

A1469-19

North Dakota Dry Pea

Variety Trial Results for 2019 and Selection Guide

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Introduction

Field peas fit well into small-grain rotations. The green- and yellow-seeded varieties are used for human consumption as dry split peas. Marrowfat are green mature peas and are used to make mushy peas and the snack food wasabi peas. Field pea seeds are fractionated into components (protein, starch, minerals) and used in diverse food products such as wheat flour in pasta, plant protein meat substitutes (burger), extruded snacks, noodles, and livestock and pigeon feeds. Field peas also are becoming attractive for addressing Type 2 diabetes and obesity due to their moderate protein concentration, slowly digestible starch and insoluble fiber component.

Field pea stems grow to a length of 33 to 36 inches, and the plant reaches its maximum height at the early pod-fill stage. A cool growing season (a mean temperature of 55 to 65 F) is necessary for optimum pea yields. Hot weather during flowering may result in a reduced seed set.

In North Dakota, field peas require about 60 days from seeding until flowering and 90 to 100 days to maturity. The moisture requirement for field peas is similar to that for cereal grains.

Field peas can be grown on a wide range of soil types, but drainage must be adequate because field peas do not tolerate saturated or soggy conditions. Field peas can be grown in a no-tillage or conventional-tillage cropping system. Field peas grow best when seeded into a weed-free seedbed and fertile soils. Land preparation for seeding is similar to wheat.

To obtain good soil-to-seed contact, seedbeds should be firm. Avoid seedbeds with large clods. Do not work the soil too finely because subsequent soil crusting following rains may cause poor emergence. Drill the seeds 2 to 3 inches deep in narrow rows (less than 10 inches apart) as early in the spring as possible. The soil should not be excessively wet at seeding.

Seeding can be done with an air seeder or grain drill. Adjust the seeder to prevent cracking of the seed, especially with the large-seeded varieties because cracked seed will not germinate. Having level ground is critical for easy harvesting. Stony fields should be avoided or rolled after seeding to bury loose stones that might be picked up during swathing and harvesting. Do not pack or roll immediately after seeding if the soil moisture is high because excess compaction or crusting can occur.

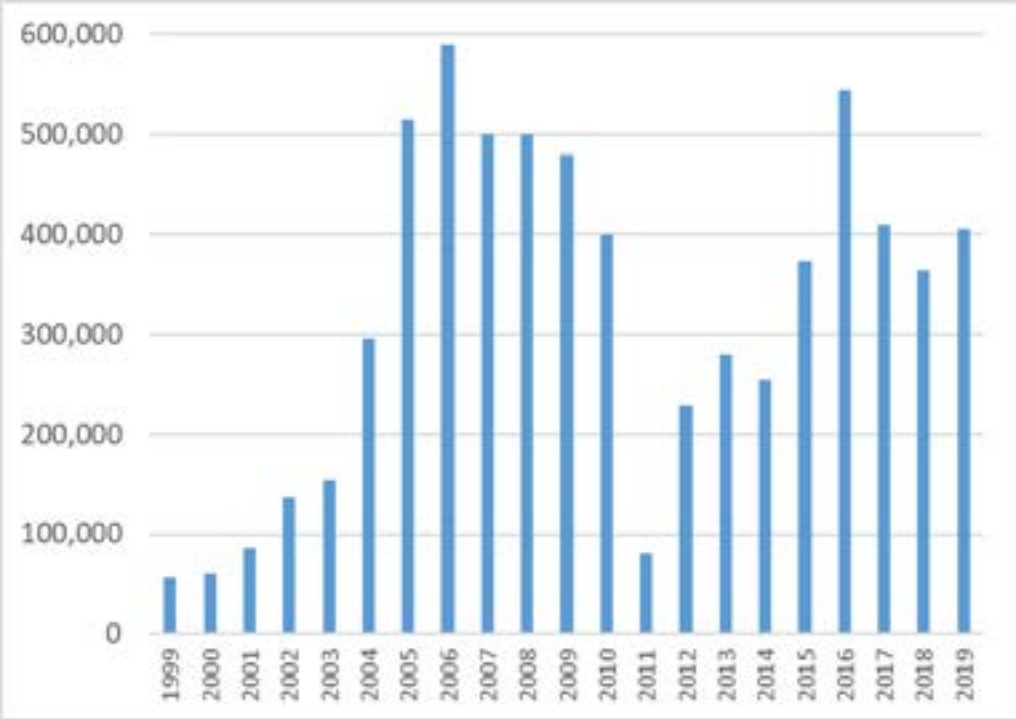
Pea seedlings can withstand considerable frost. Even if the frost is severe enough to kill the main shoot, the pea plant will regrow from buds at one of the nodes at or below the soil surface. However, this will delay plant maturity. The pea seed germination rate increases with increasing temperatures, but at temperatures greater than 64 F, the percentage of seed germination decreases.

Field peas are capable of utilizing bacterially fixed atmospheric nitrogen. The specific bacterial association for nitrogen fixation in field peas and lentils is with the bacterium *Rhizobium leguminosarum*, which is a different bacteria species than is used for soybean inoculation. If field peas are to be grown in a field for the first time or peas were not grown there recently, inoculating the seed with the proper *Rhizobium* bacteria prior to planting may be needed to ensure nodulation.

Treating the seed with a fungicide can improve emergence and plant establishment significantly. Fungicide labels should be checked to see if a particular fungicide can be used on field peas.

