



1998 Iowa Gold Catalog

High-Oil Corn Test

Acknowledgments

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Iowa Corn Growers Association
Iowa Crop Improvement Association
Iowa Department of Agriculture and Land Stewardship
Iowa State University, Department of Agronomy
Iowa State University, Department of Agricultural and Biosystems Engineering
Iowa State University Extension, Iowa Grain Quality Initiative

The following companies participated in the 1998 Iowa Gold High-Oil Corn Test. The support and participation of these firms are greatly appreciated.

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1998 Iowa Crop Performance Test—Corn Project

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A more complete version of the *1998 Iowa Gold Catalog* is available on the Iowa Grain Quality Initiative website at:

<http://www.exnet.iastate.edu/Pages/grain/>

1998 Procedure

Seed corn companies were eligible to enter high-oil corn blends in the High-Oil Corn Blends Test of the Iowa Gold Catalog Specialty Corn Test. This year's test was planted at one site near Ogden, IA. Four companies entered 15 blends in the test and one company entered a specialty corn. Commercial check hybrids were evaluated in the test this year with accepted isolation distances. Also, several commercial grain parent entries were evaluated.

How Information Is Presented

The agronomic data and quality data are averages of four replications. The oil percentage data are reported at 15.5 percent moisture and 0 percent moisture. All other data are reported at 15.5 percent moisture.

Amino acid profiles are nonreplicated values for bulked samples of corn from the four replications.

Fatty acid profiles are averages of data from 10 individual kernels from each of the four replicated plots of each entry.

Interpretation of Results

Differences between hybrids that are due to variation in soil, fertility, moisture availability, insect infestation, and disease, plus any variation due to planting and harvesting techniques, are identified through statistical analysis. The LSD (least significant difference at .05) values in the tables represent the amount of difference between two hybrids that could be due to variations in the above mentioned factors. In comparing two hybrids for any of the traits, differences greater than the LSD value can be attributed to genetic differences in the potential of the hybrids; differences less than the LSD value are not statistically different and the differences could have been due to other factors.

1998 Field Data

This test was planted on a farm operated by the Heineman brothers near Ogden, IA in Boone County. Field data are presented in Table A.

At planting time, subsoil moisture was adequate. The departures from normal, listed in Table A, represent deviations from long term averages for temperature and precipitation at the farm.

Table A. Field Data

Heineman Farm			
Niccollet loam			
Fertilizer applied, lb.	N	P ₂ O ₅	K ₂ O
Plowdown	12 fall 96	30	50
Preplant	147	—	—
Total	159	30	50
1997 crop	Soybeans		
Row width	30 inches		
Planting date	May 1		
Harvest date	October 12		

Departures from Normal

Month	Temperature (°F)	Precipitation (inches)
April	+0.1	-0.49
May	+4.8	-1.55
June	-2.8	+5.22
July	+0.5	+0.13
August	+3.0	-1.21
September	+6.1	-2.59

1998 Corn Quality Tests

Technical Information

The laboratory tests run in 1998 were composition, density, test weight, seed weight, breakage susceptibility, fatty acid profile, and amino acid profile. For some tests, an estimated standard deviation of precision (repeatability) and an estimated standard deviation of prediction (accuracy) are listed below. Accuracy for composition data is a comparison to the wet chemistry reference. For other tests, there are no base reference methods, in which case a precision only is given. The statistics include only test variability, not any genetic or field variations. The plot replications were intended to average data and correct for field variations.

Composition

Composition was measured with an Infratec whole-grain, near-infrared transmission analyzer. Data were converted to a 15.5 percent moisture basis, and reported to the nearest tenth of one percent. Oil data are also reported on a dry matter basis for comparison with commonly used contract terms. The conversion to dry basis is purely mathematical.

Long-term Average Values for Corn Composition

Moisture Basis (%)	Protein (%)	Oil (%)	Starch (%)
15.5	8.0	3.6 ^a /4.2 ^b	60.0

^apercent oil at 15.5% moisture basis

^bpercent oil on a dry matter basis

Statistics for the Corn Composition Test

Statistic	Moisture	Protein	Oil	Starch
Precision ^a	02	02	01	03
Accuracy ^b	04	04	03	10

^aStandard deviation among replicates, same sample, in % pts

^bStandard error of prediction relative to wet chemistry on samples not used for calibrations, in % pts

These statistics are based on the latest calibrations from the Iowa State University Grain Quality Laboratory.

