

Project Title: Statewide Lentil Variety Evaluation

Project Leader: Heather Mason

Project Personnel: James Thompson, Brooke Bohannon

Objective: To evaluate seed yield and agronomic performance of fifteen lentil varieties in northwestern Montana.

Results:

Fifteen lentil varieties (Table 1) were seeded into Creston sandy loam soil on April 26, 2010. The field was previously seeded to alfalfa, and was prepared for planting using conventional tillage. Fertilizer (27-30-120-24) was broadcast and incorporated prior to planting. No pesticides were applied and the trial was not irrigated. Seeds, treated with fungicide and inoculated with *Rhizobium sp.*, were sown at a rate of 10-12 seeds/ft² at a depth of 1.5 in. Plots were combine harvested at physiological maturity on August 18, 2010.

Although plots were planted five days earlier than the previous year, average flowering and maturity dates were nearly the same. The average time to flowering was 65 days after planting (June 30) and plants reached grain maturity (10% moisture) an average of 106 days after planting (August 10) (Table 1). The Turkish (red) and Pardina type lentils matured the earliest and the Laird (large green) type lentils matured the latest (Table2.) Canopy height ranged from 7 to 13 in and vine length ranged from 18 to 22 in.

Lentil test weights averaged 62.0 lb/bu (Table 1). Grain yields ranged from 29.3 bu/a (1,808 lb/a) for CDC Meteor to 40.5 bu/a (2,649 lb/a) for CDC Impala CL. Overall lentil yield across varieties was 34.1 bu/a (2,120 lb/a). CDC Impala CL and CDC Redberry were the highest yielding commercially available varieties.

Summary:

The 2010 growing season was cooler and moister than average, which most likely had an adverse impact on the lentil crop. Average grain yield and test weight (2,120 lb/a and 62 lb/bu respectively) were lower than in 2009 (2,438 lb/a and 70 lb/bu respectively). Earlier planting date in 2010 did not seem to have a significant effect on time to maturity.

Future Plans:

Trials will continue to be conducted each year in order to identify varieties suitable to the region.

Table 1. Seed yield and agronomic characteristics of varieties grown in the 2010 Statewide Lentil Variety Evaluation, Northwestern Agricultural Research Center, Kalispell, MT.

Variety	Grain Yield	Grain Yield	Test Weight	Days to Flower	Days to Maturity	Canopy Height	Vine Length
	<i>bu/a</i>	<i>lb/a</i>	<i>lb/bu</i>	<i>days after planting</i>	<i>days after planting</i>	<i>in</i>	<i>in</i>
Large Green							
Riveland	31.1	1835	58.8	65	109	7	20
Pennell	32.0	1929	60.1	65	106	9	18
CDC Improve CL	31.8	1951	61.2	65	111	8	20
Merrit	31.3	1889	60.2	65	104	9	20
Medium Green							
Brewer	34.4 ⁺	2092	60.7	64	104	7	19
CDC Vantage	30.5	1810	59	65	110	8	19
CDC Richlea	34.1 ⁺	2078	60.9	66	109	8	21
CDC Meteor	29.3	1808	61.6	66	105	8	20
LC01602300R	40.4 ⁺	2538	62.6	65	108	9	22
Small Green							
LC01602307E	37.3 ⁺	2382	63.7	65	109	8	20
Red							
CDC Redberry	35.7 ⁺	2268	63.6	65	109	13	19
LC01602062T	35.7 ⁺	2253	63.2	65	102	8	19
Crimson	33.8 ⁺	2184	64.6	65	101	8	16
CDC Impala CL	40.5 ⁺⁺	2649	65.4	67	102	7	20
Pardina							
LC01602245P	33.0	2128	64.4	65	101	7	15
Average	34.1	2120	62.0	65	106	8	19
F test	<i>ns</i>	**	**	**	**	**	**
LSD ($\alpha=0.05$)	7.31	452.2	2.14	0.9	3.2	2.6	3

Grain yield and test weight are adjusted to 10% grain moisture content.

⁺⁺Indicates highest yielding cultivar.

⁺Indicates cultivars yielding equal to the highest yielding cultivar based on Fisher's Protected LSD at the 0.05 probability level.

** Effects are significant at $P < 0.01$; *ns* denotes non-significant effects.

CL indicates varieties that are Clearfield® herbicide resistant.

Table 2. Lentil variety characteristics

<u>Variety</u>	<u>Type</u>	<u>Seed coat</u>	<u>Cotyledon</u>	<u>Resistance</u>	<u>Seed Size</u> ¹	<u>Maturity</u> ²
Riveland	Laird	Green	Yellow	as	Large	Late
Pennell	Laird	Green	Yellow	PEMV/as	Large	Moderate
CDC Improve CL	Laird	Green	Yellow	-	Large	Late
Merrit	Brewer	Mottled Green	Yellow	PEMV	Med. Large	Moderate
Brewer	Brewer	Mottled Green	Yellow	-	Medium	Moderate
CDC Vantage	Richlea	Green	Yellow	as	Medium	Late
CDC Richlea	Richlea	Green	Yellow	-	Medium	Late
CDC Meteor	Richlea	Green	Yellow	-	Medium	Moderate
LC01602300R	Richlea	Green	Yellow	-	Medium	Late
LC01602307E	Eston	Green	Yellow	-	Small	Late
CDC Redberry	Turkish	Gray	Red	as/an	Small	Late
LC01602062T	Turkish	Brown	Red	-	Small	Early
Crimson	Turkish	Brown	Red	-	Small	Early
CDC Impala CL	Turkish	Brown	Red	as/an	Extra Small	Early
LC01602245P	Pardina	Brown	Yellow	-	Small	Early

¹ - Size Classes (b/1000 seeds): Large: >60-65; Medium: 50-60; Small <50

² - Maturity (days): Early < 103; Moderate 104-106; Late >108, based on data collected at Kalispell, MT.

an: anthracnose

as: ascochyta

PEMV: pea enation mosaic virus