

# North Dakota Dry Pea Performance Testing 2011

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### Introduction

Field pea fits well into small-grain rotations. The green- and yellow-seeded varieties are used for human consumption as dry split field peas. Field peas also are used as protein concentrates for livestock and pigeon feeds. In North Dakota, pea yields are similar to hard red spring wheat yields. Field pea stems grow to a length of 2 to 4 feet, and the plant reaches maximum height at the early pod fill stage. A cool growing season is necessary for optimum pea yields (a mean temperature of 55 to 65 degrees). Hot weather during flowering may result in a reduced seed set.

In North Dakota, field pea takes about 60 days from seeding until flowering and 90 to 100 days to maturity. The moisture requirement for field pea is similar to that for cereal grains. Field peas can be grown on a wide range of soil types, but drainage must be good because field peas do not tolerate saturated or soggy conditions. Field pea can be grown in a no-tillage or conventional-tillage cropping system. Field pea grows best when seeded into a weed-free seedbed and fertile soils. Land preparation for seeding is similar to that of 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 1 to 3 inches deep in rows 6 inches apart as early in the spring as feasible. 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. 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 degrees, 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 leguminosarium*, 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 no peas were grown there recently, inoculating the seed with the proper Rhizobium prior to planting may increase nodulation.

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

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. For more production information, see publication A-1166, "Field Pea Production," which also is available on the Web. Dry peas have become a significant crop in North Dakota during the past decade. However, due to the challenging weather conditions in 2011 the harvested acres dropped substantially. Acreage for the past 13 years is shown in Table 1.

**Table 1. North Dakota Dry Pea Harvested Acreage, 1999 to 2011.**

Year	Acreage	Yield in Lb. Per Acre
1999	58,000	1,900
2000	62,000	2,170
2001	86,000	2,020
2002	138,000	1,600
2003	155,000	1,770
2004	296,000	2,340
2005	515,000	1,900
2006	590,000	1,580
2007	500,000	2,170
2008	500,000	1,580
2009	480,000	2,400
2010	400,000	2,030
2011	80,000	1,450

Source: North Dakota Agricultural Statistics Service – USDA.

### 2011 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/](http://www.ag.ndsu.edu/varietytrials/). The 2011 crop season was challenging for producers as well as researchers. There was a late start of the season and excess moisture throughout the late spring and early summer. Weather data is provided in Table 2. Due to high variability in the data the McLean County trial was not presented and the trial at Fargo was not harvested due to excess water.

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 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 percent probability, 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 abbreviation PM stands for physiologically mature. 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. Only compare values within the table and look for trends for the desired trait among different experimental sites and years. 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 summarizes several years and locations. Table 3 provides information on a core group of varieties which were included in all 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.

**Table 2. April-September 2011 Average Temperature and Precipitation Rankings for Select North Dakota Locations.**

City	Temperature Ranking	Precipitation Ranking
Bowman	25th Warmest	6th Wettest
Bismarck	40th Coolest	12th Wettest
Carrington	22nd Warmest	4th Wettest
Fargo	29th Warmest	33rd Wettest
Minot Exp. Station	21st Warmest	3rd Wettest
Williston Exp. Station	53rd Coolest	11th Wettest
North Dakota Average	<b>57th Coolest (117 years)</b>	<b>12th Wettest (117 years)</b>

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

**Table 3. 2011 Dry Pea Description of Selected Yellow and Green Cotyledon Varieties.**

Variety	Vine Length	Harvest Ease	Powdery Mildew Tolerance		Seed Size	2010 Avg. Yield	2011 Avg. Yield
			Maturity	Maturity		14-locations <sup>1</sup>	11-locations <sup>2</sup>
						(bu/a)	(bu/a)
<b>Yellow Cotyledon Type</b>							
Agassiz	Tall	Good	Good	Medium	Medium	51.3	42.5
CDC Golden	Medium	Good	Good	Medium	Medium	50.0	39.3
DS Admiral	Medium	Good	Good	Early/Med.	Medium	45.7	42.9
<b>Green Cotyledon Type</b>							
CDC Striker	Medium	Good	Poor	Medium	Medium	44.2	38.3
Cruiser	Medium	Fair	Poor	Medium	Small	42.5	32.6
Majoret	Medium	Fair	Poor	Medium	Medium	45.3	40.2
Mean						46.5	39.3
CV %						--	9.7
LSD 0.05						--	3.3

<sup>1</sup>These varieties appeared in all the locations reported in the 2010 publication.

<sup>2</sup>These varieties appeared in all the locations reported in this publication, except for Cathay organic and Nesson Valley irrigated.