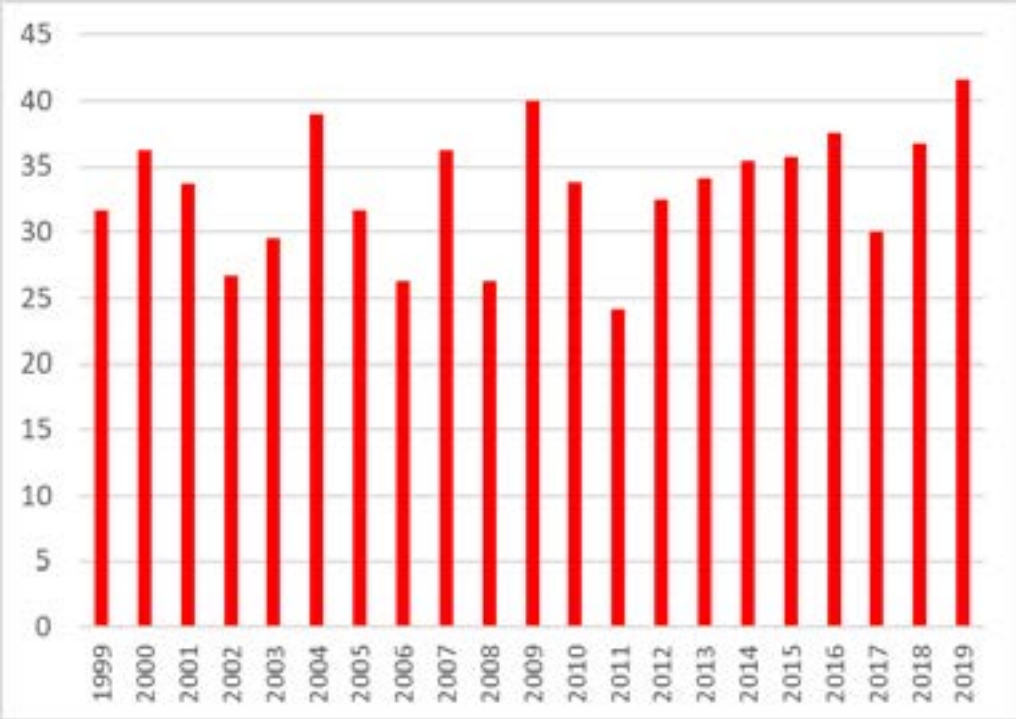
For more production information, see publication A1166, "Field Pea Production" (www.ag.ndsu.edu/publications/crops/field-pea-production). Dry pea-planted acres and yield have fluctuated during the past 21 growing seasons, as shown in Figures 1 and 2.

Figure 1. North Dakota Dry Pea Harvested Acreage, 1999 to 2019.



Source: North Dakota Agricultural Statistics Service – U.S. Department of Agriculture.

Figure 2. North Dakota Dry Pea Yield in Bushels Per Acre, 1999 to 2019.



Source: North Dakota Agricultural Statistics Service – USDA.

2019 Dry Pea Performance Trials

Variety trial data from all NDSU Research Extension Centers for all crops can be found at www.ag.ndsu.edu/varietytrials. Weather data are provided in Table 1.

Table 1. April-September 2019 Average Temperature and Precipitation Rankings for Selected North Dakota Locations.

Location	Average Temperature (Ranking)	Total Precipitation (Ranking)
Bowman	57.5 F (9th Coolest Period Since 1915)	16.03 inches (11th Wettest Period Since 1915)
Bismarck	60.7 F (56th Warmest Period Since 1875)	21.79 inches (4th Wettest Period Since 1875)
Cavalier	57.2 F (24th Coolest Period Since 1934)	14.43 inches (46th Wettest Period Since 1927)
Fargo	60.4 F (40th Warmest Period Since 1881)	20.87 inches (12th Wettest Period Since 1881)
Minot Exp. Station	57.6 F (47th Coolest Period Since 1905)	17.84 inches (16th Wettest Period Since 1905)
Williston Exp. Station	59.3 F (63rd Coolest Period Since 1894)	17.77 inches (2nd Wettest Period Since 1894)
North Dakota Average ¹	58.2 F (55th Coolest Period Since 1895)	18.4 inches (6th Wettest Period Since 1895)

Source: Adnan Akyüz, NDSU, North Dakota state climatologist.

¹Statewide values are calculated based on all available locations in North Dakota rather than the mathematical average of the list above.

The agronomic data presented in this publication are from replicated research plots using experimental designs that enable the use of statistical analysis. The LSD (least significant difference) numbers beneath the columns in the tables are derived from the statistical analyses and only apply to the numbers in the column in which they appear. If the difference between two varieties exceeds the LSD value, it means that with 95% or 90% probability (LSD 0.05 or 0.10), the higher-yielding variety has a significant yield advantage. If the difference between two varieties is less than the LSD value, then the variety yields are considered similar.

The abbreviation NS is used to indicate no significant difference for that trait among any of the varieties. The CV is a measure of variability in the trial. The CV stands for coefficient of variation and is expressed as a percentage. Large CVs mean a large amount of variation that could not be attributed to differences in the varieties. In the tables, the “mean” indicates the average of the observations in the column.

The abbreviation PM stands for physiologically mature. Physiological maturity is reached when the bottom 75% of the pods have turned yellow to brown. At this time, the upper 25% of the pods will be a dull green, with the pod surface no longer succulent.

Yields are reported at 15% moisture content. **The standard for reporting protein in field peas is at 0% moisture. The protein content data are not intended to be compared among locations.** The harvest ease score is taken at the time the plants are dried sufficiently to allow threshing or harvesting to occur. Harvest ease is an assessment of combining efficiency. The lower the score, the easier the operator will be able to get the cutter bar underneath the lowest pods and make decent travel speed through the field.

In the tables, the dry pea varieties are arranged in alphabetical order within market class (yellow and green cotyledon types). Footnotes provide more details for the table under which they appear. Characteristics to evaluate for selecting a dry pea variety include market class, yield potential in your area, test weight, reaction to problematic diseases and maturity date.

When selecting a high-yielding and good-quality variety, use data that summarize several years and locations. Table 2 provides information on a core group of varieties that were included in most locations. Choose the variety that, on average, performs the best at multiple locations near your farm during several years.

Presentation of data for the varieties tested does not imply approval or endorsement by the authors or agencies conducting the test. North Dakota State University approves the reproduction of any table in this publication only if no portion is deleted, appropriate footnotes are given, the order of the data is not rearranged and NDSU is given credit for conducting the trial.

Acknowledgments

Research specialists and technicians helped with the field work and data compilation. The assistance given by many secretaries in typing respective portions of this document is very much appreciated. A special thank you goes to Lisa Johnson, Extension Plant Sciences, for assisting in the compilation of this publication.

Table 2. 2019 Locations Where Pea Varieties Were Tested.

