

**WSU Extension Variety Testing Program**

**Grain Legume Variety and Agronomic Performance  
Trials  
2015**

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## INTRODUCTION

The goal of the WSU Extension Variety Testing Program is to provide growers and the agribusiness industry with comprehensive information on the adaptation and performance of winter and spring legume varieties across the different climatic regions and management practices in eastern Washington. Other agronomic management trials reported here have similar goals. Another valuable aspect is to provide WSU and USDA-ARS breeding programs a comprehensive testing and evaluation program for advanced breeding lines to assist in determinations for variety release recommendations. This report summarizes grain legume cultivar performance tested in WSU Extension variety trials in crop year 2015. In addition, results of some agronomic trials on seeding rates of peas, lentils and chickpeas, plus the effect of lime application on peas and chickpeas and the effect on the following winter wheat crop are presented in this report.

When selecting varieties, it is important to review the yield and other variety performance data across as many trial sites with similar climatic and growing conditions as possible. In addition, evaluation of the yield results should rely most heavily on the long term yield averages, when available, since yield performance based on a single year for a given variety can be misleading. Variety testing results vary from year to year and site to site, just as commercial growing conditions vary across years and locations. Data tables included in this report provide current year, 2-year, 3-year and 5-year averages at each location (when available). Yield and other important performance characteristics are also averaged because of the strong influence of rainfall on agronomic performance.

This report represents research in progress. Relative performance of varieties can change when tested under other environments and production practices. Evaluation of any variety included in these trials should not be construed as recommending any variety over other varieties.

The WSU Variety Testing Program is conducted by independent objective processes to assure results provide the best unbiased comparisons of variety performance.

## METHODS

### *Experimental Materials and Procedures*

The data presented in this report were generated in legume variety testing trials conducted in 2015. The total number of varieties and locations was:

#### Variety Trials:

lentils: 20 entries at 4 locations;  
peas: 24 entries at 4 locations;  
chickpeas: 20 entries at 4 locations.

#### Seeding Rate Studies:

peas: 2 varieties at 2 locations;  
lentils: 2 varieties at 2 locations;  
chickpeas: 2 varieties at 2 locations.

#### Lime Trials:

peas: 10 varieties at 2 locations;

chickpeas: 10 varieties at 2 locations.

Tables 1-3 list all entries for the legume variety trials. An alpha lattice design with three replications was used for all variety trials. Entries were planted in small plots using a planter drill with double disc openers spaced 7" apart. All trials were maintained under grower management conditions specific to each trial location. Seeding rates were determined by weighing 100 seeds (100 seed weight) of each cultivar (Table 4). Details for each trial location are presented in Table 5. Grain legume trial entries were treated with a blend of Apron XL LS, Maxim 4 FS, Mertect LSP, Cruiser 5 FS and Sodium Molybdate. Peas and lentils were treated with 10 oz/cwt rate of the blend; chickpeas were treated with 14 oz/cwt of the above blend. *Rhizobium* inoculum was added to grain legume seed for locations when naturally occurring *Rhizobium* is not believed to be present in the soil or present at low levels, including all chickpea sites. Seeding rates for grain legumes were: peas 8, lentils 9, chickpeas 5 seeds/sq.ft.

Weed management for legume variety trials was based on standard commercial practices and consisted of post-plant pre-emergence application of Lorox (1.25 lb/A) and Sencor (6 oz/A) at all locations. Additional hand weeding was utilized when needed. Pea experiments were treated with Asana XL (9.6 oz/A) to control pea weevils.

Variety plot tours were conducted at many location to provide growers and agribusiness personnel opportunities to conduct in-field observations of all entries. Prior to each plot tour, experiments were trimmed to final harvest dimensions by applying Roundup PowerMax herbicide with a hooded alley sprayer.

All legume entries were evaluated for yield (reported in pounds per acre) and 100 seed weight. Additionally, canopy height is reported for pea and lentil trials where lodging occurred and plant height is reported for all legume trials. Erect index (canopy height/plant height) is included in pea and lentil trial results where lodging occurred.

After harvest experiment data were analyzed, summarized, and sent out via e-mail list serve to anyone who requested being listed on the e-mail list. Data were also posted to the Variety Testing Program web site (<http://variety.wsu.edu/>) in nearly the same time sequence. E-mail contacts can be added to the list serve by sending a request to [sguy@wsu.edu](mailto:sguy@wsu.edu).

Some of the experiments were planted, grown and maintained but were lost at different stages prior to harvest due to various circumstances beyond our control. Following is the list of experiments lost and reasons why they are not presented in the final report.

Farmington Pea and Lentil Variety Trials – lost due to poor establishment and disease.

#### *Statistical Analysis and Interpretation*

Entry means (averages) are shown within the body of the data tables and the overall trial average at the bottom of the tables for yield, 100 seed weight, height, canopy height and erect index (where appropriate). The least significant difference (LSD) and the coefficient of variation (CV)

are also listed. The LSD is presented at the 10 percent error level and is an aid in comparing the performance of any two varieties data set (column). If the reported value of a variety is greater than another variety by more than the LSD value, then there is at least a 9 out of 10 chance the yields of those varieties are different and not due to random variation. If the measured values differ by less than the LSD value, the differences may be due to random error rather than actual differences. Yield values are reported from highest to lowest within a table, and some varieties are shown in bolded type that are within the LSD range of the highest yielding variety. This only shows the LSD range of the top yielding varieties and LSD comparisons can be done on any varieties of interest within a column. The coefficient of variation (CV) is given as a general measurement of the precision of each experiment. CV values are listed as a percent and assist in estimating how much variation is not due to variety differences but due to differences in soil variability, soil moisture, diseases, weeds, experimental technique, etc. For yield a CV of 1% to 15% is considered acceptable, while a CV greater than 15% indicates that considerable unaccounted variation was present, although there could be useful information for variety comparison with CVs of >15%, but interpretation is needed. The higher the CV, the more difficult it is to detect differences between varieties.

**Table 1. 2015 Spring Dry Pea Entries**

<b>Name</b>	<b>Originator</b>	<b>Class</b>
<b>Aragorn</b>	ProGene	Green
<b>Ariel</b>	Crop & Food Res., NZ	Green
<b>Banner</b>	ProGene	Green
<b>Columbian</b>	Campbell Soup Co.	Green
<b>Ginny (Pro 091-7137)</b>	ProGene	Green
<b>Greenwood (Pro 7040)</b>	ProGene	Green
<b>PS03101445</b>	USDA-WSU	Green
<b>PS05100840</b>	USDA-WSU	Green
<b>PS07100470</b>	USDA-WSU	Green
<b>PS10100158</b>	USDA-WSU	Green
<b>PS10100296</b>	USDA-WSU	Green
<b>PS12100058</b>	USDA-WSU	Green
<b>PS08100582</b>	USDA-WSU	Green
<b>PS12100095</b>	USDA-WSU	Green
<b>PS12100011</b>	USDA-WSU	Green
<b>PS08100133</b>	USDA-WSU	Green
<b>PS08101022</b>	USDA-WSU	Yellow
<b>PS08100950</b>	USDA-WSU	Yellow
<b>PS07100925</b>	USDA-WSU	Yellow
<b>PS08101004</b>	USDA-WSU	Yellow
<b>Carousel</b>	ProGene	Yellow
<b>Universal</b>	ProGene	Yellow



**Table 2. 2015 Lentil Entries**

Name	Originator	Class
Avondale	USDA-WSU	Richlea
Richlea	CDC - Ag. Canada	Richlea
LC11600361R	USDA-WSU	Richlea
LC11600362R	USDA-WSU	Richlea
Crimson	USDA-WSU	Turkish red
LC01602062T	USDA-WSU	Turkish red
Eston	U. of Saskatchewan	Eston
LC01602273E	USDA-WSU NDSU	Eston
LC07ND055E	common	Eston
BN Persians	USDA-WSU	Eston
Merrit		Laird
LC06601734L	USDA-WSU	Laird
LC09600410L	USDA-WSU	Laird
LC11600380L	USDA-WSU	Laird
NDL080187L	NDSU	Laird
Pardina	Spain	Pardina
LC08600113P	USDA-WSU	Pardina
LC08600116P	USDA-WSU	Pardina
LC10600494P	USDA-WSU	Pardina
LC10600231P	USDA-WSU	Pardina

**Table 3. 2015 Chickpea Entries**

Name	Originator
Billy beans	Spain
CA0490B0223D	USDA-WSU
CA0790B0642C	USDA-WSU
CA0790B0043C	USDA-WSU
CA0790B0054C	USDA-WSU
CA0890B0526D	USDA-WSU
CA0890B0733C	USDA-WSU
CA0890B0531C	USDA-WSU
CA0790B0547C	USDA-WSU
CA0890B0429C	USDA-WSU
CA0890B0551C	USDA-WSU
CDC Leader	CDC - Ag. Canada
CDC Frontier	CDC - Ag. Canada
CDC Orion	CDC - Ag. Canada
Dwelley	USDA-WSU
Myles	USDA-WSU
Nash (CA04900843C)	USDA-WSU
Royal (CA04900851C)	USDA-WSU
Sawyer	USDA-WSU
Sierra	USDA-WSU