Seed Density Test

Density of individual corn seeds (not bulk density of seeds packed in a volume) also is a measure of hardness. Harder seeds are generally denser. The density of “average” corn is about 1.260-1.270 g/cc. Density above 1.300 g/cc is considered very hard. High-oil corn normally is average or lower in density.

In 1998, a near-infrared calibration for density was used with the near-infrared transmission analyzer. Data are reported to the nearest 0.001 g/cc on a 15.5 percent moisture basis.

Precision: ± 0.003 g/cc

Accuracy: ± 0.010 g/cc, relative to nitrogen displacement reference

Test Weight

Test weight (lb/bu) measures the bulk density of grain in a known volume. A part of the Official Grades, test weight was determined by drop-filling a dry quart measure from a height of two inches. The weight of the grain in the level full measure is multiplied by 32 to obtain the test weight in lb/bu.

Test weight in all grains provides an estimate of weight contained in a storage bin. For corn, test weight is considered a general indicator of quality because stress conditions of all kinds reduce test weight. Normal corn is 55-57 lb/bu (dry). Test weights below 52 lb/bu are an indication of immaturity. Generally, lower test weight corn will not store well.

Test weight increases by 0.25 lb/bu per percentage point of moisture reduction. Dry kernels pack tighter in the cup. Very immature corn (below 50 lb/bu) may not have an increase after drying. Reported test weights are adjusted to 15.5 percent moisture.

Precision: ± 0.5 lb/bu

Seed Weight Test

Some users prefer large or small seeds. In certain situations, seeds of a certain size process or handle better. The usual unit of seed size is thousand-grain weight (TGW).

In the Seed Weight Test, a mechanically counted number of seeds is weighed. The weight is divided by the number of seeds and multiplied by 1,000 to calculate the TGW. Data are reported to the nearest gram. A proportionate moisture correction is applied to adjust data to 15.5 percent moisture basis.

Precision: ± 10 g

Seed weight also can be expressed as seeds per pound.

Wisconsin Breakage Test

The Wisconsin Breakage Test (WBT) measures grain's susceptibility to fracture during handling. A 250-g cleaned whole-grain sample is put in the WBT and the sample is broken. The sample is screened with a dockage tester using a 12/640 round-hole screen. The corn that remains on top of the screen is weighed.

Breakage susceptibility is the percentage of broken corn generated by the WBT. WBT data also are adjusted to 15.5 percent moisture, because dry grain inherently is more breakage prone than wetter grain.

Precision: $\pm 1.0\%$

Amino Acid Profile

Amino acids are the compounds that make up the protein fraction. Various individual amino acids are important to livestock feeding—for example, lysine to swine, sulfur-containing methionine and cysteine to poultry. Amino acid modification is a growing area of genetic research. Amino acid concentrations are low, less than 1.0 percent for any of the amino acids. High-oil corn is generally higher in lysine and methionine than average corn.

The amino acid profile was measured with liquid chromatography, using two digestions (acid and alkali) of 10-15 g ground sample. Data are expressed to the nearest 0.01 percentage point. The moisture basis correction formula is the same as for crude composition. Some important amino acids are:

Amino Acid	Typical Average (%)	Range (%)
Lysine	0.25	0.20-0.35
Methionine	0.19	0.12-0.25
Tryptophan	0.08	0.05-0.12

Our amino acid data analysis was done by the University of Missouri Agriculture Experiment Station Chemical Laboratories. A full 19-acid profile was provided. For cost reasons, the individual plots of a hybrid (four reps/location) were combined. The amino acid subsample was mechanically divided from this composite.

Table 1. 1998 Agronomic Data Means. Planting Rate = 30,000.