Pea Variety	Company	Carrington	Carrington No-till	Carrington Organic	Langdon	Minot	Dickinson	Williston	Divide Co.	McKenzie Co.	Williston Irrigated	Hettinger
Yellow Cotyledon Type												
AAC Asher	Legume Logic	x	x	--	x	x	--	--	--	--	--	x
AAC Carver	Meridian	x	x	--	x	x	x	x	--	--	--	x
AAC Chrome	Legume Logic	x	x	--	x	x	x	x	--	--	--	x
AAC Profit	Birdsall Grain	x	x	x	x	x	x	x	--	--	--	x
AC Earlystar	Meridian	x	x	--	x	x	x	x	--	--	--	x
Agassiz	Meridian	x	x	x	x	x	x	x	x	x	x	x
Astronaute	Legume Logic	x	--	--	x	x	--	--	--	--	--	--
Bridger	Great Northern Ag	x	x	--	--	x	x	x	--	--	--	x
CDC Amarillo	Meridian	x	-	--	x	x	x	x	--	--	--	x
CDC Dakota	Legume Logic	x	x	--	x	x	--	--	--	--	--	--
CDC Inca	Meridian	x	x	--	x	x	x	x	--	--	--	x
CDC Saffron	Meridian	x	-	--	x	x	x	x	x	x	--	x
CDC Spectrum	Meridian	x	x	--	x	x	x	x	--	--	--	x
CDC Treasure	Meridian	--	--	--	--	--	--	x	x	x	--	--
DL Apollo	Pulse USA	x	x	--	x	x	--	x	--	--	--	x
DS Admiral	Pulse USA	x	--	x	x	x	x	x	--	--	x	x
Durwood	Pulse USA	x	x	--	x	x	--	x	--	--	--	x
Hyline	Great Northern Ag	x	x	--	x	x	x	x	--	--	--	x
Jetset	Meridian	x	x	--	x	x	x	x	--	--	--	x
Korando	Pulse USA	x	x	--	x	x	--	x	--	--	--	x
LG Amigo	Pulse USA	x	x	--	x	x	--	x	--	--	--	x
LGPN 4915 ¹	Pulse USA	x	x	--	--	--	--	x	--	--	--	x
LG Sunrise	Pulse USA	x	x	--	x	x	--	x	--	--	--	x
Majestic	Jerry Blotter Farms	x	x	--	x	x	--	--	--	--	--	--
Mystique	Pulse USA	x	--	--	x	--	--	--	--	--	--	--
Navarro	Great Northern Ag	x	x	--	-	x	--	x	--	--	--	--
Nette 2010	Pulse USA	x	x	x	x	x	--	x	x	x	--	x
Protecta	Selgen	--	--	x	--	--	--	--	--	--	--	--
Salamanca	Great Northern Ag	x	x	-	x	x	x	x	--	--	--	x
Spider	Great Northern Ag	x	x	x	x	x	x	x	--	--	x	x
SW Midas	Pulse USA	x	x	--	--	--	--	x	x	x	--	x
Green Cotyledon Type												
AAC Comfort	Meridian	x	x	--	x	x	x	x	--	--	--	x
Aragorn	Pulse USA	--	--	--	--	--	--	--	x	x	--	--
Arcadia	Pulse USA	x	--	x	x	x	x	x	x	x	x	x
Banner	ProGene	--	--	--	--	--	--	x	--	--	--	x
Bluemoon	JB Farms	x	--	x	--	x	--	--	--	--	--	--
CDC Greenwater	Meridian	x	x	--	x	x	x	x	--	--	--	x
CDC Striker	Nodricks Norsask Seeds	x	--	x	x	x	x	x	x	x	x	x
Cruiser	Pulse USA	x	--	x	x	x	x	x	x	x	x	x
Empire	Legume Logic	x	x	--	--	x	--	x	--	--	--	x
Flute	Pulse USA	--	--	x	--	--	--	--	--	--	--	--
Ginny	Pulse USA	--	--	--	--	--	--	--	--	--	--	x
Hampton	USDA-ARS	x	x	--	x	x	x	x	x	x	--	x
LG Koda	Pulse USA	x	x	--	--	--	--	--	--	--	--	x
Majoret	Pulse USA	x	--	x	--	--	--	--	x	x	--	--
Shamrock	Great Northern Ag	x	x	x	--	x	--	x	--	--	--	x
Viper	Pulse USA	x	x	x	--	x	--	x	--	--	--	x

¹LG Stunner, variety name pending.

Table 3. 2019 Dry Pea - Carrington - Authors, B. Schatz and M. Ostlie.

Variety	Days to Flower	Flower Duration	Days to PM	Canopy Height ¹	Plant Lodge ²	Harvest Ease	1,000 Seed Wt.	Seed Protein	Test Weight	Seed Yield	
	(DAP) ³	(days)	(DAP) ³	(inch)	(0-9)	(0-9)	(gram)	(%)	(lb/bu)	2019	3-yr. Avg.
Yellow Cotyledon Type											
AAC Asher	61	12	93	17.6	4.5	6.0	242	24.7	65.7	42.0	--
AAC Carver	59	15	93	24.5	3.0	4.0	236	23.9	65.6	51.3	45.8
AAC Chrome	61	14	93	23.6	3.8	4.8	222	24.5	65.6	34.0	--
AAC Profit	63	12	94	21.6	3.3	4.5	226	26.1	64.8	53.4	--
AC Earlystar	60	16	93	23.1	4.3	5.8	223	23.9	65.7	53.2	49.6
Agassiz	59	18	95	22.8	3.8	5.8	234	25.4	63.8	43.7	49.1
Astronaute	60	14	93	25.6	1.5	1.5	253	25.6	65.7	44.4	--
Bridger	59	16	94	26.1	3.5	3.5	239	25.6	66.3	56.6	51.3
CDC Amarillo	62	16	95	28.0	2.8	3.5	238	25.4	64.6	53.7	47.9
CDC Dakota	64	12	95	26.7	2.8	4.3	234	25.6	66.8	66.0	--
CDC Inca	62	13	94	22.3	3.5	4.0	232	25.6	66.5	60.4	49.6
CDC Saffron	61	12	94	19.7	4.5	5.3	234	25.6	65.3	42.0	42.8
CDC Spectrum	62	14	96	27.5	2.5	3.5	241	25.5	63.7	49.5	--
DL Apollo	60	11	93	21.8	2.3	2.3	217	27.3	66.3	38.3	--
DS Admiral	60	12	93	19.7	3.5	4.3	247	24.9	66.2	51.9	47.4
Durwood	59	15	94	30.7	2.3	2.3	260	26.1	65.5	55.6	47.7
Hyline	61	15	94	17.7	5.8	7.5	228	24.5	66.1	46.0	44.4
Jetset	60	10	92	25.2	2.8	2.5	237	25.4	65.8	58.5	51.4
Korando	55	17	93	24.0	3.5	4.8	267	27.1	65.2	43.9	43.4
LG Amigo	61	12	93	22.8	2.0	2.5	235	25.8	64.6	44.0	44.5
LGPN 4915 ⁴	58	16	94	29.7	2.3	2.5	238	27.7	65.6	58.9	--
LG Sunrise	56	20	94	29.1	1.8	2.5	247	24.8	66.7	64.3	--
Majestic	61	13	94	29.2	2.0	1.8	252	26.5	65.6	33.8	40.4
Mystique	61	15	94	28.8	2.0	2.5	252	25.1	65.0	49.3	44.3
Navarro	54	17	92	20.4	2.8	2.8	255	25.6	65.0	38.6	40.4
Nette 2010	57	14	91	20.5	2.0	1.5	235	24.2	66.9	45.1	44.7
Salamanca	62	13	94	27.3	2.8	3.5	254	25.9	65.9	36.8	38.4
Spider	61	14	93	20.9	4.5	5.3	216	25.7	65.9	28.7	38.5
SW Midas	61	14	94	26.0	4.8	6.8	203	25.2	65.0	45.8	45.3
Green Cotyledon Type											
AAC Comfort	66	8	94	18.7	5.5	7.3	230	24.6	64.4	40.7	38.2
Arcadia	60	13	92	12.6	6.8	8.5	200	23.8	65.9	44.1	47.4
Bluemoon	61	12	93	23.2	3.0	3.8	254	24.4	65.6	52.1	44.9
CDC Greenwater	63	14	95	26.8	2.3	3.3	236	24.6	64.8	50.9	--
CDC Striker	62	11	93	20.8	3.5	4.3	241	27.6	66.3	48.6	47.4
Cruiser	58	17	94	17.5	5.5	6.3	214	26.5	64.9	42.8	40.5
Empire	61	14	95	33.0	1.8	3.0	238	25.0	67.1	60.2	--
Hampton	60	14	94	11.5	8.8	9.0	225	27.1	65.2	42.2	--
LG Koda	63	11	94	22.9	4.3	6.0	225	24.2	66.1	37.4	40.1
Majoret	61	11	93	22.8	4.0	4.8	245	27.1	66.1	52.7	--
Shamrock	63	10	93	24.0	2.0	4.0	255	25.7	66.4	55.3	40.7
Viper	59	13	94	27.8	3.0	3.5	241	26.5	65.4	44.2	39.6
Mean	60	14	94	23.5	3.4	4.3	237	25.5	65.6	47.8	44.5
CV %	1	9.8	0.9	18.1	31.2	213	4.8	2.4	1.2	14.6	--
LSD 0.05	0.8	1.9	1.2	6.0	1.5	1.0	16	0.8	1.1	9.6	--
LSD 0.10	0.7	1.6	1.0	5.0	1.3	0.8	14	0.7	0.9	8	--