**Table 4. 2015 WSU Legume Trials Seed Weights**

Name	100 seed wt (grams)	Seeds per Pound	Name	100 seed wt (grams)	Seeds per Pound
<b>Peas</b>			<b>Lentils</b>		
Aragorn	20.0	2,270	Avondale	4.8	9,458
Ariel	18.3	2,481	Richlea	4.7	9,660
Banner	19.5	2,328	LC11600361R	5.3	8,566
Columbian	20.0	2,270	LC11600362R	4.1	11,073
Ginny (Pro 091-7137)	20.6	2,204	Crimson	2.9	15,655
Greenwood (Pro 7040)	17.8	2,551	LC01602062T	3.8	11,947
PS03101445	18.7	2,428	Eston	2.9	15,655
PS05100840	19.8	2,293	LC01602273E	3.0	15,133
PS07100470	22.1	2,054	LC07ND055E	3.5	12,971
PS10100158	16.3	2,785	BN Persians	3.5	12,971
PS10100295	19.1	2,377	Merrit	6.2	7,323
PS12100058	17.0	2,671	LC06601734L	7.0	6,486
PS08100582	19.7	2,305	LC09600410L	7.1	6,394
PS12100095	17.3	2,624	LC11600380L	6.4	7,094
PS12100011	19.7	2,305	NDL080187L	6.3	7,206
PS08100133	21.3	2,131	Pardina	3.8	11,947
PS07100925	23.0	1,974	LC08600113P	4.1	11,073
PS08100950	22.4	2,027	LC08600116P	4.3	10,558
Carousel	21.5	2,112	LC10600494P	3.9	11,641
Universal	21.3	2,131	LC10600231P	4.0	11,350
PS08101004	21.6	2,102			
PS08101022	22.8	1,991			
			<b>Chickpeas</b>		
			Billy beans	26.9	1,688
			CA0490B0223D	31.1	1,460
			CA0790B0642C	57.6	788
			CA0790B0043C	51.1	888
			CA0790B0054C	51.4	883
			CA0890B0526D	32.7	1,388
			CA0890B0733C	47.0	966
			CA0890B0531C	57.1	795
			CA0790B0547C	46.3	981
			CA0890B0429C	54.1	839
			CA0890B0551C	52.9	858
			CDC Leader	33.0	1,376
			CDC Frontier	38.6	1,176
			CDC Orion	49.0	927
			Dwelley	53.6	847
			Myles	20.0	2,270
			Nash (CA04900843C)	60.4	752
			Royal (CA04900851C)	59.4	764
			Sawyer	49.5	917
			Sierra	41.7	1,089

**Table 5. Cultural Data for the 2015 WSU Grain Legume Trial Locations.**

Average Annual Rainfall (in)	Nursery Location	Experiment	Previous Crop	Planting					Harvest Area	Harvest Date	Soil Type	Location Data		
				Date	Rate		Planter Type <sup>1</sup>	Row Space (in)				Elevation	Latitude	Longitude
					Seeds/Ft <sup>2</sup>	Lbs/A				(ft. <sup>2</sup> )				
12-16	Colton Variety Trial	Pea	Winter Wheat	13-Apr	8	150	DD	7	88	18-Jul	Latah Silt Loam	-	N46 54.201	W117 48.227
		Lentil		13-Apr	9	60			80	18-Jul				
		Chickpea		13-Apr	5	240			80	18-Jul				
> 20	Farmington Variety Trial	Pea	Spring Wheat	27-Apr	8	150	DD	7	88	4-Aug	Thatuna Silt Loam	-	-	-
		Lentil		27-Apr	9	60			80	11-Aug				
		Chickpea		27-Apr	5	240			80	2-Sep				
> 20	Palouse Variety Trial	Pea	Spring Wheat	23-Apr	8	150	DD	7	88	1-Aug	Latah and/or Reardan Silt Loam	2650	N46 48.333	W117 03.918
		Lentil		23-Apr	9	60			80	11-Aug				
		Chickpea		23-Apr	5	240			80	20-Aug				
16-20	Walla Walla Variety Trial	Pea	Winter Wheat	27-Mar	8	150	DD	7	88	18-Jul	Walla Walla Silt Loam	1142	N46 03.310	W118 16.254
		Lentil		27-Mar	9	60			80	18-Jul				
		Chickpea		27-Mar	5	240			80	7-Aug				
16-20	Dayton Lime Trial	Pea	Spring Wheat	3-Apr	8	150	DD	7	88	7-Jul	Mondovi	-	N46 23.353	W118 03.600
		Chickpea		3-Apr	5	240	DD	7	80	28-Jul				
> 20	Farmington Seeding Rate	Lentil	Spring Wheat	27-Apr	7 - 12	47-80	DD	7	80	31-Jul	Thatuna Silt Loam	-		
> 20	Pullman Seeding Rate	Pea	Winter Wheat	21-Apr	6 - 11	113-206	DD	7	88	22-Jul	Latah and/or Reardan Silt Loam			
		Lentil		28-Apr	7 - 12	47-80	DD	7	80	7-Aug				
16-20	Walla Seeding Rate Lime Trial	Pea	Winter Wheat	27-Mar	6 - 11	113-206	DD	7	88	1-Jul	Walla Walla Silt Loam	-	N46 03.310	W118 16.254
		Chickpea		27-Mar	2 - 8	96-336	DD	7	80	6-Aug				
		Pea	Winter Wheat	3-Apr	8	150	DD	7	88	7-Jul			N46 54.201	W117 48.227
		Chickpea		3-Apr	5	96-336	DD	7	80	6-Aug				

Table 6.

## 2015 WSU SPRING PEA TRIAL SUMMARY, 2-YEAR, 3-YEAR and 5-YEAR SUMMARY

VARIETY NAME	COLTON	PALOUSE	WALLA WALLA	2015 AVERAGE	2014-2015 AVERAGE, 6 locyrs	2013-2015 AVERAGE, 9 locyrs	2011-2015 AVERAGE, 17 locyrs	COLTON	PALOUSE	WALLA WALLA	2015 AVERAGE	2014-2015 AVERAGE, 6 locyrs	2013-2015 AVERAGE, 9 locyrs	2011-2015 AVERAGE, 17 locyrs
<u>Green pea</u>	YIELD (LBS/A)							100 SEED WEIGHT (g)						
<b>Ginny</b>	1980	1900	1850	1910	2000	2140	2280	15.7	16.2	19.5	17.1	18.6	18.8	19.5
<b>PS07100470</b>	1740	1870	2120	1910	<b>2040</b>	2230	2360	14.6	16.7	20.7	17.3	19.2	19.1	20.3
<b>PS05100840</b>	1630	2120	1960	1900	1890	2110	2280	17.4	19.5	22.3	19.7	20.6	20.4	18.5
<b>Banner</b>	1940	1950	1810	1900	1870	2160	2330	16.9	16.1	17.1	16.7	18.1	18.5	19.1
<b>PS10100158</b>	1490	1690	2440	1870				13.0	14.2	19.6	15.6			
<b>Greenwood</b>	1720	1890	2010	1870	1900	2100		14.4	15.9	18.0	16.1	17.7	18.2	
<b>PS10100370</b>	1690	1970	1930	1860				17.4	19.4	22.2	19.7			
<b>PS10100295</b>	1810	2130	1610	1850				17.0	17.6	19.0	17.9			
<b>PS08100133</b>	1610	1890	1900	1800	1910	2120		16.8	16.9	21.4	18.4	20.0	20.3	
<b>Aragorn</b>	1700	1960	1660	1770	1820	2040	2160	16.6	16.2	18.4	17.1	18.2	18.8	19.6
<b>PS12100058</b>	1550	1790	1980	1770				14.0	16.9	21.7	17.6			
<b>PS08100582</b>	1620	1650	1990	1750	1950	2110		15.7	16.3	21.4	17.8	19.7	20.0	
<b>PS03101445</b>	1630	1750	1860	1750	1920	2080	2300	15.5	16.2	18.7	16.8	19.0	19.2	20.0
<b>Ariel</b>	1660	1790	1690	1710	1850	2050	2200	14.3	14.5	16.4	15.1	16.4	17.1	17.5
<b>PS12100095</b>	1490	1710	1890	1700				14.3	15.4	19.5	16.4			
<b>Columbian</b>	1450	1660	1290	1470	1340	1430	1610	17.0	17.3	19.0	17.8	18.9	19.1	
<b>PS12100011</b>	990	1170	1680	1280				15.9	16.6	24.3	18.9			
<u>Yellow pea</u>														
<b>PS08101022</b>	1990	2170	2040	<b>2070</b>	<b>2050</b>	2250		18.7	19.4	21.6	19.9	21.7	22.5	
<b>Universal</b>	1840	2000	2080	1970	2030	<b>2350</b>	<b>2420</b>	16.2	16.9	19.9	17.7	19.3		20.8
<b>PS08101004</b>	1690	2140	2020	1950	<b>2040</b>	2270		19.4	20.3	23.5	<b>21.1</b>	22.0	22.2	
<b>Carousel</b>	1750	1840	2070	1890	<b>2110</b>	<b>2290</b>	<b>2390</b>	17.0	18.9	23.2	19.7	21.7	22.2	<b>22.6</b>
<b>PS07100925</b>	1580	1950	1990	1840	1820	2070		18.2	20.6	24.2	<b>21.0</b>	<b>22.7</b>	<b>23.4</b>	
<b>PS08100950</b>	1510	1970	2010	1830				17.5	19.3	25.6	<b>20.8</b>			
<b>C.V. (%)</b>	9	5	5	6	9	9	9	4.2	3.2	3.4	3.6	3.5	3.5	3.8
<b>LSD (0.10)</b>	160	100	110	70	70	70	50	0.7	0.6	0.8	0.4	0.3	0.2	0.2
<b>Average</b>	1650	1870	1910	1850	1910	2110	2230	16.2	17.3	20.7	18.1	19.6	20.0	19.8
<b>Highest</b>	1990	2170	2440	2070	2110	2350	2420	19.4	20.6	25.6	21.1	22.7	23.4	22.6
<b>Lowest</b>	990	1170	1290	1280	1340	1430	1610	13.0	14.2	16.4	15.1	16.4	17.1	17.5

Hampton results are not included due to incorrect seed source.

1. Pea seed yield across three 2015 locations and 23 entries in Eastern Washington averaged 1850 pounds/acre and was 130 pounds/acre less than the 2014 average yield. The fourth planted location at Farmington was not reported due to disease and weed pressure. The CV and LSD values are low due to good results. The highest yielding entry across trials was the yellow seeded breeding line PS08101022.
2. Yields across combined years were higher showing lower 2015 yields due to high temperatures and limited rainfall during the growing season.
3. Seed weight in 2015 averaged 18.1 g/100 seed, 1.7 g/100 seed lower than the 5-year average.