Brand	Variety	Type	Yield bu/a**	Moisture %	Root Idg %	Stalk Idg %	Drop Ear %	Stand %
*Cargill	6303	CHK	142.6	16.1	1	12	0	87
DEKALB	CR8659	TCB	167.0	18.9	2	3	0	81
DEKALB	CR8691	TCB	153.5	18.1	0	6	0	83
*DEKALB	DK580	CHK	157.8	14.3	0	9	0	94
DEKALB	DK595TC	TCB	147.2	16.3	1	3	0	92
Genetec	B53X	SPC	77.8	16.3	1	39	0	88
*Golden Harvest	H2547	CHK	161.2	16.5	0	9	0	86
NC+	4881H	TCB	153.7	18.0	0	3	0	83
NC+	RE271	TCB	158.9	16.4	1	6	0	89
*NK Brand	6800Bt	CHK	177.0	18.0	5	2	0	90
Pfister	1571	GRP	150.2	14.7	0	4	0	99
Pfister	2020	GRP	120.7	14.9	1	15	0	94
Pfister	2025	GRP	155.7	14.5	0	22	0	95
Pfister	2650	GRP	187.6	15.9	1	5	0	96
Pfister	2652	GRP	176.3	16.8	1	12	0	94
Pfister	2680	GRP	165.5	16.5	1	10	0	93
Pfister	3034	GRP	150.7	17.5	0	5	0	89
Pfister	3049	GRP	169.8	18.0	0	13	0	97
Pfister	3977	GRP	182.3	18.9	3	5	0	97
Pfister	SK1571	TCB	145.7	14.4	0	4	0	83
Pfister	SK2020	TCB	131.8	14.6	1	10	0	83
Pfister	SK2025	TCB	148.4	14.5	0	14	0	86
Pfister	SK2650	TCB	158.1	16.8	0	7	0	85
Pfister	SK2652	TCB	155.9	18.1	1	6	0	87
Pfister	SK2680	TCB	159.9	17.9	0	9	0	88
Pfister	SK3034	TCB	151.4	17.4	1	7	0	88
Pfister	SK3049	TCB	143.6	19.0	3	13	0	82
Pfister	SK3977	TCB	165.3	21.6	3	3	0	89
*Pioneer	3489	CHK	160.2	16.3	0	1	0	93
UAP Seeds	EXP	TCB	159.3	17.7	1	4	0	86
Average of All Entries			154.5	16.8	09	87	0	89.2
Average of Check Hybrids			159.8	16.2	13	65	0	89.8
Minimum			77.8	14.3	0	1	0	81
Maximum			187.6	21.6	5	39	0	99
LSD (.05)			16.6	13				

CHK and * = Commercial Dent Corn Check Hybrid Entered by Iowa Crop Improvement Association.

TCB = TopCross® Blend.

GRP = Commercial Dent Grain Parent of One of the TopCross® Blends.

SPC = Specialty Dent Corn.

** = Converted to 15.5% Moisture.

Table 2. 1998 Quality Data Means.

Brand	Variety	Type	Protein** %	Oil % at 15.5% mst	Oil % at 0% mst	Starch** %	Density** g/cm ³	Test Weight** lb/bu	Kernel WT** g/1000	Breakage** %
*Cargill	6303	CHK	66	36	42	61.7	1.253	58.0	279	5.8
DEKALB	CR8659	TCB	69	62	73	58.1	1.220	55.3	318	4.5
DEKALB	CR8691	TCB	65	58	69	59.1	1.228	55.8	290	6.0
*DEKALB	DK580	CHK	62	34	40	62.5	1.252	57.5	258	9.5
DEKALB	DK595TC	TCB	67	61	72	59.1	1.244	58.7	259	10.0
Genetec	B53X	SPC	75	42	50	60.2	1.255	55.4	242	6.3
*Golden Harvest	H2547	CHK	61	34	40	62.2	1.267	58.2	312	7.5
NC+	4881H	TCB	66	61	72	58.5	1.225	55.6	297	5.3
NC+	RE271	TCB	81	66	78	57.7	1.263	60.5	244	12.3
*NK Brand	6800Bt	CHK	69	37	43	61.2	1.281	60.5	292	4.5
Pfister	1571	GRP	65	37	43	62.6	1.260	60.1	226	10.0
Pfister	2020	GRP	58	36	42	62.3	1.231	57.8	235	11.3
Pfister	2025	GRP	64	33	39	62.4	1.252	57.2	290	12.0
Pfister	2650	GRP	62	34	40	62.0	1.243	58.5	331	4.8
Pfister	2652	GRP	66	34	40	61.4	1.253	57.3	347	5.0
Pfister	2680	GRP	61	36	42	61.9	1.262	58.3	314	6.5
Pfister	3034	GRP	58	36	42	62.4	1.266	59.1	278	7.5
Pfister	3049	GRP	63	34	40	61.6	1.256	56.9	352	7.0
Pfister	3977	GRP	61	35	41	61.8	1.256	57.8	312	4.5
Pfister	SK1571	TCB	68	73	86	58.0	1.209	57.6	213	13.3
Pfister	SK2020	TCB	65	66	78	58.8	1.217	57.8	227	13.0
Pfister	SK2025	TCB	64	60	71	59.5	1.220	55.9	275	13.5
Pfister	SK2650	TCB	66	62	73	58.5	1.213	56.3	296	6.3
Pfister	SK2652	TCB	67	64	76	58.0	1.207	55.5	302	6.5
Pfister	SK2680	TCB	64	61	72	58.9	1.222	55.9	273	7.0
Pfister	SK3034	TCB	62	68	80	58.8	1.225	57.6	252	11.3
Pfister	SK3049	TCB	68	63	75	58.2	1.222	55.5	336	7.0
Pfister	SK3977	TCB	68	64	76	57.9	1.219	54.7	308	5.3
*Pioneer	3489	CHK	65	36	42	61.8	1.269	58.1	304	8.5
UAP Seeds	EXP	TCB	66	61	72	58.4	1.215	55.3	314	5.8
Average of All Entries			65	49	58	60.2	1.240	57.3	286	7.9
Average of Check Hybrids			64	35	42	61.9	1.264	58.5	289	7.2
Minimum			58	33	39	57.7	1.207	54.7	213	4.5
Maximum			81	73	86	62.6	1.281	60.5	352	13.5
LSD (.05)			0.3	0.3	0.3	0.7	0.012	0.7	22	3.0