Planted: April 24. Harvested: Aug. 2. Previous crop: spring wheat.

¹Height to the top of the canopy at harvest.²Lodging: 0 = none, 9 = lying flat on the ground.³DAP = Days after planting.⁴LG Stunner, variety name pending.

Table 4. 2019 Dry Pea - No-till - Carrington - Authors, B. Schatz and M. Ostlie.

Variety	Days to Flower (DAP) ³	Flower Duration (days)	Days to PM (DAP) ³	Canopy Height ¹ (inch)	Plant Lodge ² (0-9)	Harvest Ease (0-9)	Seeds/ Pound -seeds-	1,000 Seed Wt. (gram)	Seed Protein (%)	Test Weight (lb/bu)	Seed Yield 2019 (bu/a)
Yellow Cotyledon Type											
AAC Asher	58	14	93	21.7	3.5	8.3	1,636	278	26.1	64.3	64.1
AAC Carver	57	15	93	29.9	2.8	5.3	1,765	258	23.9	64.3	69.3
AAC Chrome	58	13	95	25.6	3.0	7.5	1,700	267	24.6	64.7	67.3
AAC Profit	60	13	95	29.9	2.5	7.0	1,876	242	26.3	64.8	73.5
AC Earlystar	58	15	93	30.1	3.8	7.0	1,931	235	24.2	65.0	63.1
Agassiz	58	15	94	28.6	3.5	6.3	1,869	243	25.9	64.6	66.2
Bridger	56	15	92	25.3	2.0	5.8	1,887	241	25.7	64.5	56.7
CDC Dakota	60	13	94	29.3	3.3	6.5	1,987	229	26.5	65.2	72.3
CDC Inca	59	15	95	28.0	3.8	5.5	1,986	229	25.3	65.1	72.9
CDC Spectrum	58	13	95	29.1	2.8	6.5	1,712	266	26.1	63.7	60.6
DL Apollo	58	13	91	27.2	1.5	4.8	1,923	237	26.7	65.0	65.9
Durwood	59	14	95	29.5	2.5	4.8	1,759	258	25.9	65.0	68.3
Hyline	58	14	94	22.8	3.8	8.8	1,706	266	25.4	64.4	67.2
Jetset	56	13	90	28.1	3.0	7.0	1,779	256	26.8	64.2	58.1
Korando	56	16	95	28.2	2.5	5.8	1,519	299	28.3	64.4	57.9
LG Amigo	57	12	90	22.6	2.3	6.5	1,857	245	27.7	64.0	48.5
LGPN 4915 ⁴	56	15	93	25.8	2.3	3.8	1,987	229	29.4	64.5	53.6
LG Sunrise	58	15	95	30.7	3.0	5.5	1,845	246	24.4	65.0	68.0
Majestic	59	12	95	31.5	2.0	3.5	1,682	271	26.9	63.3	59.8
Navarro	54	16	93	25.2	3.5	5.8	1,543	294	26.9	64.4	57.9
Nette 2010	57	14	93	26.0	2.5	6.5	1,794	254	26.1	65.1	57.6
Salamanca	59	12	94	29.0	2.3	5.0	1,656	275	28.1	65.0	63.5
Spider	58	14	94	26.5	2.8	6.8	1,792	254	27.2	65.3	55.7
SW Midas	58	14	90	23.0	2.8	7.3	2,015	225	25.8	64.5	52.5
Green Cotyledon Type											
AAC Comfort	61	11	96	26.6	2.8	6.8	1,633	278	25.4	64.2	64.1
CDC Greenwater	60	13	96	30.7	3.0	6.0	1,737	261	24.8	65.0	65.3
Empire	58	15	95	35.8	2.3	4.8	1,838	247	25.2	65.5	61.7
Hampton	59	13	94	20.5	8.0	9.0	1,963	231	27.3	63.8	51.4
LG Koda	59	13	94	25.4	3.3	7.5	1,944	234	23.6	65.7	62.7
Shamrock	60	12	94	27.6	2.3	5.8	1,795	253	25.9	64.9	59.9
Viper	57	13	94	24.3	3.0	5.3	1,788	254	28.7	63.9	47.5
Mean	58	14	94	27.2	3.0	6.2	1,803	253	26.2	64.6	61.7
CV %	1.2	5.9	1.0	10.2	27.4	13	3.7	3.5	2.3	0.6	10.2
LSD 0.05	1.0	1.1	1.3	3.9	1.1	1.2	93	13.0	0.8	0.6	8.8
LSD 0.10	0.8	1.0	1.1	3.2	1.0	1.0	78	10.0	0.7	0.5	7.4

Planted: May 3. Harvested: Aug. 19. Previous crop: durum and barley.