**Table 4. 2011 Dry Pea - Carrington - Authors, B. Schatz and B. Smith (Page 1 of 2).**

Variety	Days to Flower	Flower Duration	Days to PM	Vine Length <sup>1</sup>	Canopy Height <sup>2</sup>	Height Index <sup>3</sup>	Harvest Ease <sup>4</sup>	Seed Protein	Seeds/Pound	1,000		Seed Yield	
										Seed Weight	Test Wt.	2011	3-yr. Avg.
	(DAP) <sup>5</sup>	(days)	(DAP) <sup>5</sup>	(inch)	(inch)	(%)	(0-9)	(%)	(seeds)	(gram)	(lb/bu)	---(bu/a)---	
<b>Yellow Cotyledon Type</b>													
Agassiz	56	18	86	36	10	29	7	25.7	2,656	172	63.0	42.6	56.6
Audit	56	19	87	39	14	35	6	25.8	2,346	194	63.7	38.7	--
Avantgarde	54	17	84	35	11	32	7	25.1	2,357	193	63.6	38.7	--
Bridger	55	16	84	38	11	29	5	24.6	2,627	174	63.0	47.2	--
CDC Centennial	56	16	84	30	4	13	9	24.5	2,448	185	63.4	35.4	56.6
CDC Golden	57	18	86	35	10	28	7	26.2	2,990	153	63.8	28.2	52.9
CDC Meadow	57	17	85	35	8	23	7	25.0	3,051	149	63.9	37.7	53.2
CDC Treasure	56	16	84	35	10	28	6	24.2	2,618	174	64.3	46.0	--
DS Admiral	57	15	83	35	9	27	7	24.1	2,513	181	64.2	44.1	54.4
Gunner	56	16	85	35	10	28	7	25.3	2,862	160	63.0	37.0	--
Korando	54	19	86	35	11	30	6	25.8	2,233	203	62.5	40.0	54.0
LN 4217	58	15	86	35	11	31	6	24.6	3,342	137	63.2	29.7	--
LN4206	55	16	85	38	12	32	6	24.4	2,392	190	62.7	45.0	--
Midas	58	15	84	35	8	23	8	24.4	2,878	158	63.2	37.8	53.1
PST 1	56	16	87	35	10	30	8	25.5	2,315	196	63.6	37.4	--
PST 3	57	16	88	41	12	29	7	25.8	2,298	199	62.6	35.7	--
PST 7	58	16	87	39	11	30	7	24.9	2,597	176	63.8	41.3	--
PUSA 09003	57	18	88	37	13	35	5	26.1	2,614	174	62.8	32.0	51.2
PUSA 10002	54	18	86	39	11	29	6	24.8	2,587	176	63.8	49.1	--
PUSA 10003	56	17	87	40	12	31	4	24.7	2,427	188	63.6	48.3	--
PUSA 10011	57	15	88	35	9	27	6	24.8	2,426	193	64.0	42.4	--
PUSA 10012	57	16	85	37	11	29	7	24.7	2,814	161	62.7	38.5	--
PUSA 11001	52	21	88	36	10	28	6	27.4	2,872	159	62.4	37.3	--
PUSA 11001-2	52	19	84	33	9	26	7	25.3	2,278	199	62.7	45.9	--
PUSA 11002	54	15	83	34	9	27	7	27.4	3,073	149	62.9	39.0	--
PUSA 11003	55	16	86	36	11	31	6	26.0	2,609	174	62.8	38.0	--
Spider	57	17	86	39	8	21	7	25.8	2,496	182	63.6	43.6	58.0
Thunderbird	61	14	88	35	9	27	6	25.4	2,925	156	63.3	33.6	49.8
Torch	58	13	87	34	10	30	6	25.3	2,386	190	63.6	40.5	--
Trapeze	56	17	86	32	10	32	8	25.5	2,375	192	62.5	37.7	55.3
Vegas	56	16	87	36	12	33	6	25.1	2,374	192	63.4	41.8	--
<b>Marrowfat<sup>6</sup></b>													
PUSA 11004	55	16	85	35	9	26	7	24.0	1,803	252	62.7	24.4	--
PUSA 11005	55	18	86	36	9	25	7	24.2	2,003	228	62.4	32.9	--
<b>Green Cotyledon Type</b>													
Aragorn	55	18	82	36	8	22	8	25.2	2,951	154	61.4	31.7	43.7
Blue Moon	57	15	86	32	10	31	7	25.0	2,487	184	63.9	45.4	--
CDC Patrick	58	17	85	33	9	28	7	25.2	3,628	126	63.2	30.1	49.8
CDC Striker	57	13	87	33	9	26	7	25.2	2,526	180	63.7	40.2	51.2
Cruiser	56	17	84	32	9	28	8	25.0	3,038	150	62.5	31.6	49.1
Daytona	57	13	85	32	8	24	8	25.2	2,308	199	63.5	45.6	--
Emerald	55	14	84	34	7	22	7	25.3	2,530	180	62.7	45.1	54.8
K2	54	17	83	80	19	24	7	23.8	2,579	176	63.8	38.4	49.7
LN 1103	57	14	86	33	12	35	6	24.2	2,497	184	63.9	34.6	--
Mean	56	16	86	36	10	28	7	25.1	2,591	179	63.2	38.8	53.0
CV %	1	7	1	7	17	17	10	1.8	6.7	6.8	1.2	12.7	--
LSD 0.05	1	2	2	8	6	7	1	0.6	242	17	1.0	6.8	--