CHK and * = Commercial Dent Corn Check Hybrid Entered by Iowa Crop Improvement Association.

TCB = TopCross® Blend. GRP = Commercial Dent Grain Parent of One of the TopCross® Blends.

SPC = Specialty Dent Corn.

** = Converted to 15.5% Moisture.

Table 3. Two-year Agronomic Data Means.

Brand	Variety	Type	Yieldbu/a ^a	Moisture %	Root Idg %	Stalk Idg %	Drop Ear %	Stand %
			97-98	97-98	97-98	97-98	97-98	97-98
DEKALB	DK595TC	TCB	146.5	15.1	0	6	1	91
NC+	RE271	TCB	152.1	15.6	0	7	3	92
Pfister	SK1571	TCB	143.2	14.4	0	7	2	87
Pfister	SK2650	TCB	153.7	16.1	0	8	1	90
Pfister	SK2652	TCB	148.0	17.2	1	9	0	90
Pfister	SK2680	TCB	155.0	16.8	0	8	0	93
Average of All Entries			149.8	15.9	0.4	7.4	1.3	90.6
Minimum			143.2	14.4	0	6	0	87
Maximum			155.0	17.2	1	9	3	93
LSD (.05)			11.0	0.8				

TCB = TopCross® Blend.

^aValues are averages of the 1997 reported data at 15.0% moisture and the 1998 reported data at 15.5% moisture.

Table 4. Two-year Quality Data Means.^a

Brand	Variety	Type	Protein	Oil	Oil % at	Starch	Density	Test Weight	Kernel Wt	Breakage
			%	%	0% mst	%	g/cm3	lb/bu	g/1000	%
			97-98	97-98	97-98	97-98	97-98	97-98	97-98	97-98
DEKALB	DK595TC	TCB	71	6.2	73	59.2	1.247	58.5	252	11.0
NC+	RE271	TCB	83	6.6	78	57.9	1.270	60.6	249	11.9
Pfister	SK1571	TCB	74	7.9	93	57.1	1.208	57.3	211	14.1
Pfister	SK2650	TCB	70	6.5	76	58.2	1.211	55.7	289	7.3
Pfister	SK2652	TCB	71	6.6	78	57.8	1.212	55.3	295	6.5
Pfister	SK2680	TCB	67	6.6	78	58.5	1.215	55.3	272	8.9
Average of All Entries			73	6.7	80	58.1	1.227	57.1	261	10.0
Minimum			67	6.2	73	57.1	1.208	55.3	211	6.5
Maximum			83	7.9	93	59.2	1.270	60.6	295	14.1
LSD (0.05)			0.2	0.2	0.2	0.4	0.008	5.6	13	2.2

TCB = TopCross® Blend.