¹Height to the top of the canopy at harvest.²Lodging: 0 = none, 9 = lying flat on the ground.³DAP = Days after planting.⁴LG Stunner, variety name pending.

Table 5. 2019 Dry Pea - Organic - Carrington - Authors, S. Zwinger and S. Schaubert.

Variety	Days to Flower	Flower Duration	Days to PM	Canopy Height ¹	1,000 Seed Wt.	Plant Lodge ²	Seed Protein	Test Weight	Seed Yield	
	(DAP) ³	(days)	(DAP) ³	(inch)	(gram)	(0-9)	(%)	(lb/bu)	2019	3-yr. Avg.
------(bu/a)-----										
Yellow Cotyledon Type										
AAC Profit	57	13	87	27	232	3.3	26.2	62.4	57.4	--
Agassiz	53	13	83	28	225	1.0	24.3	63.6	52.4	49.0
DS Admiral	54	11	81	28	216	1.8	23.2	64.0	44.9	43.3
Nette 2010	53	10	81	27	220	0.3	23.1	64.7	45.9	48.4
Protecta	54	11	86	9	239	9.0	27.5	62.9	46.9	--
Spider	55	14	86	24	236	3.0	26.1	64.2	45.7	44.3
Green Cotyledon Type										
Arcadia	54	11	83	23	204	3.8	24.4	63.2	50.8	46.9
Bluemoon	58	7	85	28	223	2.5	24.7	64.3	38.7	--
CDC Striker	56	8	84	28	232	1.8	26.0	64.8	48.7	48.0
Cruiser	54	13	83	24	182	3.8	25.2	63.2	46.5	43.7
Flute	57	13	88	31	210	0.8	25.4	63.7	40.1	45.5
Majoret	55	9	85	26	233	1.3	25.7	64.8	43.7	--
Shamrock	57	10	86	16	246	6.8	24.2	64.2	57.5	--
Viper	53	10	84	29	213	0.8	25.5	62.6	41.5	--
Mean	55	11	84	25	222	2.8	25.1	63.8	47.2	46.1
CV %	1.3	10.2	1.4	16.4	4.0	78	2.6	0.8	10.8	--
LSD 0.05	1.0	1.6	1.7	6.0	12.8	2.7	0.9	0.7	7.1	--
LSD 0.10	0.8	1.3	1.4	5.0	10.7	2.3	0.8	0.6	5.9	--

Planted: May 6. Harvested: Aug. 7. Previous crop: cover crop.

¹Height to the top of the canopy at harvest.²Lodging: 0 = none, 9 = lying flat on the ground.³DAP = Days after planting.**Table 6. 2019 Dry Pea - Irrigated - Williston - Authors, J. Jacobs and T. Tjelde.**

Variety	Days to Flower	Vine Length	Days to PM	Canopy Height ¹	Plant Lodge ²	Seed Protein	Test Weight	Seed Yield		
	(DAP) ³	(in)	(DAP) ³	(inch)	(0-9)	(%)	(lb/bu)	2019	3-yr. Avg.	
------(bu/a)-----										
Yellow Cotyledon Type										
Agassiz	58	31	92	22	5	25.9	61.9	53.4	55.5	
DS Admiral	58	30	91	25	6	24.2	62.2	45.1	--	
Spider	60	35	94	21	6	27.4	62.5	50.8	--	
Green Cotyledon Type										
Arcadia	60	29	90	12	8	24.9	60.6	47.8	--	
CDC Striker	57	29	90	17	6	25.1	61.4	50.5	51.1	
Cruiser	57	29	91	11	8	25.2	61.0	48.2	--	
Mean	58	31	91	18	7	25.5	61.6	49.3	53.3	
CV %	5.4	5.8	2.0	23.1	20	2.1	1.0	13.6	--	
LSD 0.05	4.7	2.7	2.7	6.1	1.9	0.8	1.0	NS	--	
LSD 0.10	NS	2.2	2.3	5.0	1.6	0.7	0.8	NS	--	

Planted: May 3. Harvested: Sept. 4. Previous crop: corn.

¹Height to the top of the canopy at harvest.²Lodging: 0 = none, 9 = lying flat on the ground.³DAP = Days after planting.

Table 7. 2019 Dry Pea - Langdon - Authors, B. Hanson, T. Hakanson and L. Henry.

Variety	Days to	Days to	Canopy	Harvest	1,000	Seed	Test	Seed Yield		
	Flower	PM	Height ¹	Ease ²	Seed Wt.	Protein	Weight	2019	2-yr. Avg.	3-yr. Avg.
	(DAP) ³	(DAP) ³	(inch)	(0-9)	(gram)	(%)	(lb/bu)	------(bu/a)-----		
Yellow Cotyledon Type										
AAC Asher	56	78	19	6	280	25.3	62.3	77.1	--	--
AAC Carver	56	76	24	3	254	24.2	63.1	74.0	84.3	86.4
AAC Chrome	56	80	23	5	262	24.7	62.6	76.8	--	--
AAC Profit	58	77	27	3	231	26.9	63.1	69.5	--	--
AC Earlystar	55	76	19	6	215	23.8	62.6	67.2	79.8	78.1
Agassiz	55	75	20	6	223	26.5	61.8	64.3	78.3	78.9
Astronaut	56	77	15	8	273	27.0	62.4	66.2	--	--
CDC Amarillo	58	78	33	0	236	25.0	62.9	68.1	78.1	81.2
CDC Dakota	59	78	25	3	226	28.4	62.6	63.6	--	--
CDC Inca	57	78	28	1	243	25.5	63.3	70.6	83.6	82.7
CDC Saffron	57	77	24	3	262	26.2	63.1	71.8	79.2	77.8
CDC Spectrum	58	79	26	2	252	26.3	62.7	69.6	--	--
DL Apollo	55	75	27	1	244	26.7	63.3	64.0	--	--
DS Admiral	54	75	20	5	250	25.4	62.3	61.2	72.8	74.8
Durwood	55	77	28	1	254	26.3	62.7	60.6	76.0	--
Hyline	56	76	16	8	257	25.2	62.9	68.7	81.5	--
Jetset	54	75	23	3	283	26.8	62.1	67.2	79.6	77.5
Korando	52	75	16	8	290	28.1	62.2	61.5	--	--
LG Amigo	55	78	24	4	238	26.5	62.4	61.0	--	--
LG Sunrise	52	76	23	4	246	25.5	62.9	63.7	--	--
Majestic	56	79	30	1	276	25.8	62.6	67.4	--	--
Mystique	56	78	20	6	251	26.3	62.3	65.4	80.1	80.6
Nette 2010	53	75	20	4	256	25.2	63.3	64.8	77.5	78.3
Salamanca	55	76	19	5	273	27.8	62.6	61.2	75.7	--
Spider	56	77	19	6	241	26.8	62.4	62.6	75.3	76.7
Green Cotyledon Type										
AAC Comfort	62	81	26	3	281	26.5	62.6	66.7	80.1	78.3
Arcadia	56	76	17	6	210	25.7	62.5	65.4	74.7	76.8
CDC Greenwater	59	80	31	0	256	24.8	63.4	67.9	78.0	81.7
CDC Striker	55	75	16	7	213	25.9	62.5	66.1	77.6	80.2
Cruiser	53	73	15	9	221	26.7	62.1	56.0	66.9	68.1
Hampton	57	78	10	9	222	28.2	61.7	59.3	--	--
Mean	56	77	22	4	249	26.1	62.6	66.1	77.8	78.6
CV %	1.0	1.9	15.3	43	2.3	1.5	0.6	5.8	--	--
LSD 0.05	0.8	2.0	4.7	2.5	11.5	0.6	0.5	5.4	--	--
LSD 0.10	0.7	1.7	3.9	2.1	9.6	0.5	0.4	4.5	--	--