**Table 4. 2011 Dry Pea - Carrington - Authors, B. Schatz and B. Smith (Page 2 of 2).**

Variety	Days to Flower Flower (DAP) <sup>5</sup>	Flower Duration (days)	Days to PM (DAP) <sup>5</sup>	Vine Length <sup>1</sup> (inch)	Canopy Height <sup>2</sup> (inch)	Height Index <sup>3</sup> (%)	Harvest Ease <sup>4</sup> (0-9)	Seed Protein (%)	Seeds/ Pound (seeds)	1,000 Seed Weight (gram)	Test Wt. (lb/bu)	Seed Yield	
												2011	3-yr. Avg.
<b>Green Cotyledon Type</b>													
LN 1116	56	16	87	35	9	26	7	25.9	2,388	190	62.2	38.2	--
LN1115	57	16	88	34	9	27	7	25.2	2,416	188	63.3	38.7	--
Majoret	56	15	86	34	9	28	8	25.2	2,471	184	63.4	42.9	53.9
Matrix	58	14	87	35	9	26	6	23.8	2,504	184	63.6	44.9	54.3
PST 5	55	19	87	37	11	31	6	24.1	2,515	181	64.0	41.0	--
PST 9	57	15	85	37	8	23	7	25.4	2,374	192	63.8	41.5	--
SW 741	58	17	89	34	9	26	7	26.4	2,985	153	61.9	25.6	--
SW Arcadia	56	15	84	32	6	18	8	24.4	2,819	161	62.2	40.0	56.7
Shamrock	59	15	88	36	11	29	6	25.0	2,537	179	62.8	36.5	55.7
Mean	56	16	86	36	10	28	7	25.1	2,591	179	63.2	38.8	53.0
CV %	1	7	1	7	17	17	10	1.8	6.7	6.8	1.2	12.7	--
LSD 0.05	1	2	2	8	6	7	1	0.6	242	17	1.0	6.8	--

Planted: May 5. Harvested: Aug. 5. Previous crop: spring wheat.

<sup>1</sup>Plant height at end of flowering.

<sup>2</sup>Height to the top of the canopy at harvest.

<sup>3</sup>Height Index: Calculated as the ratio of canopy height/plant height.

<sup>4</sup>Harvest Ease: 0 = all plants upright (very easy harvest) to 9 = all plants flat (very difficult to direct harvest).

<sup>5</sup>DAP = Days after planting.

<sup>6</sup>Marrowfat is a very large, irregularly-shaped green cotyledon pea used in snack foods and specialty markets.

**Table 5. 2011 Dry Pea - Irrigated - Carrington - Authors, B. Schatz and T. Indergaard.**

Variety	Days to Flower (DAP)	Days to PM (DAP)	Lodge		Seed Protein (%)	Seeds/ Pound (seeds)	1,000 Seed Weight (gram)	Test Wt. (lb/bu)	Seed Yield	
			after hail <sup>1</sup> (0-9)	Harvest Ease (0-9)					2011 <sup>2</sup>	3-yr. Avg.
<b>Yellow Cotyledon Type</b>										
Agassiz	48	82	3	6	27.1	2,654	172	62.0	31.8	--
Bridger	47	80	1	4	25.8	2,436	187	62.1	41.4	--
CDC Golden	48	81	4	6	26.6	2,842	161	62.5	30.8	62.4
DS Admiral	48	78	4	6	25.3	2,443	186	62.4	33.6	66.1
Gunner	48	83	4	5	26.4	2,605	176	62.3	27.0	--
Midas	49	81	5	7	26.1	2,819	163	62.5	32.5	64.5
PUSA 09003	28	84	2	4	26.9	2,549	179	62.4	20.7	--
Spider	49	82	4	6	26.6	2,514	181	62.3	38.5	73.2
Torch	51	83	3	5	26.3	2,305	198	62.7	35.3	--
Trapeze	48	82	5	7	26.4	2,237	203	61.9	40.8	--
Vegas	49	83	3	5	26.3	2,385	191	62.3	35.6	--
<b>Green Cotyledon Type</b>										
Arcadia	48	80	6	8	25.5	2,836	160	61.1	30.3	66.9
Blumoon	49	82	4	6	26.3	2,410	189	62.1	32.6	--
CDC Striker	49	82	5	7	26.6	2,421	188	62.7	34.2	61.7
Cruiser	47	81	5	7	26.5	2,906	157	61.1	23.9	55.6
Daytona	50	81	6	6	25.5	2,324	196	61.9	37.3	--
K2	45	81	5	6	25.2	2,602	175	61.8	39.7	66.8
Majoret	49	81	5	7	26.6	2,586	177	62.4	27.2	60.9
Shamrock	51	84	2	5	25.4	2,465	184	62.1	21.1	--
SW 741	50	--	3	5	27.8	2,890	158	62.4	20.1	--
Mean	47	81	4	6	26.3	2,561	179	62.2	31.7	64.2
CV %	25	1	25	13	2.1	5	5	0.7	15.9	--
LSD 0.05	NS	1	1	1	0.6	158	11	0.5	5.8	--

Planted: May 18. Harvested: Aug. 15. Previous crop: spring wheat.

<sup>1</sup>The plant lodging score was recorded four days after a hail storm at which time pea cultivars were all still flowering.

<sup>2</sup>Yield results in this trial do not reflect the potential irrigated pea yield due to a hail storm at flowering.