**Table 7.**

**2015 WSU LENTIL TRIAL SUMMARY, 2-YEAR, 3-YEAR and 5-YEAR SUMMARY**

VARIETY NAME	COLTON	PALOUSE	WALLA WALLA	2015 AVERAGE	2014-2015 AVERAGE, 6 locyrs	2013-2015 AVERAGE, 10 locyrs	2011-2015 AVERAGE, 18 locyrs	COLTON	PALOUSE	WALLA WALLA	2015 AVERAGE	2014-2015 AVERAGE, 6 locyrs	2013-2015 AVERAGE, 10 locyrs	2011-2015 AVERAGE, 18 locyrs
	YIELD (LBS/A)							100 SEED WEIGHT (g)						
<b>Avondale</b>	890	1300	1150	<b>1110</b>	1410	1520	1590	3.8	4.2	5.3	4.4	4.7	4.8	4.9
<b>LC01602273E</b>	1040	1200	1040	<b>1090</b>	1300	1380		2.9	2.9	3.8	3.2	3.3	3.4	
<b>Richlea</b>	700	1210	1230	<b>1050</b>	1370	1460		4.1	4.2	5.5	4.6	4.8	4.9	
<b>LC11600361R</b>	850	1130	1140	<b>1040</b>				3.7	3.7	5.6	4.4			
<b>LC07ND055E</b>	730	1060	1310	1030	1350	1400		3.0	3.1	4.0	3.4	3.5	3.6	
<b>Pardina</b>	810	1390	820	1000	1270	1340	1480	3.2	3.4	4.5	3.7	3.7	3.8	3.9
<b>LC11600362R</b>	740	1130	1110	990				3.5	3.6	4.7	3.9			
<b>LC08600113P</b>	710	1340	900	990	1300	1430	1480	3.7	3.7	5.3	4.2	4.3	4.5	4.6
<b>LC10600494P</b>	750	1310	870	980				3.4	3.7	4.2	3.8			
<b>LC09600410L</b>	390	1110	1370	950				5.8	6.1	7.6	<b>6.5</b>			
<b>Merrit</b>	610	1320	890	940	1140	1260	1360	5.0	5.2	6.8	5.7	6.0	6.2	6.3
<b>NDL080187L</b>	540	910	1340	930				4.4	4.8	6.5	5.2			
<b>Crimson</b>	550	1130	970	890	1090	1190	1180	2.8	2.8	3.8	3.1	3.2	3.3	3.4
<b>Eston</b>	550	900	1150	870	1150	1280	1260	2.7	2.8	3.7	3.1	3.1	3.2	3.3
<b>BN Persians</b>	750	1340	480	860				2.8	3.0	3.5	3.1			
<b>LC06601734L</b>	440	1070	1020	850	1120	1230	1320	5.6	5.9	6.9	6.1	6.6	6.6	6.8
<b>LC08600116P</b>	450	1190	890	840	1070			3.9	4.2	5.8	4.6	4.7		
<b>LC10600231P</b>	620	1160	720	830				3.4	3.7	4.7	3.9			
<b>LC01602062T</b>	570	1220	640	810	1120	1250	1340	3.7	4.1	4.8	4.2	4.3	4.4	4.5
<b>LC11600380L</b>	330	1140	940	800				5.6	5.9	7.3	6.3			
<b>C.V. (%)</b>	17	6	15	12	13	11	12	3.1	2.9	2.5	2.8	3.2	3.4	3.6
<b>LSD (0.10)</b>	120	80	160	70	70	50	40	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Average</b>	650	1180	1000	940	1220	1340	1380	3.9	4.1	5.2	4.4	4.4	4.5	4.7
<b>Highest</b>	1040	1390	1370	1110	1400	1520	1590	5.8	6.1	7.6	6.5	6.6	6.6	6.8
<b>Lowest</b>	330	900	480	800	1070	1190	1180	2.7	2.8	3.5	3.1	3.1	3.2	3.3

1. Lentil seed yield across three 2015 locations and 20 entries in Eastern Washington averaged 940 pounds/acre and was 490 pounds/acre less than the 2014 average yield. The fourth planted location at Farmington was not reported due to disease and weed pressure. As in 2014, the highest yielding variety across locations was Avondale.

2. Overall yields were low due to high temperatures and limited rainfall during the growing season.

3. Seeds weights were marginally lower than the 5-year average due to growing conditions.

Table 8.

## 2015 WSU SPRING CHICKPEA TRIAL SUMMARY, 2-YEAR, 3-YEAR and 5-YEAR SUMMARY

VARIETY NAME	COLTON	FARMINGTON	PALOUSE	WALLA WALLA	2015 AVERAGE	2014-2015 AVERAGE, 6 locyrs	2013-2015 AVERAGE, 10 locyrs	2011-2015 AVERAGE, 18 locyrs	COLTON	FARMINGTON	PALOUSE	WALLA WALLA	2015 AVERAGE	2014-2015 AVERAGE, 6 locyrs	2013-2015 AVERAGE, 10 locyrs	2011-2015 AVERAGE, 18 locyrs
	YIELD (LBS/A)								100 SEED WEIGHT (g)							
<b>CDC Frontier</b>	1160	1560	2090	3030	<b>1960</b>	2070	1970	2240	34.5	35.6	37.6	35.5	35.8	35.6	35.7	36.5
<b>Billy beans</b>	1510	1720	1780	2590	<b>1900</b>	1990	1960		28.8	29.1	31.9	31.1	30.2	30.2	30.3	
<b>CA0790B0547C</b>	1210	1300	2060	2480	1760				45.9	49.6	53.7	50.1	49.8			
<b>CDC Leader</b>	1400	1450	1760	2080	1670				35.3	39.4	41.7	40.0	39.1			
<b>CA0490B0223D</b>	1390	1660	2030	1560	1660	1820	1860		25.9	26.1	28.4	29.2	27.4	27.6	27.7	
<b>CA0790B0054C</b>	960	1400	1750	2300	1600	1750	1720		50.3	50.4	55.2	54.1	52.5	52.1	51.5	
<b>Myles</b>	1220	1340	1600	2110	1570	1690	1690		16.9	16.9	18.5	19.0	17.8	18.0	18.3	
<b>CA0790B0043C</b>	1170	1070	1690	2310	1560	1780	1740		46.9	48.6	52.6	52.3	50.1	50.5	49.9	
<b>CA0790B0733C</b>	1090	980	1870	2300	1560				45.2	47.8	49.2	46.7	47.2			
<b>CA0890B0429C</b>	1060	1130	1840	1990	1500				49.5	52.2	56.5	54.6	53.2			
<b>CDC Orion</b>	1330	1580	1780	1280	1490	1730	1820	2110	39.9	43.6	44.8	45.7	43.5	43.8	43.2	43.8
<b>Sawyer</b>	1150	1280	1630	1820	1470	1640	1680	1950	40.4	42.7	46.2	43.5	43.2	43.2	42.8	42.8
<b>CA0890B0531C</b>	1310	1180	1660	1620	1440				48.0	49.1	52.7	50.1	50.0			
<b>CA0790B0642C</b>	1110	1110	1810	1710	1430				48.2	52.1	55.8	52.7	52.2			
<b>CA0890B0526D</b>	870	1550	1610	1420	1360	1300	1360		29.0	29.9	31.7	27.4	29.5	29.3	29.0	
<b>Nash</b>	1160	1110	1570	1550	1350	1540	1580	1910	55.7	55.5	60.8	57.3	<b>57.3</b>	57.4	56.9	58.0
<b>Royal</b>	870	600	1750	1900	1280	1360			50.0	54.0	57.7	48.3	52.5	52.5		
<b>Sierra</b>	800	530	1690	1890	1230	1290	1370	1700	43.3	49.9	52.1	47.3	48.1	48.2	47.4	49.1
<b>CA0890B0551C</b>	550	840	1650	1540	1150				43.3	49.7	54.9	49.8	49.5			
<b>Dwelley</b>	470	560	1490	1430	980	1040	1110	1420	44.1	45.9	51.8	46.1	47.0	47.4	47.0	48.5
<b>C.V. (%)</b>	10	17	8	6	10	10	10	11	4.8	3.6	2.1	2.8	3.4	3.1	3.4	4.1
<b>LSD (0.10)</b>	120	210	150	130	80	70	50	50	2.1	1.7	1.1	1.3	0.8	0.6	0.5	0.4
<b>Average</b>	1090	1200	1760	1950	1500	1620	1660	1890	41.1	43.4	46.7	44.0	43.8	41.2	40.0	46.5
<b>Highest</b>	1510	1720	2090	3030	1960	2070	1970	2240	55.7	55.5	60.8	57.3	57.3	57.4	56.9	58.0
<b>Lowest</b>	470	530	1490	1280	980	1040	1110	1420	16.9	16.9	18.5	19.0	17.8	18.0	18.3	36.5

1. Chickpea seed yield in 2015 across four locations and 20 entries per location in Eastern Washington averaged 1500 pounds/acre and was 380 pounds/acre less than the 2014 average yield. The CV and LSD values are very good to acceptable with deer damage to later maturity entries contributing to variation at Farmington. The highest yielding variety across trials was 'CDC Frontier'.
2. Yields across combined years increase with years due to lower yields in 2015 from high temperatures and limited rainfall during the growing season.
3. Seed weight in 2015 averaged 43.8 grams/100 seed and was 1.5 grams/100 seed higher than in 2014.