Planted: May 8. Harvested: Aug. 16.

¹Height to the top of the canopy at harvest.²Harvest Ease: 0 = all plants upright (very easy harvest) to 9 = all plants flat (very difficult to direct harvest).³DAP = Days after planting.

Table 8. 2019 Dry Pea - Minot - Authors, H. Worrall, T. Stefaniak, N. Bandillo and S. Forster.

Variety	Days to	Days to	Canopy	Seeds/	1,000	Seed	Test	Seed Yield		
	Flower	PM	Height	Pound	Seed Wt.	Protein	Weight	2019	2-yr. Avg.	3-yr. Avg.
	(DAP) ²	(DAP) ²	(cm)	(seeds)	(gram)	(%)	(lb/bu)	------(bu/a)-----		
Yellow Cotyledon Type										
AAC Asher	51	80	44	1,670	272	25.5	65.3	49.7	52.6	--
AAC Carver	52	81	62	1,946	234	24.0	65.3	46.0	52.7	52.8
AAC Chrome	52	81	49	1,857	244	24.2	66.4	50.9	54.3	--
AAC Profit	53	81	58	1,953	233	25.5	65.9	52.5	49.9	--
AC Earlystar	51	80	65	2,078	219	23.1	65.6	50.5	53.2	54.1
Agassiz	51	80	60	2,013	226	25.5	65.4	48.5	53.1	52.6
Astronaute	51	75	58	1,891	240	25.2	65.4	48.8	--	--
Bridger	50	80	55	1,988	228	24.0	65.9	42.9	50.7	51.7
CDC Amarillo	53	81	70	1,990	228	25.0	65.9	59.1	57.5	58.0
CDC Dakota	56	83	70	2,077	219	27.6	65.8	48.3	--	--
CDC Inca	53	82	71	1,984	229	24.5	66.0	53.7	53.2	53.3
CDC Saffron	52	80	55	1,830	248	25.1	65.6	48.7	50.3	48.7
CDC Spectrum	52	82	62	1,959	232	25.6	65.6	49.2	--	--
DL Apollo	51	79	62	2,069	219	25.1	66.7	51.9	--	--
DS Admiral	51	80	60	1,955	232	24.1	65.1	45.6	49.8	47.9
Durwood	51	81	67	1,950	233	24.7	65.6	41.6	47.0	--
Hyline	52	81	59	1,990	228	23.7	65.8	46.6	49.1	48.1
Jetset	51	79	59	1,783	263	25.6	64.7	47.8	49.3	50.3
Korando	49	78	48	1,844	248	25.6	65.0	43.4	--	--
LG Amigo	52	83	63	1,936	235	24.9	65.0	38.2	43.1	--
LG Sunrise	48	79	56	1,913	237	23.5	65.2	42.3	50.9	--
Majestic	53	79	63	2,148	212	24.8	64.2	42.6	50.8	51.3
Navarro	47	77	40	1,884	244	23.6	64.4	36.9	47.1	50.0
Nette 2010	49	78	53	1,925	237	22.1	65.8	34.6	46.6	--
Salamanca	51	79	58	1,925	236	24.9	65.6	43.2	50.5	53.6
Spider	52	81	70	1,936	236	26.1	66.0	46.3	51.3	46.0
Green Cotyledon Type										
AAC Comfort	56	86	60	1,813	252	25.7	64.5	49.2	50.3	54.5
Arcadia	50	79	49	2,144	212	25.5	64.9	47.9	50.2	52.2
Bluemoon	52	79	52	2,077	222	24.1	64.6	33.1	41.9	46.0
CDC Greenwater	52	83	72	1,913	237	24.5	65.9	48.3	53.0	56.5
CDC Striker	51	79	44	2,036	223	24.2	65.2	47.3	47.3	45.1
Cruiser	51	79	53	2,235	203	25.4	64.4	40.6	43.6	44.9
Empire	52	81	80	2,018	225	24.5	66.9	45.8	--	--
Hampton	52	81	49	2,027	224	27.5	65.0	46.1	47.9	--
Shamrock	53	82	65	1,817	252	25.0	65.5	50.8	51.3	49.1
Viper	49	78	52	1,913	237	25.9	64.6	40.4	48.7	--
Mean	51	80	59	1,958	233	25	65.4	46.1	49.9	50.8
CV %	2.2	2.7	13.1	6.9	7.3	3.9	0.9	15.0	--	--
LSD 0.05	1.3	2.5	9.0	158	20.0	1.1	0.7	8.1	--	--
LSD 0.10	1.0	1.8	6.8	113	16.7	0.9	0.5	6.3	--	--

Planted: April 30. Harvested: Aug. 9. Previous crop: oat.

¹Lodging: 0 = none, 9 = lying flat on the ground.²DAP = Days after planting.

Table 9. 2019 Dry Pea - Recrop - Dickinson - Author, G. Martin.