**Table 6. 2011 Dry Pea - Dazey (Carrington REC) - Authors, B. Schatz and T. Indergaard.**

Variety	Days to Flower	Plant Height <sup>1</sup>	Canopy Height <sup>2</sup>	Harvest Ease <sup>3</sup>	Seed Protein	Seeds/Pound	Seed Weight	Test Weight	Seed Yield	
									2011	3-yr. Avg.
	(DAP) <sup>4</sup>	(inch)	(inch)	(0-9)	(%)	(seeds)	(gram)	(lb/bu)	-----(bu/a)-----	
<b>Yellow Cotyledon Type</b>										
Agassiz	47	38	10	5	26.7	2,622	173	62.6	40.5	--
Bridger	47	37	12	4	26.1	2,543	181	63.0	48.0	--
CDC Golden	48	33	8	7	26.6	2,734	167	63.3	38.8	50.9
DS Admiral	48	35	9	6	25.4	2,281	199	62.5	47.0	49.3
Gunner	50	38	7	6	25.6	2,724	167	62.8	37.2	--
Midas	49	32	4	8	25.9	2,958	154	62.7	37.6	54.1
Spider	49	35	4	8	26.0	2,520	181	63.5	49.8	56.5
Torch	50	34	6	7	26.0	2,547	178	63.0	41.8	--
Trapeze	47	33	6	6	26.3	2,418	188	62.6	42.0	--
Vegas	48	40	13	6	26.2	2,310	198	62.9	45.2	--
<b>Green Cotyledon Type</b>										
Arcadia	48	31	3	9	25.2	2,943	155	61.5	39.4	54.7
Bluemoon	51	35	9	6	25.6	2,482	183	62.8	49.3	--
CDC Striker	49	32	7	7	26.8	2,511	181	63.1	38.9	45.5
Cruiser	46	36	7	6	26.4	3,124	146	62.2	34.5	40.8
Daytona	51	34	6	7	25.3	2,260	201	62.6	52.3	--
K2	46	32	7	7	25.3	2,559	178	62.2	41.0	50.0
Majoret	48	31	8	7	26.1	2,380	191	63.6	43.5	49.2
Shamrock	51	36	7	7	25.8	2,678	170	61.8	30.9	--
Mean	48	34	7	6	26.0	2,589	177	62.7	42.1	50.1
CV %	2	7	30	13	2.0	6.4	6.6	0.8	15.1	--
LSD 0.05	1	3	3	1	0.7	235	17	0.7	8.7	--

Planted: May 19. Harvested: Aug. 15. Previous crop: soybean.

<sup>1</sup>Plant height at end of flowering.<sup>2</sup>Height to the top of the canopy at harvest.<sup>3</sup>Harvest Ease: 0 = all plants upright (very easy harvest) to 9 = all plants flat (very difficult to harvest direct).<sup>4</sup>DAP = Days after planting.**Table 7. 2011 Dry Pea - Organic - Carrington - Authors, S. Zwinger and S. Schaubert.**

Variety	Days to Flower	Flower Duration	Days to PM	Seeds/Pound	Seed Protein	Test Weight	Seed Yield	
							2011	3-yr. Avg.
	(DAP) <sup>3</sup>	(days)	(DAP) <sup>3</sup>	(seeds)	(%)	(lb/bu)	-----(bu/a)-----	
<b>Yellow Cotyledon Type</b>								
Agassiz	57	20	89	--	--	62.2	41.7	--
CDC Golden	57	18	88	3,194	27.0	63.1	32.3	58.5
DS Admiral	57	14	84	2,676	24.5	63.2	41.2	53.5
Eclipse	58	19	91	2,548	26.5	63.3	29.5	--
Spider	58	18	89	2,521	26.3	63.2	43.6	--
<b>Green Cotyledon Type</b>								
CDC Striker	59	11	87	2,715	25.6	63.3	39.3	56.0
Cooper	61	14	93	2,424	25.7	62.6	30.1	--
Cruiser	57	16	87	3,285	26.5	61.8	29.6	52.2
Majoret	58	12	87	2,751	25.5	62.8	38.8	55.6
Mean	58	16	88	2,764	26.0	62.8	36.2	55.2
CV %	5	1	1	5	1.9	0.6	13.8	--
LSD 0.05	1	2	2	200	0.7	0.6	6.6	--

Planted: May 4. Harvested: Aug. 5. Previous crop: emmer.

<sup>1</sup>Plant height at end of flowering.<sup>2</sup>Lodging: 0 = none, 9 = lying flat on the ground.<sup>3</sup>DAP = Days after planting.

**Table 8. 2011 Dry Pea - Direct Seeded - Wishek (Carrington REC) - Authors, B. Schatz and T. Indergaard.**

Variety	Days to Flower (DAP) <sup>4</sup>	Plant Height <sup>1</sup> (inch)	Harvest Lodging (0-9)	Harvest Ease <sup>3</sup> (0-9)	Seed Protein (%)	Seeds/ Pound (seeds)	1,000 Seed Weight (gram)	Test Weight (lb/bu)	Seed Yield	
									2011	3-yr. Avg.
<b>Yellow Cotyledon Type</b>										
Agassiz	46	25	6	4	27.4	2,285	199	62.7	32.5	46.6
Bridger	46	22	6	5	27.5	2,407	189	62.3	29.2	--
CDC Golden	47	20	7	6	28.1	2,456	185	62.7	28.9	44.7
DS Admiral	46	30	5	4	26.9	2,064	220	62.4	23.4	40.8
Gunner	46	23	6	5	27.5	2,353	194	62.9	26.7	--
Midas	48	18	7	6	27.4	2,580	176	62.5	29.8	45.9
Spider	48	18	6	5	27.9	2,193	207	62.1	32.5	47.0
Torch	49	24	5	5	27.2	2,119	215	63.0	29.4	--
Trapeze	46	17	8	6	27.9	2,048	222	61.9	27.7	--
Vegas	47	24	6	4	27.4	2,288	199	62.6	26.9	--
<b>Green Cotyledon Type</b>										
Arcadia	46	10	9	8	27.6	2,778	164	61.8	28.4	--
Bluemoon	47	15	7	6	27.0	2,327	196	63.0	28.3	--
CDC Striker	48	21	6	5	28.6	2,327	195	63.5	25.6	39.8
Cruiser	46	19	7	6	27.7	2,613	174	61.5	27.4	38.2
Daytona	48	22	7	5	26.7	2,061	221	63.0	26.6	--
K2	45	15	7	6	26.8	2,325	195	62.6	27.4	39.5
Majoret	47	23	6	4	26.7	2,191	207	63.4	32.0	38.3
Shamrock	49	17	7	6	26.3	2,361	194	63.0	24.7	--
Mean	47	20	6	5	27.4	2,321	197	62.6	28.2	42.3
CV %	1	30	14	16	2.2	4.7	4.7	0.8	16.1	--
LSD 0.05	1	8	1	1	0.8	157	13	0.7	6.2	--

Planted: May 26. Harvested: Aug. 17 . Previous crop: oats.