**Table 9. 2015 WSU Variety Testing Pea Trial Summary, Colton**

Variety Name	Type	2015				
		Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in.)	Canopy Height (in.)	Erect Index (0.01-1.00)
PS08101022	<i>Yellow</i>	<b>1990</b>	<b>18.7</b>	17	17	1.00
<b>Ginny (Pro 091-7137)</b>	<i>Green</i>	<b>1980</b>	15.7	20	20	1.00
<b>Banner</b>	<i>Green</i>	<b>1940</b>	16.9	23	23	1.00
<b>Universal</b>	<i>Yellow</i>	<b>1840</b>	16.2	21	21	1.00
PS10100295	<i>Green</i>	1810	17.0	28	28	1.00
<b>Carousel</b>	<i>Yellow</i>	1750	17.0	22	22	1.00
PS07100470	<i>Green</i>	1740	14.6	22	22	1.00
<b>Greenwood (Pro 7040)</b>	<i>Green</i>	1720	14.4	20	20	1.00
<b>Aragorn</b>	<i>Green</i>	1700	16.6	22	22	1.00
PS08101004	<i>Yellow</i>	1690	19.4	20	20	1.00
PS10100370	<i>Green</i>	1690	17.4	23	23	1.00
<b>Ariel</b>	<i>Green</i>	1660	14.3	21	21	1.00
PS03101445	<i>Green</i>	1630	15.5	20	20	1.00
PS05100840	<i>Green</i>	1630	17.4	18	18	1.00
PS08100582	<i>Green</i>	1620	15.7	21	21	1.00
PS08100133	<i>Green</i>	1610	16.8	19	19	1.00
PS07100925	<i>Yellow</i>	1580	18.2	16	16	1.00
PS12100058	<i>Green</i>	1550	14.0	22	22	1.00
PS08100950	<i>Yellow</i>	1510	17.5	18	18	1.00
PS12100095	<i>Green</i>	1500	14.3	23	23	1.00
PS10100158	<i>Green</i>	1490	13.0	23	23	1.00
<b>Columbian</b>	<i>Green</i>	1450	17.0	29	12	0.41
PS12100011	<i>Green</i>	990	15.9	22	22	1.00
<b>C.V. %</b>		9	4.2	7	7	0.91
<b>LSD (.10)</b>		160	0.7	2	2	0.01
<b>Average</b>		1650	16.2	21	21	0.98
<b>Highest</b>		1990	19.4	29	28	1.00
<b>Lowest</b>		990	13.0	16	12	0.41

Hampton results not included due to incorrect seed source.

1. Seed yield in the 2015 Colton spring dry pea variety trial averaged 1650 pounds/acre. This is the first year at this location. The Colton nursery was located about two miles west of Colton, WA near the Snake River canyon rim (Harold Schultheis, cooperator).
2. This nursery was seeded on 13 April, 2015. Seed was placed at an eight seeds/sq.ft. rate (about 150 lb/acre for average seed size) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well. Warm and dry conditions prevailed across the growing season limiting yield potential.
3. Yields ranged from 990 to 1990 pounds/acre. There was low variability in the trial and a relatively narrow LSD shows four entries in the bolded top group. The green variety 'Ginny' was the highest yielding named entry. Color type is listed after variety name.
4. Seed weights averaged 16.2 grams/100 seed, plants averaged a short 21 inches, and stood well.

**Table 10. 2015 WSU Variety Testing Pea Trial Summary, Palouse**

Variety Name	Type	2015							
		5 year Average (lbs/a)	3 year Average (lbs/a)	2 year Average (lbs/a)	Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in.)	Canopy Height (in.)	Erect Index (0.01-1.00)
PS08101022	Yellow		2690	2220	<b>2170</b>	19.4	19	19	1.00
PS08101004	Yellow		2630	2320	<b>2140</b>	<b>20.3</b>	22	21	0.98
PS10100295	Green				<b>2130</b>	17.6	26	21	0.82
PS05100840	Green	2560	2470	2210	<b>2120</b>	19.5	18	18	1.00
Universal	Yellow	2750	2710	2260	2000	16.9	25	25	1.00
PS08100950	Yellow				1970	19.3	18	18	1.00
PS10100370	Green				1970	19.4	26	26	1.00
Aragorn	Green	2440	2470	2090	1960	16.2	23	23	1.00
Banner	Green	2530	2350	2100	1950	16.1	24	23	0.97
PS07100925	Yellow		2520	2080	1950	<b>20.6</b>	19	19	1.00
Ginny (Pro 091-7137)	Green	2450	2400	2090	1900	16.2	22	22	1.00
PS08100133	Green		2460	2130	1890	16.9	21	21	1.00
Greenwood (Pro 7040)	Green		2320	2000	1890	15.9	23	23	1.00
PS07100470	Green	2490	2370	2080	1870	16.7	24	24	1.00
Carousel	Yellow	2630	2530	2140	1840	18.9	24	24	1.00
Ariel	Green	2390	2400	2070	1790	14.5	23	23	1.00
PS12100058	Green				1790	16.9	25	25	1.00
PS03101445	Green	2420	2330	2000	1750	16.2	23	23	1.00
PS12100095	Green				1710	15.4	25	25	1.00
PS10100158	Green				1690	14.2	24	24	1.00
Columbian	Green	1940	1820	1740	1660	17.3	31	12	0.39
PS08100582	Green		2350	1960	1650	16.3	22	22	1.00
PS12100011	Green			1930	1170	16.6	26	26	1.00
C.V. %		10	9	7	5	3.2	6	7	4.59
LSD (.10)		110	120	100	100	0.6	2	2	0.05
Average		2460	2430	2080	1860	17.3	23	22	0.97
Highest		2750	2710	2320	2170	20.6	31	26	1.02
Lowest		1940	1820	1740	1170	14.2	18	12	0.39

Hampton results not included due to incorrect seed source.

1. Seed yield in the 2015 Palouse spring dry pea variety trial averaged 1860 pounds/acre, 600 pounds/acre less than the 4-year average at this location. The Palouse nursery was located about eight miles south of Palouse, WA (Chris and Frank Fleener, cooperators).
2. This nursery was seeded on 23 April, 2015. Seed was delivered at an eight seeds/sq.ft. rate (about 150 lb/acre for average seed size) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well. Warm and dry conditions prevailed across the growing season limiting yield potential.
3. Yields ranged from 1170 to 2170 pounds/acre. There was low variability in the trial and a relatively narrow LSD shows four numbered line entries in the bolded top group. The yellow variety 'Universal' was the highest yielding named entry. Color type is listed after variety name.
4. Seed weights averaged 17.3 grams/100 seed and is lower than last year by 2.8 grams/100 seed. Plants also averaged four inches shorter, and the erect index was higher than last year.



**Table 11. 2015 WSU Variety Testing Pea Trial Summary, Walla Walla**

Variety Name	Type	2015							
		4 year Average* (lbs/a)	3 year Average* (lbs/a)	2 year Average (lbs/a)	Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in.)	Canopy Height (in.)	Erect Index (0.01-1.00)
PS10100158	Green				2440	19.6	21	17	0.81
PS07100470	Green	2280	2280	2300	2120	20.7	22	22	1.00
Universal	Yellow	2180	2180	2110	2080	19.9	24	24	1.00
Carousel	Yellow	2320	2240	2260	2070	23.2	25	25	1.00
PS08101022	Yellow			2170	2040	21.6	20	20	0.98
PS08101004	Yellow		2260	2240	2020	23.5	19	16	0.84
PS08100950	Yellow				2010	25.6	18	16	0.90
Greenwood (Pro 7040)	Green		2150	2130	2010	18.0	23	23	1.00
PS08100582	Green			2190	1990	21.4	21	21	1.00
PS07100925	Yellow		2070	1980	1990	24.2	19	19	1.00
PS12100058	Green				1980	21.7	24	24	1.00
PS05100840	Green	2100	2000	1900	1960	22.3	18	18	1.00
PS10100370	Green				1930	22.2	23	22	0.94
PS08100133	Green			2000	1900	21.4	21	21	1.00
PS12100095	Green				1890	19.5	24	24	1.00
PS03101445	Green	2210	2120	2090	1860	18.7	22	20	0.94
Ginny (Pro 091-7137)	Green	2100	2090	2050	1850	19.5	23	23	1.00
Banner	Green	2090	2000	1890	1810	17.1	24	22	0.94
Ariel	Green	2060	1970	1870	1690	16.4	23	23	1.00
PS12100011	Green				1680	24.3	25	25	1.00
Aragorn	Green	2010	1930	1860	1660	18.4	22	21	0.96
PS10100295	Green				1610	19.0	26	18	0.69
Columbian	Green	1320	1270	1050	1290	19.0	28	10	0.38
C.V. %		7	7	7	5	3.4	8	10	6.67
LSD (.10)		80	90	110	110	0.8	2	2	0.07
Average		2070	2040	2010	1920	20.8	22	21	0.93
Highest		2320	2280	2300	2440	25.6	28	25	1.00
Lowest		1320	1270	1050	1290	16.4	18	10	0.38

\* 2013 data not included

Hampton results not included due to incorrect seed source.

1. Seed yield in the 2015 Walla Walla spring dry pea variety trial averaged 1920 pounds/acre, 150 pounds/acre less than the 4-year average at this location. The Walla Walla nursery was located about two miles east of Walla Walla, WA (Dwelley Jones, cooperator).

2. This nursery was seeded on 27 March, 2015. Seed was delivered at an eight seeds/sq.ft. rate (about 150 lb/acre for average seed size) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well. A late season irrigation was applied close to physiological maturity and had a minor impact on crop performance.

3. Yields ranged from 1290 to 2440 pounds/acre. There was low variability in the trial and a relatively narrow LSD shows only a numbered line entry in the bolded top group. The yellow variety 'Universal' was the highest yielding named entry. Color type is listed after variety name.

4. Seed weights averaged 20.8 grams/100 seed and is lower than last year by 1.8 grams/100 seed. Plants were also shorter, but the erect index was similar to last year.