^aValues are averages of the 1997 reported data at 15.0% moisture and the 1998 reported data at 15.5% moisture. The oil % at 0% moisture values are averages of oil % at 0% moisture for both years.

Laboratory Information

All laboratory information, the fatty acid protocols and 19 amino acid profiles can be found at the Iowa Grain Quality Initiative website:

<http://www.exnet.iastate.edu/Pages/grain/>

Fatty acid profile data were submitted by Linda Pollak and Susan Duvick, USDA-ARS, Department of Agronomy, Iowa State University, Ames, IA, (515) 294-7831.

Amino acid profile data were submitted by Thomas Mawhinney, University of Missouri Agriculture Experiment Station Chemical Laboratories, Columbia, MO.

Table 5. Fatty Acid Profiles.

Brand	Variety	Type	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3	Total ^a Sats
Check Hybrids, Specialty Corns, and Commercial Grain Parents of TopCross® Blends								
*Pioneer	3489	CHK	10.30	2.65	26.98	58.98	1.13	12.90
*DEKALB	DK580	CHK	10.58	2.65	32.53	53.08	1.18	13.25
*NK Brand	6800Bt	CHK	11.60	2.33	29.98	54.80	1.43	13.78
*Gargill	6303	CHK	11.90	2.30	28.05	56.70	1.20	14.28
*Golden Harvest	H2547	CHK	11.88	2.43	30.00	54.73	1.20	14.35
Genetec	B53X	SPC	11.23	2.50	30.28	55.10	0.95	13.68
Pfister	2652	GRP	11.90	2.28	26.68	58.08	1.20	14.10
Pfister	2680	GRP	11.70	2.33	27.98	56.68	1.33	14.05
Pfister	2650	GRP	11.20	2.25	26.85	58.25	1.35	13.48
Pfister	3049	GRP	11.80	2.33	28.38	56.25	1.25	14.15
Pfister	3977	GRP	12.20	2.33	27.93	56.30	1.30	14.48
Pfister	2025	GRP	11.63	2.45	28.78	55.80	1.30	14.05
Pfister	1571	GRP	12.20	2.40	29.55	54.68	1.23	14.60
Pfister	2020	GRP	12.15	2.35	28.75	55.40	1.35	14.50
Pfister	3034	GRP	11.85	2.40	28.43	55.90	1.30	14.28
Average of Normal Hybrids			11.61	2.40	28.74	56.05	1.25	13.99
TopCross® Blends								
DEKALB	CR8691	TCB	11.70	2.70	33.93	50.95	1.08	14.35
DEKALB	CR8659	TCB	12.28	2.75	33.90	50.60	1.00	14.93
DEKALB	DK595TC	TCB	11.63	2.83	36.63	48.08	0.90	14.45
NC+	RE271	TCB	10.83	2.90	35.05	50.40	0.78	13.68
NC+	4881H	TCB	12.05	2.55	31.48	52.85	1.10	14.60
UAP	EXP	TCB	12.10	2.65	32.08	52.15	1.05	14.73
Pfister	SK2652	TCB	12.18	3.13	32.88	51.05	1.00	15.28
Pfister	SK2680	TCB	11.80	2.53	32.18	52.40	1.08	14.35
Pfister	SK2650	TCB	11.23	2.65	31.20	53.90	1.08	13.88
Pfister	SK3049	TCB	12.08	2.63	31.40	52.85	1.00	14.73
Pfister	SK3977	TCB	11.68	2.65	34.85	49.88	0.98	14.30
Pfister	SK2025	TCB	12.05	2.68	30.33	53.93	1.05	14.70
Pfister	SK1571	TCB	12.23	2.43	33.93	50.68	0.98	14.65
Pfister	SK2020	TCB	12.03	2.60	35.18	49.23	0.95	14.65
Pfister	SK3034	TCB	12.05	2.63	34.25	50.23	0.95	15.28
Average, TopCross® Blends			11.86	2.69	33.28	51.28	1.00	14.57

CHK and * = Commercial Dent Corn Check Hybrid Entered by the Iowa Crop Improvement Association.

TCB = TopCross® Blend. GRP = Commercial Dent Grain Parent of One of the TopCross® Blends. SPC = Specialty Dent Corn.

^aTotal Sats = Total Saturated Fats (Palmitic and Stearic).