Variety	Days to Flower (DAP) ²	Days to PM (DAP) ²	Canopy Height ¹ (inch)	Seeds/ Pound (seeds)	1,000 Seed Wt. (gram)	Test Weight (lb/bu)	Protein (%)	Seed Yield	
								2019 ----- (bu/a)	3-yr.Avg. ----- (bu/a)
Yellow Cotyledon Type									
AAC Carver	57	88	29	1,589	287	64.5	24.5	47.0	--
AAC Chrome	57	92	24	1,735	262	65.0	24.2	50.1	--
AAC Profit	58	89	28	1,773	256	65.4	25.9	55.7	--
AC Earlystar	57	89	25	1,859	245	64.4	24.9	40.9	--
Agassiz	57	87	26	1,758	259	64.3	25.0	52.2	32.3
Bridger	56	89	23	1,699	267	65.1	25.9	45.6	--
CDC Amarillo	58	91	27	1,999	227	65.0	24.5	43.2	--
CDC Inca	58	88	28	1,882	242	65.8	25.1	54.4	--
CDC Saffron	58	88	24	1,707	266	64.9	25.1	47.5	--
CDC Spectrum	58	90	28	1,787	24	64.9	26.4	45.8	--
DS Admiral	57	89	26	1,789	257	64.9	25.2	40.7	29.9
Hyline	57	88	25	1,645	276	65.1	23.9	48.7	--
Jetset	57	88	22	1,711	266	64.9	26.2	43.6	--
Salamanca	57	87	26	1,545	294	65.4	26.8	45.5	--
Spider	57	90	24	1,882	242	64.6	26.1	43.4	30.2
Green Cotyledon Type									
AAC Comfort	59	93	25	1,576	290	64.5	25.2	46.5	--
Arcadia	57	87	24	1,868	244	64.1	25.2	44.3	32.6
CDC Greenwater	58	92	25	1,903	239	64.8	24.0	41.1	--
CDC Striker	57	88	22	1,754	259	65.0	25.4	46.2	32.2
Cruiser	57	87	24	1,867	244	63.9	25.8	35.6	26.4
Hampton	57	90	24	1,841	247	63.8	27.1	46.5	--
Mean	57	89	25	1,770	247	64.8	25.4	45.9	30.6
CV %	1.0	1.4	10.7	6.5	6.8	0.6	2.3	11.2	--
LSD 0.05	1.0	2.0	4.0	165	25.0	0.5	0.8	7.1	--
LSD 0.10	1.0	2.0	3.0	138	21.0	0.4	0.7	6.0	--

Planted: May 3. Harvested: Aug. 7. Previous crop: cover crop.

¹Height to the top of the canopy at harvest.²DAP = Days after planting.

Table 10. 2019 Dry Pea - Divide County (Williston REC) - Authors, G. Pradhan, M. Miller and J. Bergman.

Variety	Seed	1,000	Test	Seed Yield	
	Protein	Seed Wt.	Weight	2019	3-yr. Avg.
	(%)	(gram)	(lb/bu)	------(bu/a)-----	
Yellow Cotyledon Type					
Agassiz	26.3	221	62.4	61.8	44.6
CDC Saffron	26.2	233	63.3	61.2	--
CDC Treasure	24.0	205	64.4	51.7	--
Nette 2010	24.0	227	63.9	53.1	36.2
SW Midas	24.7	201	63.3	51.2	--
Green Cotyledon Type					
Aragorn	25.6	198	62.4	46.1	--
Arcadia	23.7	206	62.7	52.2	41.2
CDC Striker	26.6	232	63.7	47.4	--
Cruiser	25.1	185	63.0	45.2	--
Hampton	26.9	217	61.8	49.3	--
Majoret	26.7	227	63.4	56.9	--
Mean	25.4	214	63.1	52.4	40.7
CV %	1.9	3.7	0.7	11.7	--
LSD 0.05	0.8	13.4	0.8	10.4	--
LSD 0.10	0.7	11.1	0.6	8.6	--

Planted: May 15. Harvested: Aug. 21. Previous crop: spring wheat.

Table 11. 2019 Dry Pea - McKenzie County (Williston REC) - Authors, G. Pradhan, M. Miller and J. Bergman.

Variety	Seed	1,000	Test	Seed Yield
	Protein	Seed Wt.	Weight	2019
	(%)	(gram)	(lb/bu)	(bu/a)
Yellow Cotyledon Type				
Agassiz	25.8	230	61.3	54.7
CDC Saffron	25.6	236	62.7	53.6
CDC Treasure	24.5	206	63.2	47.5
Nette 2010	24.2	223	63.3	46.5
SW Midas	24.8	201	61.7	43.0
Green Cotyledon Type				
Aragorn	23.6	192	61.4	36.6
Arcadia	23.4	205	61.7	50.1
CDC Striker	27.6	226	62.6	33.2
Cruiser	24.8	180	61.7	37.7
Hampton	28.3	220	61.6	43.2
Majoret	26.6	232	62.6	36.8
Mean	25.4	214	62.2	43.9
CV %	3.8	2.3	0.7	8.7
LSD 0.05	1.6	8.5	0.8	6.5
LSD 0.10	1.4	7.0	0.7	5.4

Planted: May 13. Harvested: Sept. 5. Previous crop: lentil.

Table 12. 2019 Dry Pea - Williston - Authors, G. Pradhan, M. Miller and J. Bergman.

