2013 THOMPSON YIELD TRIAL

The NDSU corn breeding program planted 52 breeding experiments across >50 state and regional locations in 2013.
Our program managed, in 2013 (as in previous years), the largest testing network of commercial hybrids for North Dakota.
Nine locations were grown with the objective to find strengths and weaknesses of hybrids available in the market.
A hybrid with top yields at only one testing site could be hiding weaknesses not easily seen in just one location.
Growing the same hybrids across several testing sites within regions increases chances to expose weaknesses.
There is a need to grow as many locations as possible within North Dakota regions in order to select top hybrids
Select genetically diverse hybrids showing unbiased and stable performance across locations and regions

Company	Hybrid	RM	Grain Moisture (%)	Grain Yield (bu/A)	Test Weight (lb/bu)	Stalk Lodging (%)	Root Lodging (%)	Ear Drop (%)
EARLY RM (non GMO)	NDSU Corn Breeding CHECK	70	**13.8**	151.2	56.8	0.0	0.0	0.0
MID RM (non GMO)	NDSU Corn Breeding CHECK	75	**14.4**	118.8	57.8	0.0	0.0	0.0
Nutech	3A-080™	80	14.8	104.0	53.7	0.0	0.0	0.0
Wensman	W 8085VT2RIB	84	14.9	139.6	57.1	0.0	0.0	0.0
Nutech	5B-7701™	77	15.1	132.7	58.0	0.0	0.0	0.0
Peterson	PFS 71D83	83	15.2	134.3	57.8	0.0	0.0	0.0
NorthStar	VS 82-182	82	15.4	134.9	55.3	0.0	2.9	0.0
Nutech	5H-8002™	80	15.4	101.8	55.0	0.0	5.6	0.0
NorthStar	VS 81-481	81	15.5	98.9	59.3	0.0	0.0	0.0
ProSeed	1083 GT3000	83	16.0	151.9	56.7	0.0	0.0	0.0
Peterson	PFS 92G84	84	16.0	113.7	53.8	0.0	0.0	0.0
Monsanto	DKC33-78	83	16.1	103.0	56.4	0.0	0.0	0.0
Dahlman	R42-21VT2PRIB	84	16.2	121.1	55.4	0.0	0.0	0.0
Syngenta	N09V-GT/CB/LL	79	16.5	128.2	56.4	0.0	0.0	0.0
Wensman	W 80841VT2PRO	84	16.5	124.4	56.5	0.0	0.0	0.0
Proseed	1283 VT2P	83	16.6	119.3	57.6	0.0	0.0	0.0
Peterson	PFS 75K85	85	16.7	154.9	58.3	0.0	0.0	0.0
Nutech	5B-7901™	79	16.8	105.6	58.0	0.0	1.4	0.0
Proseed	PX 85 VT2P	85	16.8	116.6	53.3	0.0	0.0	0.0
Nutech	5H-080™	83	17.0	106.1	52.9	0.0	0.0	0.0

Dahlman	R43-23VT2PRIB	85	17.1	148.6	56.2	0.0	0.0	0.0
Proceed	PX 85 VT2PB	85	17.3	126.7	58.0	0.0	0.0	0.0
Hyland	8180	84	17.4	126.6	54.3	0.0	0.0	0.0
Dairyland	DS-7085	85	17.4	152.5	55.2	1.4	0.0	0.0
Stine	9140 3000GT	82	17.8	131.8	55.8	0.0	0.0	0.0
Nutech	5B-782™	82	17.9	138.2	54.5	0.0	0.0	0.0
Monsanto	DKC31-10	81	17.9	137.8	55.3	0.0	0.0	0.0
Monsanto	DKC36-30	86	18.1	120.8	59.5	2.3	0.0	0.0
Proseed	PX 82 VT2P	82	18.1	154.5	57.0	0.0	0.0	0.0
Proseed	1182 GTCBLL	82	18.3	110.2	51.0	0.0	0.0	0.0
Syngenta	N19L-3110A	85	18.4	108.7	53.5	1.3	0.0	0.0
Hyland	8105	80	18.5	112.7	54.5	0.0	0.0	0.0
Partner Brand	PB 5203 GT	82	19.3	137.2	55.1	0.0	7.1	0.0
Syngenta	N20Y-3220	85	19.3	141.3	54.8	0.0	0.0	0.0
Hyland	8166	83	19.3	113.8	53.4	0.0	0.0	0.0
Dairyland	DS-9383SSX	83	19.4	143.1	54.6	0.0	0.0	0.0
Syngenta	N17P-3000GT	84	19.5	153.5	53.3	0.0	0.0	0.0
Nutech	5Z-775™	75	20.4	99.8	53.8	0.0	0.0	0.0
Partner Brand	PB 5030 RR	80	21.3	147.4	54.5	1.3	1.3	0.0
LATE RM	CHECK	80	21.5	126.2	56.4	0.0	1.3	0.0
NorthStar	84-184 GT/CB/LL	84	21.8	126.4	51.8	0.0	0.0	0.0
Hyland	8201	84	23.5	114.9	52.3	1.3	0.0	0.0
LATE RM	CHECK	85	26.1	123.4	54.5	0.0	0.0	0.0
Nutech	5N-183™	83	28.4	100.3	51.5	4.1	1.6	0.0
Dairyland	DS-7985	85	29.5	131.7	54.9	0.0	0.0	0.0
Mean			18.2	126.4	55.3	0.3	0.5	0.0
Efficiency compared to a RCBD			107.0	**109.0**	102.7	98.9	97.8	0.0
CV%			7.2	13.7	3.7	311.7	364.0	0.0
LSD (5%)			3.6	32.6	4.1	3.8	6.6	0.0

Experiments conducted by the NDSU Corn Breeding Program in dryland condition in Thompson 2013.

RM = Relative maturity given by Industry. Be cautious. As shown in results they may not correspond to moisture at harvest

The Lattice design was up to 109% (YIELD) more efficient than a Randomized Complete Block Design (RCBD)

Most fields in North Dakota have undesirable field variation. Therefore, field trial managers should avoid RCBDs.

LATTICES are grown by the NDSU corn breeding program, they are planted and harvested the same way a (RCBD) would be.

The statistical analyses, however, eliminates bias due to the environment even in uniform fields. They are very simple to manage.

The larger the number of hybrids in one experiment the larger the variation that cannot be explained by hybrid differences.

Therefore, the NDSU corn breeding program grows experiments arranged in lattice experimental designs.

These can fix undesirable experimental variation seen in randomized complete block designs (RCBD) for each trait evaluated.

Harvested Stand = 32,600 plants/A

No significant differences across hybrids for stand

The information generated by the ND corn breeding program in multi-location high and low yielding environmental trials of the same industry hybrids across ND regions was worth $ Millions for hybrid selection by farmers, based on the genetic differences found among hybrids in lattice designs.

This information is generated UNBIASED for farmers and industry. No bias from any institution is added.

It is very tempting to discard test trials due to high *Coefficients of Variation (CVs)* or large *Least Significant Differences (LSDs)* .

In many cases, data is proposed to be discarded when it could be the most useful to easily expose hybrid deficiencies.

Be cautious, experimental errors are much more important than CVs. CVs do not tell the whole story.

CVs are dependent of experiment means as low mean experiments will make CVs to be larger in accurate experiments.

There is the need to grow hybrids in low yielding environments to expose their weaknesses.

If trials have low yields due to drought, CVs might look high but they are the best trials showing drought susceptible hybrids.

If you see hybrids with 50% and 0% lodging across locations, both CVs and LSDs could be large but useful for hybrid selection.