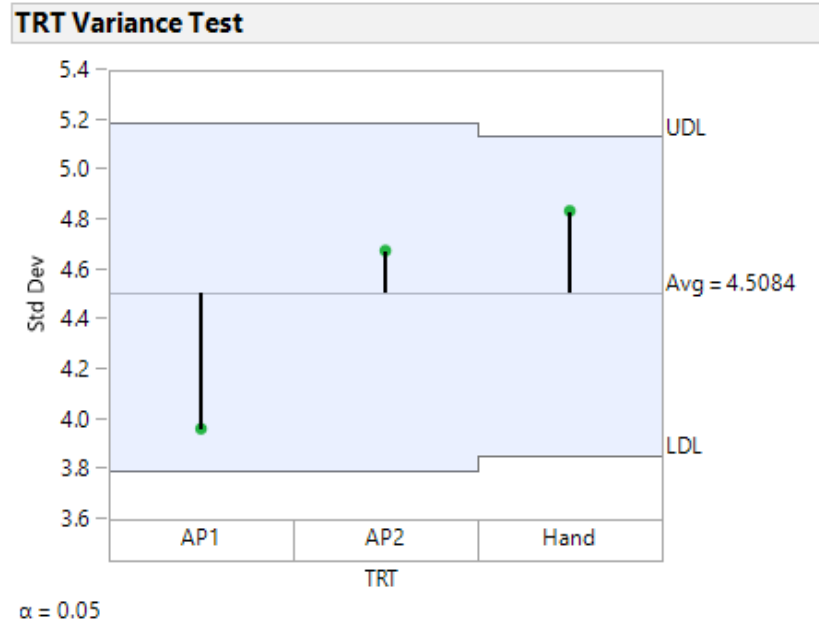
Variance components

It was also looked at the different variance components, which can also be summarized as a Gauge R&R, where repeatability is variation within a treatment (hand planted, AP1 or AP2), reproducibility is variation between treatments and part-to-part variation is variation due to batch.

Variance Components for Gauge R&R						
Component	Var	% of Total	20	40	60	80
Gauge R&R	21.60079	3.84				
Repeatability	21.22327	3.77				
Reproducibility	0.37752	0.0671				
Part-to-Part	540.73103	96.16				

Bias analysis

As part of the bias analysis, it was also considered if there were differences in variance or standard deviations between the 3 planting methods.





Thank you!