Variety	Days to Flower (DAP) ²	Days to PM (DAP)	Canopy Height ¹ (inch)	1,000 Seed Wt. (gram)	Seed Protein (%)	Test Weight (lb/bu)	Seed Yield	
							2019	3-yr. Avg.
							----- (bu/a) -----	
Yellow Cotyledon Type								
AAC Carver	57	93	24	260	20.9	65.1	67.6	39.8
AAC Chrome	59	95	23	274	21.5	65.8	75.0	--
AAC Profit	61	95	26	257	22.9	65.1	66.1	--
AC Earlystar	57	93	24	230	20.2	65.3	64.6	38.9
Agassiz	57	93	23	267	21.8	64.9	62.3	38.9
Bridger	55	94	21	244	23.4	65.7	64.2	37.8
CDC Amarillo	60	95	26	249	22.0	65.3	59.3	33.0
CDC Inca	60	94	27	240	22.5	65.3	65.9	36.9
CDC Saffron	59	94	22	266	21.9	65.5	60.7	36.5
CDC Spectrum	59	96	25	264	23.7	64.7	63.9	--
CDC Treasure	56	93	26	224	21.1	65.9	61.9	--
DL Apollo	58	92	20	234	22.8	65.6	60.0	--
DS Admiral	58	94	22	247	21.9	65.3	54.6	34.8
Durwood	57	96	28	259	22.9	65.2	61.5	36.2
Hyline	58	94	23	267	22.7	65.4	62.5	36.8
Jetset	58	95	23	261	24.5	65.4	62.4	37.2
Korando	54	95	23	287	24.7	65.4	57.1	35.9
LG Amigo	57	94	21	240	24.5	64.7	54.3	34.1
LGPN 4915 ³	55	94	23	235.4	26.7	65.2	56.6	--
LG Sunrise	55	94	28	247	20.3	66.3	57.5	--
Navarro	53	93	21	270	22.6	65.3	55.8	37.0
Nette 2010	54	93	24	240	20.2	66.3	57.4	38.0
Salamanca	57	92	25	266	23.2	64.8	58.0	36.4
Spider	59	96	26	253	23.0	65.2	60.6	34.4
SW Midas	59	92	21	220	20.5	65.1	53.4	34.6
Green Cotyledon Type								
AAC Comfort	62	96	23	271	23.6	65.2	66.5	34.1
Arcadia	57	95	21	220	20.6	65.3	61.4	38.6
Banner	54	91	20	210	17.6	65.5	54.6	--
CDC Greenwater	60	96	27	252	21.7	65.3	56.8	33.2
CDC Striker	57	94	19	227	20.3	65.2	64.3	38.2
Cruiser	56	92	21	210	21.6	64.9	48.2	30.3
Empire	58	95	30	234	22.4	66.0	55.9	--
Hampton	60	94	20	244	25.5	64.9	55.8	--
Shamrock	60	93	22	258	22.3	65.4	62.7	32.6
Viper	56	93	23	236	22.5	64.5	53.5	33.0
Mean	57	94	24	248	22.3	65.3	60.1	35.9
CV %	1.6	1.5	12	4.0	3.6	0.6	8.3	--
LSD 0.05	1.3	1.9	3.8	13.9	1.1	0.6	6.9	--
LSD 0.10	1.1	1.6	3.2	11.7	0.9	0.5	5.8	--

Planted: April 26. Harvested: Aug. 2. Previous crop: cover crop.

¹Height to the top of the canopy at harvest.²DAP = Days after planting.³LG Stunner, variety name pending.

Table 13. 2019 Dry Pea - Hettinger - Authors, J. Rickertsen and M. Wells.

Variety	Days to Flower	Flower Duration	Days to PM	Canopy Height ¹	Lodge	Seed Protein	1,000 Seed Wt.	Seeds/ Pound	Test Weight	Seed Yield	
	(DAP) ²	(days)	(DAP) ²	(inch)	(0-9)	(%)	(gram)	(seeds)	(lb/bu)	2019	3-yr. Avg.
Yellow Cotyledon Type											
AAC Asher	52	14	77	28	8	25.8	245	1,853	57.7	46.0	--
AAC Carver	52	14	77	34	6	24.5	223	2,034	58.4	50.4	--
AAC Chrome	52	15	78	29	7	25.1	229	1,979	58.8	48.5	--
AAC Profit	56	12	79	32	7	27.4	218	2,094	58.9	50.2	--
AC Earlystar	51	15	77	32	6	25.0	198	2,303	57.7	44.8	--
Agassiz	51	16	78	31	7	27.4	220	2,059	57.8	48.4	28.6
Bridger	50	16	77	31	7	26.3	213	2,133	58.7	46.5	24.0
CDC Amarillo	56	11	78	31	6	26.1	216	2,099	58.1	44.1	--
CDC Inca	54	13	78	33	6	26.5	206	2,209	58.5	50.9	--
CDC Saffron	54	12	77	30	8	26.4	232	1,962	58.7	46.9	--
CDC Spectrum	55	13	79	32	7	27.4	208	2,186	57.9	46.6	--
DL Apollo	52	14	77	33	7	26.6	207	2,196	59.2	47.8	--
DS Admiral	51	15	77	33	7	25.7	222	2,045	58.2	44.0	25.5
Durwood	52	15	78	34	5	26.6	226	2,011	58.3	45.3	26.8
Hyline	52	15	77	30	7	26.1	228	1,991	58.7	45.4	24.2
Jetset	51	15	78	31	7	26.0	226	2,008	58.0	46.0	--
Korando	50	17	78	31	7	28.0	246	1,845	57.2	41.7	--
LG Amigo	51	15	77	30	7	27.2	211	2,161	58.3	41.5	24.4
LGPN4915 ³	50	16	77	31	6	29.4	200	2,275	58.1	44.6	--
LG Sunrise	50	17	78	32	6	25.9	217	2,097	58.3	45.8	--
Nette 2010	51	15	77	30	7	26.0	205	2,220	59.1	45.5	26.0
Salamanca	53	13	77	32	7	27.2	246	1,847	58.3	49.3	28.0
Spider	54	14	78	33	8	27.1	234	1,942	59.0	45.2	27.5
SW Midas	52	14	77	28	7	25.5	189	2,400	58.7	40.5	22.4
Green Cotyledon Type											
AAC Comfort	58	9	78	31	8	26.9	230	1,975	57.4	40.1	--
Arcadia	51	15	77	26	8	25.9	191	2,377	58.4	40.5	19.5
Banner	47	19	77	30	7	24.2	190	2,385	57.3	41.4	--
CDC Greenwater	54	13	78	31	6	25.2	223	2,042	58.3	44.2	--
CDC Striker	51	15	77	29	9	26.0	192	2,370	58.3	43.4	21.9
Cruiser	51	15	77	31	7	26.4	190	2,396	58.7	40.6	22.4
Empire	54	12	78	34	6	27.6	207	2,195	58.7	40.4	--
Ginny	51	15	77	28	8	26.1	185	2,456	58.2	32.5	18.6
Hampton	52	14	77	27	9	29.2	200	2,266	56.8	32.3	--
LG Koda	54	13	77	31	7	25.5	206	2,200	59.0	39.9	24.3
Shamrock	54	12	77	31	7	25.7	218	2,080	57.3	41.0	23.6
Viper	50	16	77	32	7	27.8	215	2,112	57.3	38.6	21.5
Mean	52	14	77	31	7	26.4	214	2,133	58.2	43.9	24.1
CV %	1.4	5.5	0.6	6.6	9.3	2.2	4.0	4.0	1.0	7.9	--
LSD 0.05	1.0	1.1	0.6	2.9	0.9	0.8	12.0	117	0.8	4.9	--
LSD 0.10	0.8	0.9	0.5	2.4	0.8	0.7	10.0	98	0.7	4.1	--

Planted: May 13. Harvested: Aug. 19. Previous crop: corn.

¹Height to the top of the canopy at harvest.²Days after planting.³LG Stunner, variety name pending.

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