<sup>1</sup>Plant height at end of flowering.<sup>2</sup>Height to the top of the canopy at harvest.<sup>3</sup>Harvest Ease: 0 = all plants upright (very easy harvest) to 9 = all plants flat (very difficult to harvest direct).<sup>4</sup>DAP = Days after planting.**Table 9. 2011 Dry Pea - Organic - Cathay (Carrington REC) - Authors, S. Zwinger and S. Schaubert.**

Variety	Seeds/ Pound (seeds)	1,000 Seed Weight (grams)	Test Weight (lb/bu)	Seed Yield	
				2011	3-yr. Avg.
<b>Yellow Cotyledon Type</b>					
Agassiz	2,328	195	62.1	13.6	--
CDC Golden	2,504	181	62.6	14.7	18.7
DS Admiral	2,283	199	62.6	19.3	18.4
<b>Green Cotyledon Type</b>					
CDC Striker	2,320	196	64.2	13.6	18.8
Cruiser	3,132	145	61.7	10.8	16.1
Majoret	2,278	199	64.0	13.9	16.3
Matrix	2,287	199	61.3	9.6	--
Shamrock	2,249	202	61.8	13.0	--
Mean	2,422	190	62.5	13.6	17.7
CV %	3.6	3.7	0.7	19.4	--
LSD 0.05	129	10	0.6	3.9	--

Planted: May 26. Harvested: Aug. 31. Previous crop: cover crop (alfalfa and sweet clover green manure).

**Table 10. 2011 Forage/Cover Crop Pea - Carrington - Authors, S. Zwinger and S. Schaubert.**

Variety	Harvest Date	Plant Stand (Plt/ft <sup>2</sup> )	Days to Flower (DAP) <sup>4</sup>	Vine Length <sup>1</sup> (inch)	Canopy Height <sup>2</sup> (inch)	Plant Lodge <sup>3</sup> (0-9)	Harvest Moisture (%)	Biomass Protein (% DM)	Biomass N Con. (lb/a DM)	----- DM Yield -----		
										Yield 15% M	2011	3-yr. Avg.
4010	2	6	61	28	19	6	85	22	86	1.42	1.20	1.25
85-50004	1	7	54	38	35	0	85	19	73	1.37	1.17	--
Admiral + Arvika	1	7	57	45	41	1	85	19	81	1.59	1.35	1.39
Admiral + Aus. Winter	1	8	56	37	35	1	85	22	90	1.50	1.28	1.30
Admiral	1	7	55	32	31	0	85	19	87	1.67	1.42	1.52
Akoja	1	7	56	39	32	2	84	20	71	1.31	1.11	--
Arvika	2	8	62	33	20	7	86	22	84	1.42	1.21	1.50
Austrian Winter	2	8	61	28	19	5	86	22	70	1.19	1.01	1.06
Flex	2	7	61	32	21	5	86	20	62	1.16	0.99	--
Forager	2	7	62	30	22	4	85	21	84	1.45	1.23	--
Grande	2	6	59	30	23	4	85	21	95	1.62	1.38	1.44
Gunner	1	7	56	34	32	0	85	22	93	1.58	1.35	--
Journey	1	6	53	36	29	3	84	22	64	1.09	0.92	--
Mirgreen	2	6	59	29	21	6	85	21	76	1.33	1.13	--
Pulse USA #1	2	5	59	27	19	5	84	20	63	1.14	0.97	--
Tucker	2	7	59	28	22	1	86	21	83	1.45	1.23	1.45
Victoria	1	5	55	30	25	3	87	25	63	0.95	0.81	0.95
Mean		7	58	33	26	3	85	21	78	1.37	1.16	1.3
C.V. (%)		12	1	7	10	38	1.1	9.3	14.1	11.7	11.7	--
LSD 0.05		1	1	3	4	2	1	3	15	0.22	0.19	--

Planted: May 4. Harvested: Date 1 = July 8 and Date 2 = July 12. Previous crop: spring wheat

All treatments sown at 350,000 PLS/a.

All treatments harvested approximately 10 days after flowering.

<sup>1</sup>Plant height at end of flowering.

<sup>2</sup>Height to the top of the canopy at harvest.

<sup>3</sup>Lodging: 0 = none, 9 = lying flat on the ground.

<sup>4</sup>DAP = Days after planting.