**Table 12. 2015 WSU Variety Testing Lentil Trial Summary, Colton**

2015						
Variety Name	Type	Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in.)	Canopy Height (in.)	Erect Index (0.01-1.00)
LC01602273E	<i>Eston</i>	1040	2.9	13	11	0.92
Avondale	<i>Richlea</i>	890	3.8	12	12	0.95
LC11600361R	<i>Richlea</i>	850	3.7	12	11	0.87
Pardina	<i>Pardina</i>	810	3.2	11	10	0.93
LC10600494P	<i>Pardina</i>	750	3.4	12	11	0.94
BN Persians	<i>Eston</i>	750	2.8	12	10	0.83
LC11600362R	<i>Richlea</i>	740	3.5	15	13	0.89
LC07ND055E	<i>Eston</i>	730	3.0	11	11	0.98
LC08600113P	<i>Pardina</i>	710	3.7	12	11	0.89
Richlea	<i>Richlea</i>	700	4.1	12	12	0.94
LC10600231P	<i>Pardina</i>	620	3.4	11	10	0.96
Merrit	<i>Laird</i>	610	5.0	12	10	0.89
LC01602062T	<i>Turkish Red</i>	570	3.7	11	11	0.94
Crimson	<i>Turkish Red</i>	550	2.8	10	10	0.93
Eston	<i>Eston</i>	550	2.7	11	11	0.98
NDL080187L	<i>Laird</i>	540	4.4	11	11	0.94
LC08600116P	<i>Pardina</i>	450	3.9	12	10	0.83
LC06601734L	<i>Laird</i>	440	5.6	13	12	0.91
LC09600410L	<i>Laird</i>	390	5.8	12	11	0.91
LC11600380L	<i>Laird</i>	330	5.6	12	12	0.93
C.V. %		17	3.1	9	10	6.81
LSD (.10)		120	0.1	1	1	0.07
Average		650	3.9	12	11	0.92
Highest		1040	5.8	15	13	0.98
Lowest		330	2.7	10	10	0.83

1. Seed yield in the 2015 Colton spring lentil variety trial averaged 650 pounds/acre. This is the first year at this location. The Colton nursery was located about two miles west of Colton, WA near the Snake River canyon rim (Harold Schultheis, cooperator)
2. This nursery was seeded on 13 April, 2015. Seed was placed at a nine seeds/sq. ft. rate (about 60 lbs/acre for average 'Laird' seed weight) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well. Warm and dry conditions prevailed across the growing season limiting yield potential and seed filling.
3. Yields ranged from 330 to 1040 pounds/acre. The variability was acceptable for a legume trial with low yield potential. The top yielding named variety was Avondale, a Richlea type.
4. Seed weights averaged 3.9 grams/100 seed, plants averaged a short 12 inches and stood well.

**Table 13. 2015 WSU Variety Testing Lentil Trial Summary, Palouse**

Variety Name	Type	2015							
		5 Year Average (lbs/a)	3 Year Average (lbs/a)	2 Year Average (lbs/a)	Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in)	Canopy Height (in)	Erect Index (0.01-1.00)
<b>Pardina</b>	<i>Pardina</i>	2010	1890	1670	<b>1390</b>	3.4	11	11	1.00
<b>BN Persians</b>	<i>Eston</i>				<b>1340</b>	3.0	12	10	0.89
<b>LC08600113P</b>	<i>Pardina</i>	1900	1730	1490	<b>1340</b>	3.7	12	11	0.89
<b>Merrit</b>	<i>Laird</i>	1750	1600	1300	<b>1320</b>	5.2	13	13	0.97
<b>LC10600494P</b>	<i>Pardina</i>				1310	3.7	12	12	1.00
<b>Avondale (LC01602300R)</b>	<i>Richlea</i>	2000	1810	1520	1300	4.2	13	13	0.98
<b>LC01602062T</b>	<i>Turkish red</i>	1840	1690	1360	1220	4.1	12	11	0.93
<b>Richlea</b>	<i>Richlea</i>		1640	1460	1210	4.2	13	12	0.93
<b>LC01602273E</b>	<i>Eston</i>		1720	1390	1200	2.9	12	11	0.97
<b>LC08600116P</b>	<i>Pardina</i>			1320	1190	4.2	12	9	0.79
<b>LC10600231P</b>	<i>Pardina</i>				1160	3.7	12	12	1.00
<b>LC11600380L</b>	<i>Laird</i>				1140	5.9	15	15	1.00
<b>Crimson</b>	<i>Turkish red</i>	1620	1580	1330	1130	2.8	11	10	0.94
<b>LC11600362R</b>	<i>Richlea</i>				1130	3.6	14	13	0.97
<b>LC11600361R</b>	<i>Richlea</i>				1130	3.7	13	12	0.90
<b>LC09600410L</b>	<i>Laird</i>				1110	<b>6.1</b>	12	12	1.00
<b>LC06601734L</b>	<i>Laird</i>	1710	1440	1190	1070	5.9	13	13	0.97
<b>LC07ND055E</b>	<i>Eston</i>		1710	1410	1060	3.1	12	12	1.00
<b>NDL080187L</b>	<i>Laird</i>				910	4.8	13	13	1.00
<b>Eston</b>	<i>Eston</i>	1670	1610	1260	900	2.8	12	11	0.93
<b>C.V. %</b>		10	10	11	6	2.9	7	10	6.96
<b>LSD (.10)</b>		80	100	120	80	0.1	1	1	0.07
<b>Average</b>		1810	1680	1390	1180	4.1	12	12	0.95
<b>Highest</b>		2010	1890	1670	1390	6.1	15	15	1.00
<b>Lowest</b>		1620	1440	1190	900	2.8	11	9	0.79

1. Seed yield in the 2015 Palouse spring lentil variety trial averaged 1180 pounds/acre, 630 pounds/acre less than the 5-year average at this location. The Palouse nursery was located about eight miles south of Palouse, WA (Chris and Frank Fleener, cooperators).
2. This nursery was seeded on 23 April, 2015. Seed was delivered at a nine seeds/sq. ft. rate (about 60 lbs/acre for average 'Laird' seed weight) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well. Warm and dry conditions prevailed across the growing season limiting yield potential.
3. Yields ranged from 900 to 1390 pounds/acre. There was low variability in the trial and a relatively narrow LSD shows four entries at in the bolded top group. Pardina was the highest yielding entry.
4. Seed weights averaged 4.1 grams/100 seed and is lower than last year by 0.4 grams/100 seed. Plants averaged three inches shorter, but the erect index was higher than last year.

Table 14.

## 2015 WSU Variety Testing Lentil Trial Summary, Walla Walla

Variety Name	Type	2015							
		5 Year Average (lbs/a)	3 Year Average (lbs/a)	2 Year Average (lbs/a)	Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in)	Canopy Height (in)	Erect Index (0.01-1.00)
LC09600410L	<i>Laird</i>				1370	7.6	13	12	0.90
NDL080187L	<i>Laird</i>				1340	6.5	13	11	0.86
LC07ND055E	<i>Eston</i>		1200	1550	1310	4.0	13	13	0.97
Richlea	<i>Richlea</i>		1300	1480	1230	5.5	15	12	0.85
Avondale (LC01602300R)	<i>Richlea</i>	1360	1270	1370	1150	5.3	13	13	0.96
Eston	<i>Eston</i>	1030	1040	1280	1150	3.7	12	12	0.98
LC11600361R	<i>Richlea</i>				1140	5.6	15	8	0.55
LC11600362R	<i>Richlea</i>				1110	4.7	14	11	0.80
LC01602273E	<i>Eston</i>		1090	1340	1040	3.8	12	11	0.92
LC06601734L	<i>Laird</i>	1170	1180	1340	1020	6.9	14	11	0.79
Crimson	<i>Turkish red</i>	810	850	980	970	3.8	11	9	0.83
LC11600380L	<i>Laird</i>				940	7.3	14	10	0.73
LC08600113P	<i>Pardina</i>	1160	1100	1160	900	5.3	13	10	0.78
LC08600116P	<i>Pardina</i>			1050	890	5.8	12	9	0.80
Merrit	<i>Laird</i>	1180	1020	1190	890	6.8	13	11	0.88
LC10600494P	<i>Pardina</i>				870	4.2	12	11	0.92
Pardina	<i>Pardina</i>	1150	890	1000	820	4.5	12	10	0.83
LC10600231P	<i>Pardina</i>				720	4.7	12	10	0.87
LC01602062T	<i>Turkish red</i>	1100	970	1120	640	4.8	12	11	0.89
BN Persians	<i>Eston</i>				480	3.5	11	9	0.79
C.V. %		15	15	15	15	2.5	7	11	8.66
LSD (.10)		80	100	130	160	0.1	1	1	0.08
Average		1120	1080	1240	1000	5.2	13	11	0.85
Highest		1360	1300	1550	1370	7.6	15	13	0.98
Lowest		810	850	980	480	3.5	11	8	0.55

1. Seed yield in the 2015 Walla Walla spring lentil variety trial averaged 1000 pounds/acre, 120 pounds/acre less than the 5-year average at this location. The Walla Walla nursery was located about two miles east of Walla Walla, WA (Dwelle Jones, cooperator).

2. This nursery was seeded on 27 March, 2015. Seed was delivered at the nine seeds/sq. ft. rate (about 60 lbs/acre for average 'Laird' seed weight) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well. A late season irrigation was applied close to physiological maturity and had a minor impact on crop performance.

3. Yields ranged from 480 to 1370 pounds/acre. The variability was acceptable for a legume trial with low yield potential. The top yielded named variety was Richlea.

4. Seed weights averaged 5.2 g/100 seed, plants averaged 13 inches in height, and the erect index was 0.85 with all these parameters similar to 2015 averages.

**Table 15. 2015 WSU Variety Testing Chickpea Trial Summary, Colton**

Variety Name	2015		
	Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in.)
<b>Billy beans</b>	<b>1510</b>	28.8	17
<b>CDC Leader</b>	<b>1400</b>	35.3	16
<b>CA0490B0223D</b>	<b>1390</b>	25.9	14
CDC Orion	1330	39.9	14
<b>CA0890B0531C</b>	1310	48.0	17
Myles	1220	16.9	12
<b>CA0790B0547C</b>	1210	45.9	16
<b>CA0790B0043C</b>	1170	46.9	19
<b>Nash (CA04900843C)</b>	1160	<b>55.7</b>	15
CDC Frontier	1160	34.5	16
<b>Sawyer</b>	1150	40.4	18
<b>CA0790B0642C</b>	1110	48.2	16
<b>CA0790B0733C</b>	1090	45.2	15
<b>CA0890B0429C</b>	1060	49.5	17
<b>CA0790B0054C</b>	960	50.3	19
<b>Royal (CA04900851C)</b>	870	50.0	18
<b>CA0890B0526D</b>	870	29.0	15
Sierra	800	43.3	17
<b>CA0890B0551C</b>	550	43.3	15
<b>Dwelley</b>	470	44.1	17
<b>C.V. %</b>	10	4.8	7
<b>LSD (.10)</b>	116	2.1	1
<b>Average</b>	1090	41.1	16
<b>Highest</b>	1510	55.7	19
<b>Lowest</b>	470	16.9	12

1. Seed yield in the 2015 Colton spring chickpea variety trial averaged 1090 pounds/acre. This is the first year at this location. The Colton nursery was located about two miles west of Colton, WA near the Snake River canyon rim (Harold Schultheis, cooperator).
2. This nursery was seeded on 13 April, 2015. Seed was placed at a 5 seeds/sq. ft. rate (about 200 lb/acre rate for average seed size) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well. Warm and dry conditions prevailed across the growing season.
3. Yields ranged from 470 to 1510 pounds/acre. There was average variability in the trial and the LSD shows three entries in the bolded, top group. The variety 'Billy beans' was the highest yielding entry.
4. Seed weights averaged 41.1 grams/100 seed, plants averaged a short 16 inches and stood well.