All reported values, including total sats, are averages of 40 individual kernel observations.

Table 6. Amino Acid Profiles at 15.5 Percent Moisture for Seven Amino Acids.

Brand	Variety	Type	Threonine	Proline	Cysteine	Methionine	Histidine	Lysine	Tryptophan
Check Hybrids, Specialty Corns, and Commercial Grain Parents of TopCross® Blends									
*Pioneer	3489	CHK	0.23	0.56	0.17	0.14	0.19	0.24	0.06
*DEKALB	DK580	CHK	0.24	0.55	0.16	0.15	0.19	0.24	0.05
*NK Brand	6800Bt	CHK	0.24	0.63	0.17	0.12	0.22	0.23	0.05
*Cargill	6303	CHK	0.23	0.54	0.16	0.12	0.19	0.24	0.05
*Golden Harvest	H2547	CHK	0.19	0.46	0.14	0.10	0.17	0.19	0.05
Genetec	B53X	SPC	0.26	0.64	0.18	0.17	0.23	0.27	0.06
Pfister	2652	GRP	0.23	0.55	0.16	0.14	0.19	0.22	0.05
Pfister	2680	GRP	0.22	0.53	0.15	0.11	0.19	0.22	0.05
Pfister	2650	GRP	0.23	0.59	0.16	0.12	0.20	0.22	0.05
Pfister	3049	GRP	0.23	0.59	0.17	0.13	0.20	0.22	0.05
Pfister	3977	GRP	0.23	0.56	0.15	0.13	0.19	0.23	0.06
Pfister	2025	GRP	0.23	0.56	0.17	0.13	0.20	0.24	0.06
Pfister	1571	GRP	0.23	0.56	0.16	0.13	0.19	0.22	0.06
Pfister	2020	GRP	0.22	0.50	0.16	0.12	0.18	0.23	0.05
Pfister	3034	GRP	0.22	0.53	0.16	0.14	0.19	0.22	0.05
Average of Normal Hybrids			0.23	0.56	0.16	0.13	0.20	0.23	0.05
Minimum			0.19	0.46	0.14	0.10	0.17	0.19	0.05
Maximum			0.26	0.64	0.18	0.17	0.23	0.27	0.06
TopCross® Blends									
DEKALB	CR8691	TCB	0.24	0.57	0.16	0.13	0.19	0.24	0.04
DEKALB	CR8659	TCB	0.24	0.61	0.16	0.14	0.21	0.26	0.05
DEKALB	DK595TC	TCB	0.25	0.62	0.19	0.16	0.19	0.24	0.05
NC+	RE271	TCB	0.27	0.70	0.19	0.18	0.23	0.25	0.06
NC+	4881H	TCB	0.24	0.57	0.16	0.13	0.20	0.25	0.04
UAP	EXP	TCB	0.24	0.57	0.16	0.14	0.21	0.27	0.05
Pfister	SK2652	TCB	0.24	0.56	0.16	0.13	0.20	0.26	0.05
Pfister	SK2680	TCB	0.24	0.55	0.17	0.13	0.20	0.25	0.05
Pfister	SK2650	TCB	0.25	0.60	0.17	0.15	0.22	0.26	0.06
Pfister	SK3049	TCB	0.25	0.60	0.17	0.15	0.21	0.25	0.04
Pfister	SK3977	TCB	0.25	0.59	0.17	0.13	0.22	0.27	0.04
Pfister	SK2025	TCB	0.24	0.56	0.15	0.14	0.20	0.26	0.06
Pfister	SK1571	TCB	0.25	0.57	0.17	0.15	0.21	0.26	0.06
Pfister	SK2020	TCB	0.22	0.53	0.14	0.14	0.17	0.22	0.05
Pfister	SK3034	TCB	0.24	0.56	0.16	0.15	0.20	0.26	0.06
Average, TopCross® Blends			0.24	0.58	0.17	0.15	0.20	0.25	0.05
Minimum			0.22	0.53	0.14	0.13	0.17	0.22	0.04
Maximum			0.27	0.70	0.19	0.18	0.23	0.27	0.06

CHK and * = Commercial Dent Corn Check Hybrid Entered by the Iowa Crop Improvement Association.

TCB = TopCross® Blend. GRP = Commercial Dent Grain Parent of One of the TopCross® Blends. SPC = Specialty Dent Corn.

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And justice for all

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