**Table 11. 2011 Dry Pea - Irrigated - Nesson Valley (Williston REC) - Authors, T. Tjelde and C. Wahlstrom.**

Variety	Days to Flower (DAP) <sup>2</sup>	Flower Duration (days)	Canopy Height <sup>1</sup> (inch)	Seed Protein (%)	1,000 Seed Wt. (gram)	Seeds/ Pound (seeds)	Test Weight (lb/bu)	Seed Yield		
								2011	2-yr. Avg.	3-yr. Avg.
<b>Yellow Cotyledon Type</b>										
Agassiz	53	66	11.7	26.5	237	1,916	61.3	30.9	41.7	--
CDC Golden	53	66	13.9	27.0	202	2,253	62.2	23.4	35.1	--
DS Admiral	53	66	15.1	25.5	223	2,034	62.7	30.1	34.9	41.9
Spider	53	66	10.9	26.0	235	1,930	62.2	23.1	--	--
<b>Green Cotyledon Type</b>										
Arcadia	53	64	7.2	26.0	212	2,138	61.7	14.5	27.0	--
CDC Striker	53	61	13.5	27.9	255	1,781	63.0	23.5	36.9	43.6
Cruiser	53	66	13.1	25.9	204	2,232	61.3	20.4	31.5	38.4
Blue Moon	53	61	13.6	26.5	232	1,961	62.9	25.3	--	--
Mean	53	64	12.4	26.4	225	2,031	62.2	23.9	34.5	41.3
CV %	0	2	19	1.6	7.9	--	0.5	20.4	--	--
LSD 0.05	NS	1.5	3.4	1.0	10.5	--	0.8	7.2	--	--

Planted: May 13. Harvested: Aug. 23. Previous crop: sugarbeets.

<sup>1</sup>Height to the top of the canopy at harvest.

<sup>2</sup>DAP = Days after planting.

**Table 12. 2011 Dry Pea - Langdon - Authors - B. Hanson and R. Wilhelmi.**

Variety	Days to 1st Flower	Days to PM	Vine Length <sup>1</sup>	Canopy Ht. at Harvest <sup>2</sup>	Height Index <sup>3</sup>	Harvest Ease <sup>4</sup>	1,000 Seed Weight	Seeds/ Pound	Seed Protein (%)	Test Weight (lb/bu)	Seed Yield	
	(DAP) <sup>5</sup>	(DAP) <sup>5</sup>	(inch)	(inch)	(%)	(0-9)	(gram)	(seeds)	(%)	(lb/bu)	2011	3-yr. Avg.
<b>Yellow Cotyledon Type</b>												
Agassiz	52	89	44	19	44	4	229	1,989	25.8	64.4	65.6	81.5
Audit	51	88	48	21	45	4	231	1,970	25.7	63.7	62.9	--
Avantgarde	48	87	44	22	50	4	273	1,667	25.3	64.1	74.0	--
CDC Centennial	52	86	46	18	39	6	197	2,306	24.8	65.2	71.3	78.3
CDC Golden	50	85	43	17	41	5	224	2,038	25.1	64.1	58.4	74.4
DS Admiral	52	87	41	27	67	2	205	2,227	23.5	65.1	70.4	--
LN 4217	50	88	47	27	58	2	260	1,748	24.7	64.0	72.9	--
LN4206	48	85	44	15	33	6	243	1,872	25.3	64.3	59.5	--
PST 1	52	89	46	15	32	7	224	2,035	25.8	63.8	56.7	--
PST 3	52	87	44	17	39	5	235	1,934	24.5	64.6	68.6	--
PST 7	52	88	45	15	34	5	230	1,980	24.9	64.5	68.8	--
Spider												
<b>Green Cotyledon Type</b>												
CDC Striker	52	88	45	18	41	5	205	2,225	25.9	64.7	56.9	76.4
Cruiser	51	85	48	16	34	6	174	2,626	24.9	63.8	51.0	69.2
LN 1103	53	91	43	25	58	3	248	1,835	24.0	64.7	72.1	79.8
LN 1116	51	91	44	26	59	3	239	1,908	26.3	63.5	58.5	--
LN1115	50	87	41	26	66	2	271	1,679	24.4	64.9	74.1	--
Majoret	51	85	41	15	37	7	230	1,980	25.8	64.8	64.3	78.9
PST 5	49	93	44	19	44	4	223	2,036	24.7	64.8	64.4	--
PST 9	53	87	44	14	33	7	226	2,010	25.1	64.3	57.1	--
Mean	51	88	44	20	45	5	230	2,003	25.1	64.4	64.6	76.9
CV %	1	2	6	20	20	26	5.1	5.7	1.9	0.6	8.7	--
LSD 0.05	1	3	4	6	15	2	25	239	1.0	0.7	9.3	--

Planted: May 19. Harvested: Aug. 30.

<sup>1</sup>Plant height at end of flowering.

<sup>2</sup>Height to the top of the canopy at harvest.

<sup>3</sup>Height Index: Plant height at time of harvest relative to plant height at the end of bloom.

<sup>4</sup>Harvest Ease: 0 = all plants upright (very easy harvest) to 9 = all plants flat (very difficult to direct harvest).

<sup>5</sup>DAP = Days after planting.