Table 16.

## 2015 WSU Variety Testing Chickpea Trial Summary, Farmington

Variety Name	4 Year Average (lbs/a)^	3 Year Average (lbs/a)+	2 Year Average (lbs/a)*	2015		
				Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in)
Billy beans		1930	1760	<b>1720</b>	29.1	19
CA0490B0223D			1710	<b>1660</b>	26.1	14
CDC Orion	2100	1930	1720	<b>1580</b>	43.6	15
CDC Frontier	2080	1950	1710	<b>1560</b>	35.6	15
CA0890B0526D			1520	<b>1550</b>	29.9	17
CDC Leader				1450	39.4	15
CA0790B0054C			1450	1400	50.4	19
Myles			1490	1340	16.9	14
CA0790B0547C				1300	49.6	17
Sawyer	1920	1760	1480	1280	42.7	17
CA0890B0531C				1180	49.1	14
CA0890B0429C			1180	1130	52.2	16
Nash (CA04900843C)	1870	1720	1350	1110	<b>55.5</b>	16
CA0790B0642C				1110	52.1	14
CA0790B0043C		1620	1280	1070	48.6	18
CA0790B0733C				980	47.8	16
CA0890B0551C				840	49.7	14
Royal (CA04900851C)				600	<b>54.0</b>	20
Dwelley	1320	1330	980	560	45.9	16
Sierra	1620	1510	1090	530	49.9	17
C.V. %	14	13	13	17	3.6	5
LSD (.10)	120	120	140	210	1.7	1
Average	1820	1720	1440	1200	43.4	16
Highest	2100	1950	1760	1720	55.5	20
Lowest	1320	1330	980	530	16.9	14

\* 2013 & 2015 data (2014 data not included due to deer damage)

+ 2012, 2013 & 2015 data

^ 2011, 2012, 2013 & 2015 data

1. Seed yield in the 2015 Farmington spring chickpea variety trial averaged 1200 pounds/acre, 620 pounds/acre less than the 4-year average at this location. The Farmington nursery was located about four miles south of Farmington, WA (Bruce Nelson, cooperator).
2. This nursery was seeded on 27 April, 2015. Seed was delivered at a five seeds/sq.ft rate (about 200 lbs/acre for average seed size) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well, but the growing season was warmer and drier than normal.
3. Average yields ranged from 530 to 1720 pounds/acre. The variability was higher than desired. Deer feeding on later maturity entries contributed to variability. The variety 'Billy beans' was the highest yielding entry.
4. Seed weights averaged 43.4 grams/100 seed and plant height averaged a short 16 inches.

Table 17.

## 2015 WSU Variety Testing Chickpea Trial Summary, Palouse

Variety Name	5 Year Average (lbs/a)	3 Year Average (lbs/a)	2 Year Average (lbs/a)	2015		
				Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in)
CDC Frontier	2700	2550	2400	<b>2090</b>	37.6	16
CA0790B0547C				<b>2060</b>	53.7	15
CA0490B0223D		2500	2350	<b>2030</b>	28.4	14
CA0790B0733C				1870	49.2	17
CA0890B0429C				1840	56.5	16
CA0790B0642C				1810	55.8	15
Billy beans		2330	2100	1780	31.9	16
CDC Orion	2720	2530	2220	1780	44.8	15
CDC Leader				1760	41.7	14
CA0790B0054C		2260	2020	1750	55.2	18
Royal (CA04900851C)			1730	1750	57.7	16
CA0790B0043C		2230	2030	1690	52.6	18
Sierra	2140	1870	1640	1690	52.1	16
CA0890B0531C				1660	52.7	15
CA0890B0551C				1650	54.9	14
Sawyer	2420	2300	2010	1630	46.2	15
CA0890B0526D		1740	1480	1610	31.7	16
Myles		2170	1920	1600	18.5	15
Nash (CA04900843C)	2350	2200	1910	1570	<b>60.8</b>	16
Dwelley	1840	1560	1300	1490	51.8	16
C.V. %	8	8	9	8	2.1	4
LSD (.10)	80	110	130	150	1.1	1
Average	2360	2190	1930	1760	46.7	16
Highest	2720	2550	2400	2090	60.8	18
Lowest	1840	1560	1300	1490	18.5	14

1. Seed yields in the 2015 Palouse spring chickpea trial averaged 1760 pounds/acre, 600 pounds/acre less than the 5-year average at this location. The Palouse nursery was located about eight miles south of Palouse, WA (Chris and Frank Fleener, cooperators).

2. This nursery was seeded on 23 April, 2015. Seed was delivered at a five seeds/sq.ft. rate (about 200 lbs/acre for average seed size) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well. Warm and dry conditions prevailed across the growing season and limited yield potential.

3. Yields ranged from 1490 to 2090 pounds/acre. There was low variability in the trial and a relatively narrow LSD shows three entries in the bolded top group. The variety 'CDC Frontier' was the highest yielded named entry.

4. Seed weights averaged 46.7 grams/100 seed and is slightly lower than last year's average seed weight. Plants averaged only 16 inches and were 6 inches shorter in 2015 than in 2014.

Table 18.

## 2015 WSU Variety Testing Chickpea Trial Summary, Walla Walla

Variety Name	5 Year Average (lbs/a)	3 Year Average (lbs/a)	2 Year Average (lbs/a)	2015		
				Yield (lbs/a)	100 Seed Weight (grams)	Plant Height (in)
CDC Frontier	2410	2190	2450	<b>3030</b>	35.5	16
Billy beans		2090	2240	2590	31.1	19
CA0790B0547C				2480	50.1	15
CA0790B0043C		1980	2190	2310	52.3	19
CA0790B0054C		1870	2060	2300	54.1	17
CA0790B0733C				2300	46.7	15
Myles		1800	1880	2110	19.0	15
CDC Leader				2080	40.0	14
CA0890B0429C				1990	54.6	16
Royal (CA04900851C)			1610	1900	48.3	16
Sierra	1670	1430	1560	1890	47.3	16
Sawyer	1850	1580	1690	1820	43.5	16
CA0790B0642C				1710	52.7	13
CA0890B0531C				1620	50.1	15
CA0490B0223D		1600	1580	1560	29.2	13
Nash (CA04900843C)	1800	1470	1560	1550	<b>57.3</b>	16
CA0890B0551C				1540	49.8	14
Dwelley	1420	1190	1320	1430	46.1	17
CA0890B0526D		1180	1200	1420	27.4	14
CDC Orion	1820	1460	1530	1280	45.7	14
C.V. %	11	8	7	6	2.8	6
LSD (.10)	100	80	100	130	1.3	1
Average	1830	1650	1760	1950	44.0	16
Highest	2410	2190	2450	3030	57.3	19
Lowest	1420	1180	1200	1280	19.0	13

1. Seed yield in the 2015 Walla Walla spring chickpea variety trial averaged 1950 pounds/acre, 80 pounds/acre more than the 5-year average at this location. The Walla Walla nursery was located about two miles east of Walla Walla, WA (Dwelley Jones, cooperator).
2. This nursery was seeded on 27 March, 2015. Seed was delivered at a five seeds/sq.ft rate (about 200 lb/acre for average seed size) using a double-disc drill set on 7-inch spacing. Seeding was timely and the crop established well. Although the overall growing season was warm and dry, a late season irrigation during grain filling of about 1 inch of water boosted yields and seed weights.
3. Yields ranged from 1280 to 3030 pounds/acre. There was low variability in the trial and a relatively narrow LSD shows one variety in the bolded top group. The variety 'CDC Frontier' was the highest yielding entry.
4. Seed weights averaged 44.0 grams/100 seed and is 3.5 grams/100 seed lower than last year. Plants averaged 16 inches, 3 inches shorter than in 2014.



**Table 19. Spring Pea Seeding Rate Trial, Pullman****2015 Ginny Seeding Rate Trial - Pullman**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	6 sds/sqft	701	14.0	13.3	9.2
2	7 sds/sqft	709	13.9	13.5	9.7
3	8 sds/sqft	709	13.9	13.7	9.9
4	9 sds/sqft	837	14.3	14.2	12.0
5	10 sds/sqft	840	13.6	14.2	13.5
6	11 sds/sqft	883	14.5	14.2	14.4
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	Average	780	14.0	13.8	11.4
	C.V. %	12	3.3	4.9	14.0
	LSD 0.05	95	0.5	NS	1.6
	P value	0.0053	0.0412	0.1381	0.0000

**2015 Hampton Seeding Rate Trial - Pullman**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	6 sds/sqft	956	18.6	16.2	7.8
2	7 sds/sqft	1031	18.8	16.2	8.7
3	8 sds/sqft	878	17.9	15.8	10.0
4	9 sds/sqft	1030	18.0	15.8	10.4
5	10 sds/sqft	952	17.7	15.7	13.2
6	11 sds/sqft	1019	17.8	15.7	14.0
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	Average	978	18.1	15.9	10.6
	C.V. %	13	2.7	4.1	15.3
	LSD 0.05	NS	0.5	NS	1.6
	P value	0.2308	0.0027	0.5975	0.0000

The spring 2015 Pullman pea seeding rate study was seeded on 21 April, 2015 for Ginny and 1 May, 2015 for Hampton using a conventional double disc plot drill following wheat. Seeds of two varieties were placed at 6, 7, 8, 9, 10, and 11 seeds/sq.ft. rates in 7-inch row spacing. There were six replications in the two trials considered separately by variety. Seeds were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about two miles east of Pullman, WA (WSU Crop and Soils Department Spillman Farm, cooperator). The Hampton seed planted in this trial had a normal germination and establishment rate unlike at Walla Walla. However, high temperatures and low precipitation restricted crop performance especially in later seeding and allowed only minimal response to seeding rates for both varieties. Despite later seeding, Hampton out-yielded Ginny, but both varieties showed little performance change due to seeding rate except for the lowest rate.

