2013 LAKOTA 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	**21.1**	116.6	58.3	0.0	0.0	0.0
MID RM (non GMO)	NDSU CORN BREEDING CHECK	75	**21.7**	123.3	55.6	0.0	0.0	0.0
Proseed	1182 GTCBLL	82	22.2	107.0	56.2	7.1	8.6	0.0
Peterson	PFS 92G84	84	22.4	115.8	61.0	4.4	3.0	0.0
Nutech	3A-080™	80	22.5	104.2	49.5	5.4	4.2	0.0
Nutech	5N-183™	83	22.5	115.8	57.7	9.7	1.8	0.0
Nutech	5B-7901™	79	22.6	108.6	49.1	3.7	28.3	0.0
Wensman	W 80841VT2PRO	84	22.7	122.0	61.2	7.7	2.7	0.0
Nutech	5H-8002™	80	22.8	111.2	60.3	7.4	7.0	0.0
Dairyland	DS-7085	85	22.8	118.1	55.8	6.0	2.0	0.0
Partner Brand	PB 5203 GT	82	22.9	113.4	56.6	41.1	0.2	0.0
Nutech	5Z-775™	75	23.0	105.6	52.0	0.0	10.4	0.0
Peterson	PFS 71D83	83	23.1	112.3	59.1	2.4	5.0	0.0
Nutech	5H-080™	83	23.2	116.8	51.9	9.4	2.3	0.0
Nutech	5B-7701™	77	23.3	107.3	48.1	7.8	7.6	0.0
NorthStar	VS 82-182	82	23.4	100.7	52.8	44.6	0.0	0.0
Syngenta	N17P-3000GT	84	23.6	125.1	57.6	0.0	0.0	0.0
Syngenta	N19L-3110A	85	23.7	115.6	48.4	9.7	3.0	0.0
Proseed	1083 GT3000	83	23.8	102.8	48.0	3.8	1.9	0.0
LATE RM	CHECK	80	23.9	103.3	50.4	4.7	31.2	0.0

Monsanto	DKC31-10	81	24.2	112.4	54.7	3.4	2.2	0.0
Peterson	PFS 75K85	85	24.3	100.7	52.3	6.3	0.0	0.0
Hyland	8105	80	24.4	114.8	54.8	0.0	2.7	0.0
Stine	9140 3000GT	82	24.9	103.6	49.9	13.0	0.2	0.0
Syngenta	N09V-GT/CB/LL	79	25.2	111.1	56.2	4.1	0.0	0.0
Nutech	5B-782™	82	25.4	121.4	55.5	1.7	4.5	0.0
Dairyland	DS-7985	85	25.6	114.2	47.3	14.5	0.9	0.0
Monsanto	DKC36-30	86	25.7	95.3	46.8	1.3	4.0	0.0
Proseed	1283 VT2P	83	25.8	110.5	55.6	0.0	0.0	0.0
Syngenta	N20Y-3220	85	26.0	100.1	47.4	19.9	0.0	0.0
Proseed	PX 85 VT2P	85	26.2	115.5	55.2	12.6	20.0	0.0
NorthStar	VS 81-481	81	26.3	119.2	53.5	0.0	0.0	0.0
Wensman	W 8085VT2RIB	84	26.4	105.7	48.4	8.4	18.5	0.0
Proseed	PX 85 VT2PB	85	26.5	107.2	53.5	0.0	2.4	0.0
Proseed	PX 82 VT2P	82	26.9	113.7	52.2	0.0	0.0	0.0
Hyland	8166	83	27.7	99.1	47.5	10.0	1.1	0.0
Dahlman	R43-23VT2PRIB	85	28.2	107.0	49.3	12.8	4.1	0.0
Dahlman	R42-21VT2PRIB	84	28.5	101.9	48.0	0.7	1.2	0.0
Dairyland	DS-9383SSX	83	29.3	109.9	51.8	0.0	1.3	0.0
Monsanto	DKC33-78	83	29.4	100.0	48.2	13.2	0.6	0.0
NorthStar	84-184 GT/CB/LL	84	29.5	120.8	51.2	2.0	1.4	0.0
Partner Brand	PB 5030 RR	80	29.8	118.5	51.4	7.1	0.0	0.0
Hyland	8201	84	31.0	106.6	50.5	5.5	3.7	0.0
Hyland	8180	84	31.8	97.8	48.7	4.3	0.0	0.0
LATE RM	CHECK	85	32.3	105.6	51.9	8.7	0.0	0.0
Mean			25.3	110.2	52.7	7.2	4.2	0.0
Efficiency compared to a RCBD			**152.0**	139.0	121.3	142.1	97.8	0.0
CV%			6.1	17.7	4.7	277.8	342.0	0.0
LSD (5%)			4.7	34.6	5.4	5.1	2.1	0.0

Experiments conducted by the NDSU Corn Breeding Program in dryland condition in Lakota 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 152% (MOISTURE) 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 = 28,000 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.