**Table 13. 2011 Dry Pea - Minot - Authors, S. Pederson, K. McPhee and J. Pederson.**

Variety	Plant Stand (Plt/ft <sup>2</sup> )	Days to Flower (DAP) <sup>2</sup>	Flower Duration (days)	Canopy Height (inch)	Lodging <sup>1</sup> (0-9)	Seed Protein (%)	Seeds/ Pound (seeds)	1,000	Test Weight (lb/bu)	Seed Yield		
								Seed Weight (gram)		2011	3-yr. Avg.	
											---	(bu/a)---
<b>Yellow Cotyledon Type</b>												
Agassiz	17	49	22	48	6	24.9	2,388	187	62.9	40.6	60.8	
Bridger	17	49	18	59	4	25.8	2,207	204	64.0	35.8	--	
Carousel	18	49	15	44	7	25.0	2,564	178	63.6	36.6	--	
CDC Centennial	21	48	18	17	9	25.1	2,323	195	63.2	43.5	58.4	
CDC Golden	18	49	20	39	6	25.9	2,705	166	63.8	37.1	61.1	
CDC Meadow	17	51	19	55	6	24.4	2,788	164	64.4	33.2	49.3	
CDC Treasure	17	49	20	49	6	24.3	2,682	169	63.7	34.3	--	
DS Admiral	15	48	17	48	6	24.6	2,150	212	63.3	38.0	51.5	
PUSA 09003	18	52	22	63	3	25.0	2,009	218	63.5	34.5	58.7	
Spider	8	50	25	49	6	25.3	2,205	203	64.1	36.0	51.2	
Thunderbird	18	54	17	52	5	25.0	2,735	165	64.0	38.1	56.7	
Universal	19	46	20	44	6	26.1	2,554	179	63.9	35.7	--	
Vegas	20	48	17	54	4	26.1	2,129	216	63.6	41.9	--	
<b>Green Cotyledon Type</b>												
Aragorn	18	46	20	37	7	25.2	2,672	170	62.7	22.6	--	
Banner	22	47	24	37	7	21.8	2,944	155	64.0	31.1	--	
Bluemoon	20	50	16	46	6	24.9	2,347	196	63.4	35.3	--	
CDC Patrick	16	51	18	42	7	25.2	3,242	138	63.2	28.0	55.5	
CDC Striker	19	49	16	48	6	25.9	2,162	205	64.5	33.0	58.2	
Cruiser	16	51	20	40	6	25.0	2,798	164	63.7	30.5	43.8	
Emerald	16	48	17	49	5	25.8	2,290	200	62.8	17.3	--	
Majoret	21	50	16	35	7	25.0	2,162	206	63.9	37.2	48.6	
Mean	18	49	19	45	6	25.1	2,479	185	63.6	34.3	54.5	
CV %	22	3	16	15	11	1.3	5.9	5.0	0.6	9.8	--	
LSD 0.05	7	3	6	13	1	0.7	308	18	0.7	6.3	--	

Planted: May 19. Harvested: Aug. 22.

<sup>1</sup>Lodging: 0 = none, 9 = lying flat on the ground.<sup>2</sup>DAP = Days after planting.**Table 14. 2011 Dry Pea - Sheridan County (NCREC), Minot - Authors, S. Pederson, K. McPhee and M. Halvorson.**

Variety	Seed Protein (%)	Seeds/ Pound (seeds)	1,000	Test Weight (lb/bu)	Seed Yield			
			Seed Wt. (gram)		2011	2-yr. Avg.		
							---	(bu/a)---
<b>Yellow Cotyledon Type</b>								
Agassiz	25.2	2,047	222	62.4	31.2	46.0		
CDC Golden	25.7	2,245	202	62.4	40.0	51.5		
DS Admiral	24.9	1,983	229	62.0	37.0	45.8		
<b>Green Cotyledon Type</b>								
CDC Striker	26.2	2,146	212	63.7	31.5	38.5		
Cruiser	25.5	2,371	191	60.7	23.4	30.4		
Majoret	25.4	2,109	216	64.2	34.0	39.5		
Mean	25.5	2,150	212	62.6	32.8	42.0		
CV %	1.8	3.3	3.3	1.2	17.7	--		
LSD 0.05	0.7	106	11	1.1	8.8	--		

Planted: May 26. Harvested: Aug. 30. Previous crop: spring wheat.

**Table 15. 2011 Dry Pea - Recrop - Williston - Authors, G. Bradbury and S. Loomer.**

Variety	Days to	Flower	Vine	Canopy	Seed	1,000	Seeds/	Test	Seed Yield	
	Flower	Duration	Length <sup>1</sup>	Height <sup>2</sup>	Protein	Seed Wt.	Pound	Weight	2011	2-yr. Avg.
	(DAP) <sup>3</sup>	(days)	(inch)	(inch)	(%)	(gram)	(seeds)	(lb/bu)	-----(bu/a)----	
<b>Yellow Cotyledon Type</b>										
Agassiz	61	11	26	21	24.7	217	2,096	64.3	32.5	34.1
Audit	61	10	29	22	25.5	260	1,749	64.3	39.3	35.7
Avantgarde	59	11	26	20	24.3	266	1,709	65.6	36.9	36.8
Bridger	60	10	27	21	24.7	228	1,994	65.3	38.5	--
CDC Centennial	62	9	24	17	24.6	244	1,861	64.9	37.4	38.9
CDC Golden	61	10	27	20	24.4	224	2,024	64.5	29.1	32.4
CDC Meadow	63	10	24	19	24.5	199	2,285	65.0	25.7	30.9
CDC Treasure	61	10	29	20	24.4	223	2,040	64.9	35.5	--
DS Admiral	62	9	29	23	24.4	246	1,849	64.6	31.6	32.6
Gunner	61	10	28	20	24.8	241	1,888	64.4	36.6	--
Korando	59	11	27	16	25.0	256	1,771	65.0	35.7	35.0
Midas	62	9	25	20	23.8	212	2,138	64.7	31.6	34.5
Spider	62	9	28	22	24.4	247	1,837	65.8	35.2	35.1
SW Salute	61	9	26	21	24.7	230	1,977	64.4	37.2	37.6
Thunderbird	64	8	25	20	25.2	218	2,084	63.7	31.8	33.9
Trapeze	60	10	25	18	24.7	255	1,782	64.7	37.4	36.5
Vegas	61	10	27	21	24.6	230	1,971	64.8	35.1	--
<b>Green Cotyledon Type</b>										
Aragorn	60	10	25	19	24.4	228	1,989	64.0	31.6	31.4
Blue Moon	62	9	27	21	24.6	258	1,763	64.2	35.6	34.6
CDC Patrick	63	8	26	18	24.5	195	2,329	64.3	36.4	35.8
CDC Striker	62	8	24	21	25.5	244	1,862	64.8	31.9	29.9
Cruiser	61	10	23	18	23.7	202	2,254	63.7	26.1	28.8
Daytona	62	9	29	19	24.7	258	1,757	65.3	37.4	--
Emerald	60	11	28	23	24.4	242	1,880	64.5	38.9	--
K2	59	11	23	19	24.3	223	2,035	65.3	32.6	31.9
Majoret	61	9	26	22	25.7	243	1,869	64.7	30.9	31.0
Shamrock	63	8	27	20	24.4	239	1,902	65.1	35.1	--
SW Arcadia	60	10	25	21	24.7	215	2,112	64.8	40.7	38.8
Mean	61	10	26	20	24.6	241	1,912	64.7	34.5	34.1
CV %	1	10	9	11	1.4	2.6	3.0	0.9	9.0	--
LSD 0.05	1	1	3	3	0.5	13	101	0.8	4.3	--