**Table 20. Spring Pea Seeding Rate Trial, Walla Walla****2015 Ginny Seeding Rate Trial - Walla Walla**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	6 sds/sqft	1558	19.6	22.2	8.9
2	7 sds/sqft	1682	19.8	22.8	9.6
3	8 sds/sqft	1673	19.4	22.5	11.1
4	9 sds/sqft	1762	19.2	22.3	11.5
5	10 sds/sqft	1703	19.2	22.2	12.6
6	11 sds/sqft	1667	19.0	22.7	13.6
	Average	1674	19.4	22.6	11.2
	C.V. %	6	2.6	3.8	6.5
	LSD 0.05	95	NS	NS	0.7
	P value	0.0361	0.0827	0.1898	0.0000

**2015 Hampton Seeding Rate Trial - Walla Walla**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	6 sds/sqft	1392	23.4	19.7	2.9
2	7 sds/sqft	1501	23.3	20.2	3.5
3	8 sds/sqft	1530	23.0	19.3	4.0
4	9 sds/sqft	1644	23.0	19.7	4.6
5	10 sds/sqft	1551	22.0	19.3	5.5
6	11 sds/sqft	1637	22.1	19.3	5.1
	Average	1543	22.8	19.6	4.3
	C.V. %	6	2.1	7.7	17.0
	LSD 0.05	98	0.5	NS	0.7
	P value	0.0018	0.0000	0.9146	0.0000

The spring 2015 Walla Walla pea seeding rate study was seeded on 27 March, 2015 using a conventional double disc plot drill following wheat. Seeds of two varieties were placed at 6, 7, 8, 9, 10, and 11 seeds/sq.ft. rates in 7-inch row spacing. There were six replications in the two trials considered separately by variety. Seeds were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about two miles east of Walla Walla, WA (Dwelley Jones, cooperator). The Hampton seed planted in this trial had a normal germination rate, but did not germinate and establish well in the field, averaging less than 50%, resulting in low stand counts. High temperatures and low precipitation restricted crop performance allowing only minimal response to seeding rates for both varieties. These trials had a late-season irrigation, close to physiological maturity, but did not save the crop from stress due to low available water during the majority of the season.

**Table 21. Lentil Seeding Rate Trial, Farmington****2015 Avondale Seeding Rate Trial - Farmington**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	7 sds/sqft	554	5.2	11.2	8.8
2	8 sds/sqft	565	5.0	11.2	9.1
3	9 sds/sqft	597	5.0	10.8	10.0
4	10 sds/sqft	617	5.1	10.8	11.0
5	11 sds/sqft	612	5.0	10.8	10.6
6	12 sds/sqft	596	5.0	11.8	12.0
	Average	590	5.0	11.1	10.2
	C.V. %	19	2.9	7.0	14.2
	LSD 0.05	NS	NS	NS	1.4
	P value	0.9068	0.3612	0.2232	0.0075

**2015 Morena Seeding Rate Trial - Farmington**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	7 sds/sqft	404	4.0	11.3	9.9
2	8 sds/sqft	431	4.0	11.3	9.4
3	9 sds/sqft	454	4.0	11.8	9.7
4	10 sds/sqft	483	4.1	12.2	10.1
5	11 sds/sqft	477	4.0	11.7	8.4
6	12 sds/sqft	496	4.0	12.2	11.9
	Average	457	4.0	11.8	9.9
	C.V. %	38	3.5	6.9	18.9
	LSD 0.05	NS	NS	NS	NS
	P value	0.9403	0.7634	0.2926	0.0738

The spring 2015 Farmington lentil seeding rate study was seeded on 27 April, 2015 using a conventional double disc plot drill following spring wheat. Seeds of two varieties were placed at 7, 8, 9, 10, 11, and 12 seeds/sq.ft. rates in 7-inch row spacing. There were six replications in the two trials considered separately by variety. The trial was located about four miles south of Farmington, WA (Bruce Nelson, cooperator). Seeding conditions were variable and plants established differentially because of field variation and disease problems. Yields were very low and plant growth during the season was poor. Disease and variable field conditions contributed to poor results. Additionally, high temperatures and low precipitation restricted crop performance, and there were no significant response to seeding rates for both varieties.

**Table 22. Lentil Seeding Rate Trial, Pullman****2015 Avondale Seeding Rate Trial - Pullman**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	7 sds/sqft	183	4.6	8.7	9.6
2	8 sds/sqft	192	4.6	9.0	9.7
3	9 sds/sqft	213	4.5	9.2	10.0
4	10 sds/sqft	196	4.5	8.8	10.4
5	11 sds/sqft	190	4.6	8.8	10.9
6	12 sds/sqft	206	4.6	9.0	11.6
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	Average	197	4.6	8.9	10.4
	C.V. %	16	2.7	6.2	18.3
	LSD 0.05	NS	NS	NS	NS
	P value	0.6281	0.7579	0.6971	0.4428

**2015 Morena Seeding Rate Trial - Pullman**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	7 sds/sqft	378	3.4	10.7	9.0
2	8 sds/sqft	409	3.4	10.7	9.7
3	9 sds/sqft	404	3.5	10.5	9.4
4	10 sds/sqft	480	3.4	10.8	9.8
5	11 sds/sqft	421	3.4	10.5	10.8
6	12 sds/sqft	386	3.4	10.2	11.3
<hr/>					
	Average	413	3.4	10.6	10.0
	C.V. %	26	3.3	6.7	16.5
	LSD 0.05	NS	NS	NS	NS
	P value	0.6593	0.7299	0.6822	0.1659

The spring 2015 Pullman lentil seeding rate study was seeded on 28 April, 2015 using a conventional double disc plot drill following spring wheat. Seeds of two varieties were placed at 7, 8, 9, 10, 11, and 12 seeds/sq.ft. rates in 7-inch row spacing. There were six replications in the two trials considered separately by variety. Seeding conditions were dry and plants did not establish well. The trial was located about two miles east of Pullman, WA (WSU Crop and Soils Department Spillman Farm, cooperator). Yields were very low and plant growth during the season was poor. High temperatures and low precipitation restricted crop performance, especially with the relative late seeding, and there were no significant response to seeding rates for both varieties.

**Table 23. 2015 Billy beans Seeding Rate Trial - Pullman**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	3 sds/sqft	910	28.2	14.7	3.9
2	4 sds/sqft	1002	28.3	14.7	5.7
3	5 sds/sqft	1113	28.6	14.5	7.1
4	6 sds/sqft	1192	28.2	14.8	7.7
5	7 sds/sqft	1189	28.8	14.8	9.7
6	8 sds/sqft	1265	28.3	15.2	10.9
	Average	1112	28.4	14.8	7.5
	C.V. %	8	2.1	4.1	15.9
	LSD 0.05	93	NS	NS	1.2
	P value	0.0000	0.5730	0.5254	0.0000

Trt. no.	Seeding rate seeds/sqft	Screen 1* %	Screen 2 %	Screen 3 %	Screen 4 %	Screen 5 %	Screen 6 %	Screen 7 %
1	3 sds/sqft	0.00	0.02	0.4	1.8	32.10	51.23	14.48
2	4 sds/sqft	0.00	0.03	0.45	2.22	34.57	49.68	13.07
3	5 sds/sqft	0.00	0.03	0.4	1.95	35.30	49.23	13.07
4	6 sds/sqft	0.00	0.05	0.32	2.25	37.12	48.87	11.38
5	7 sds/sqft	0.00	0.00	0.43	2.18	37.78	47.65	11.97
6	8 sds/sqft	0.00	0.10	0.53	3.05	37.07	47.38	11.90
	Average	0.00	0.04	0.42	2.24	35.66	49.01	12.64
	C.V. %	0.00	208.6	101.6	38.8	7.95	4.61	20.01
	LSD 0.05	0.00	NS	NS	NS	2.80	NS	NS
	P value	0.00	0.3948	0.973	0.2297	0.0183	0.071	0.3427

\* screen sizes: #1 = 25/64" round holes; #2 = 25/64"; #3 = 23/64"; #4 = 22/64"; #5 = 20/64"; #6 = 18/64"; #7 = bottom pan

The spring 2015 Pullman chickpea seeding rate study of 'Billy beans' was seeded on 21 April, 2015 using a conventional double disc plot drill following wheat. Seeds were placed at 3, 4, 5, 6, 7, and 8 seeds/sq.ft. rates in 7-inch row spacing. There were six replications. Seeds were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about two miles east of Pullman, WA (WSU Crop and Soils Department Spillman Farm, cooperator). There was low available water and unseasonably warm temperatures during the majority of the season. Yield increased incrementally for each seeding rate increase and many steps were significant, despite overall yields being well below expectations. Seed weight and plant height values were not significant among seeding rate. Screened seed size were not significant for seeding rate except for an increasing % on screen 5 and a decreasing % on screen 6 indicating some inverse effect of seeding rate on seed size.