Planted: April 28 into harrowed stubble. Harvested: July 28.

<sup>1</sup>Plant height at end of flowering.<sup>2</sup>Height to the top of the canopy at harvest.<sup>3</sup>DAP = Days after planting.

**Table 16. 2011 Dry Pea - Recrop - Dickinson - Author, G. Martin.**

Variety	Days to Flower (DAP) <sup>2</sup>	Flower Duration (days)	Canopy Height (inch)	Lodging <sup>1</sup> (0-9)	Seeds/ Pound (seeds)	Seed Protein (%)	Test Weight (lb/bu)	Seed Yield	
								2011	3-yr. Avg.
								-----	(bu/a)-----
<b>Yellow Cotyledon Type</b>									
Agassiz	56	15	27	3	2,293	24.4	62.0	50.3	--
CDC Centennial	56	14	23	8	2,113	24.2	63.5	48.1	--
CDC Golden	56	14	26	5	2,341	25.5	62.1	47.5	49.9
CDC Meadow	56	15	27	5	2,504	24.5	64.4	44.4	--
CDC Treasure	55	15	28	4	2,294	24.6	64.3	49.5	--
DS Admiral	56	14	26	4	2,207	24.1	64.0	45.6	45.3
<b>Green Cotyledon Type</b>									
CDC Patrick	57	13	25	7	2,934	24.7	63.0	45.4	--
CDC Striker	56	13	26	1	2,125	25.4	63.6	43.0	45.0
Cruiser	55	15	25	7	2,756	24.4	62.9	36.1	39.7
Majoret	56	13	25	1	2,093	24.8	63.5	45.4	46.0
Mean	56	14	26	4	2,366	24.7	63.3	45.5	45.2
CV %	1	4	6	26	4	1.4	0.7	5.4	--
LSD 0.05	1	1	2	2	126	0.5	0.6	3.5	--

Planted: May 6. Harvested: Aug. 3. Previous crop: oat.

<sup>1</sup>Lodging: 0 = none, 9 = lying flat on the ground.

<sup>2</sup>DAP = Days after planting.

**Table 17. 2011 Dry Pea - Hettinger - Authors, E. Eriksmoen and R. Olson.**

Variety	Days to Flower (DAP) <sup>2</sup>	Flower Duration (days)	Days to PM (DAP) <sup>2</sup>	Canopy Height (inch)	Lodging <sup>1</sup> (0-9)	1,000 Seed Weight (gram)	Seed Protein (%)	Test Weight (lb/bu)	Seed Yield	
									2011	3-yr. Avg.
									-----	(bu/a)-----
<b>Yellow Cotyledon Type</b>										
Agassiz	63	15	89	22	6	228	25.7	65.8	58.6	51.9
CDC Golden	63	14	88	19	8	199	25.3	64.6	60.9	55.4
DS Admiral	63	14	86	21	6	211	25.3	63.9	59.8	48.0
Gunner	62	15	88	21	7	197	25.1	64.4	60.1	--
Korando	61	14	86	18	8	243	25.4	63.2	64.4	49.0
Midas	64	12	87	21	8	168	25.2	65.0	58.5	50.5
Vegas	62	14	87	24	7	196	25.4	66.4	59.5	--
<b>Green Cotyledon Type</b>										
CDC Striker	64	12	89	20	8	199	26.2	64.7	47.0	39.4
Cruiser	62	15	89	19	8	193	25.3	63.6	44.0	42.7
K2	62	14	88	22	7	180	25.1	64.2	55.4	46.9
Majoret	64	12	89	20	8	193	25.9	64.8	46.3	43.5
Shamrock	66	11	92	23	5	212	25.2	64.1	51.0	--
SW Arcadia	62	12	86	19	9	176	25.6	64.3	51.3	48.5
Mean	63	13	88	21	7	200	25.4	64.5	55.1	47.6
CV %	1	6	1	16	14	6.6	1.5	2.5	4.9	--
LSD 0.05	1	1	1	5	1	19	0.5	NS	3.9	--

Planted: April 29. Harvested: Aug. 8. Seeding rate: 330,000 live seeds per acre. Previous crop: spring wheat.

<sup>1</sup>Lodging: 0 = none, 9 = lying flat on the ground.

<sup>2</sup>DAP = Days after planting.



**For more information on this and other topics, see: [www.ag.ndsu.edu](http://www.ag.ndsu.edu)**

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