**Table 24. 2015 Billy beans Seeding Rate Trial - Walla Walla**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	3 sds/sqft	2278	32.2	19.8	4.3
2	4 sds/sqft	2564	32.4	20.5	5.5
3	5 sds/sqft	2453	32.9	19.3	6.5
4	6 sds/sqft	2563	31.9	20.0	7.4
5	7 sds/sqft	2524	32.1	18.8	9.4
6	8 sds/sqft	2705	32.2	19.8	9.7
	Average	2515	32.3	19.7	7.1
	C.V. %	6	1.9	4.7	15.6
	LSD 0.05	156	NS	NS	1.1
	P value	0.0031	0.1555	0.0784	0.0000

Trt. no.	Seeding rate seeds/sqft	Screen 1* %	Screen 2 %	Screen 3 %	Screen 4 %	Screen 5 %	Screen 6 %	Screen 7 %
1	3 sds/sqft	0.05	0.2	2.08	6.35	48.65	38.55	4.15
2	4 sds/sqft	0.01	0.82	2.63	8.77	51.90	32.48	3.38
3	5 sds/sqft	0.17	0.75	2.25	7.08	51.43	33.77	4.48
4	6 sds/sqft	0.01	0.77	3.20	7.78	49.85	34.97	4.58
5	7 sds/sqft	0.03	0.53	2.93	8.45	50.18	33.30	4.58
6	8 sds/sqft	0.01	0.72	3.00	9.85	47.33	34.12	4.95
	Average	0.04	0.63	2.68	8.05	49.74	34.53	4.31
	C.V. %	242.8	74.86	39.83	27.17	7.07	14	26.89
	LSD 0.05	NS	NS	NS	NS	NS	NS	NS
	P value	0.0607	0.2406	0.4218	0.1198	0.2291	0.3508	0.3031

\* screen sizes: #1 = 25/64" round holes; #2 = 25/64"; #3 = 23/64"; #4 = 22/64"; #5 = 20/64"; #6 = 18/64"; #7 = bottom pan

The spring 2015 Walla Walla Chickpea seeding rate study of 'Billy beans' was seeded on 27 March, 2015 using a conventional double disc plot drill following wheat. Seeds were placed at 3, 4, 5, 6, 7, and 8 seeds/sq.ft. rates in 7-inch row spacing. There were six replications. Seeds were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about two miles east of Walla Walla, WA (Dwellely Jones, cooperator). These trials had a late-season irrigation before physiological maturity that helped relieve late season water stress, increase yield, but there was low available water during the majority of the season. The lowest seeding rate yielded least, and the highest yielded most. Seed weight and seed size, shown in the second table, were not affected by seeding rate.

**Table 25. 2015 Sierra Seeding Rate Trial - Pullman**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	2 sds/sqft	528	43.0	15.0	2.3
2	3 sds/sqft	661	42.6	15.2	3.5
3	4 sds/sqft	794	42.5	14.5	4.5
4	5 sds/sqft	803	42.0	14.5	5.8
5	6 sds/sqft	789	43.2	14.7	7.1
6	7 sds/sqft	824	42.7	14.8	6.4

Average	733	42.6	14.8	4.9
C.V. %	11	2.3	5.3	14.4
LSD 0.05	78	NS	NS	0.7
P value	0.0000	0.3744	0.615	0.0000

Trt. no.	Seeding rate seeds/sqft	Screen 1* %	Screen 2 %	Screen 3 %	Screen 4 %	Screen 5 %	Screen 6 %	Screen 7 %
1	2 sds/sqft	4.72	14.35	25.00	23.87	23.40	7.28	1.37
2	3 sds/sqft	3.9	11.85	23.87	23.88	25.37	9.32	1.82
3	4 sds/sqft	4.62	11.83	25.30	25.15	24.42	6.98	1.68
4	5 sds/sqft	6.05	13.45	23.83	24.17	23.47	7.65	1.45
5	6 sds/sqft	4.25	11.18	23.02	25.73	27.18	7.20	1.43
6	7 sds/sqft	5.62	11.58	23.70	24.28	25.47	7.88	1.42

Average	4.86	12.38	24.12	24.51	24.88	7.72	1.53
C.V. %	55.71	23.99	11.23	12.97	14.81	23.36	53.21
LSD 0.05	NS	NS	NS	NS	NS	NS	NS
P value	0.7362	0.4138	0.6955	0.8823	0.4911	0.2865	0.9127

\* screen sizes: #1 = 25/64" round holes; #2 = 25/64"; #3 = 23/64"; #4 = 22/64"; #5 = 20/64"; #6 = 18/64"; #7 = bottom pan

The spring 2015 Pullman chickpea seeding rate study of 'Sierra' was seeded on 21 April, 2015 using a conventional double disc plot drill following wheat. Seeds were placed at 2, 3, 4, 5, 6, and 7 seeds/sq.ft. rates in 7-inch row spacing. There were six replications. Seed were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about two miles east of Pullman, WA (WSU Crop and Soils Department Spillman Farm, cooperator). There was low available water and unseasonably warm temperatures during the majority of the season. For yield, the lowest two seeding rates were significantly lower progressively compared to the 4 seeds/sq.ft. rate. Seed weight, screened seed size, and plant height values were not significant among seeding rate.

**Table 26. 2015 Sierra Seeding Rate Trial - Walla Walla**

Trt. no.	Seeding rate seeds/sqft	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plants/sqft
1	2 sds/sqft	1520	48.4	16.3	2.2
2	3 sds/sqft	1631	48.0	16.0	3.3
3	4 sds/sqft	1656	47.7	15.5	4.6
4	5 sds/sqft	1634	47.5	16.0	5.4
5	6 sds/sqft	1738	46.9	15.2	6.4
6	7 sds/sqft	1791	47.2	15.8	7.2

Average	1662	47.6	15.8	4.9
C.V. %	12	2.0	3.4	18.1
LSD 0.05	NS	NS	0.5	0.9
P value	0.244	0.119	0.0157	0.0000

Trt. no.	Seeding rate seeds/sqft	Screen 1* %	Screen 2 %	Screen 3 %	Screen 4 %	Screen 5 %	Screen 6 %	Screen 7 %
1	2 sds/sqft	11.18	24.17	28.60	20.23	13.88	1.83	0.10
2	3 sds/sqft	9.65	23.58	28.97	21.12	14.47	2.10	0.15
3	4 sds/sqft	9.48	23.57	27.82	22.02	14.92	2.07	0.12
4	5 sds/sqft	10.17	22.70	28.53	22.88	13.98	1.78	0.05
5	6 sds/sqft	9.03	21.28	28.38	20.90	17.03	3.18	0.18
6	7 sds/sqft	8.30	23.00	26.88	22.47	16.72	2.53	0.13

Average	9.64	23.05	28.20	21.60	15.17	2.25	0.12
C.V. %	24.06	11.35	7.46	11.07	11.92	39.13	151.6
LSD 0.05	NS	NS	NS	NS	1.78	NS	NS
P value	0.3944	0.5059	0.5918	0.3935	0.0159	0.0904	0.8691

\* screen sizes: #1 = 25/64" round holes; #2 = 25/64"; #3 = 23/64"; #4 = 22/64"; #5 = 20/64"; #6 = 18/64"; #7 = bottom pan

The spring 2015 Walla Walla Chickpea seeding rate study of 'Sierra' was seeded on 27 March, 2015 using a conventional double disc plot drill following wheat. Seeds were placed at 2, 3, 4, 5, 6, and 7 seeds/sq.ft. rates in 7-inch row spacing. There were six replications. Seeds were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about two miles east of Walla Walla, WA (Dwelley Jones, cooperator). These trials had a late-season irrigation before physiological maturity that helped relieve late season water stress, increase yield, but there was low available water during the majority of the season. There was no significant yield or seed weight response to seeding rate. The screened seed size results in the second table are not significant except for some variability in one of the smaller screen sizes.



**Table 27. 2015 Spring Pea Lime Study in Dayton**

entry	variety - treatment	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plts/sqft
1	Banner - lime	1381	17.9	22	9.9
1	Banner - no lime	1490	17.4	21	10.7
2	PS05100840 - lime	1386	20.0	15	10.0
2	PS05100840 - no lime	1399	19.8	15	9.0
3	PS08100133 - lime	1336	19.8	17	11.5
3	PS08100133 - no lime	1286	19.7	17	10.1
4	Greenwood - lime	1186	18.6	19	12.5
4	Greenwood - no lime	1331	19.2	19	12.0
5	Aragorn - lime	1260	19.1	19	10.1
5	Aragorn - no lime	1335	19.0	20	11.1
6	Ginny - lime	1364	19.9	19	10.1
6	Ginny - no lime	1260	19.7	18	10.4
7	Ariel - lime	1145	16.8	18	10.4
7	Ariel - no lime	1260	16.9	19	10.9
8	Exp. PS1 - lime	1186	20.6	18	4.7
8	Exp. PS1 - no lime	1157	20.5	18	4.1
9	Universal - lime	1276	19.3	20	11.8
9	Universal - no lime	1317	19.9	20	10.0
10	PS08101022 - lime	1350	20.9	17	9.2
10	PS08101022 - no lime	1479	21.1	16	10.9
	Overall Average	1309	19.3	18	9.9
	Average - lime	1287	19.3	18	10.0
	Average - no lime	1331	19.3	18	9.9
	C.V. %	12	2.9	6	13.6
	LSD .05 - lime treatment	NS	NS	NS	NS
	LSD .05 - variety	131	0.5	0.9	1.1
	P value - lime treatment	0.2107	0.952	0.4609	0.7302
	P value - variety	0.0208	0	0	0
	P value - lime trt. x variety	0.8037	0.5923	0.1309	0.2089

The spring 2015 Dayton pea lime study was seeded on 3 April, 2015 using a conventional double disc plot drill following spring wheat. Seeds were placed at 8 seeds/sq.ft. rate in 7-inch row spacing. Seeds were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about six miles northwest of Dayton, WA (Jay Penner, cooperator). On 26 September, 2014, the lime treatment was applied at a rate of 2000#/acre of CaCO<sub>3</sub> as liquid NuCal in a 1-2 micron particle size. Soil sampling in the top 3 inches shows an average change from pH 5.2 at lime application to pH 6.5 at crop seeding. There was no appreciable pH change in the 3-6 in soil sampled. Pea yield was below long term averages for this region due to unusual high temperatures and low precipitation during the growing season. However, the variability was acceptable and there was no significant agronomic effect from lime treatment and no interaction with variety.

**Table 28. 2015 Pea Lime Study in Walla Walla**

entry	variety - treatment	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plts/sqft
1	Banner - lime	1768	18.7	20	10.5
1	Banner - no lime	1568	17.8	20	9.6
2	PS05100840 - lime	1772	19.3	19	10.7
2	PS05100840 - no lime	1948	19.5	19	10.4
3	PS08100133 - lime	1577	19.9	19	11.3
3	PS08100133 - no lime	1868	20.5	20	10.9
4	Greenwood - lime	1833	18.8	20	11.2
4	Greenwood - no lime	1698	18.5	20	10.9
5	Aragorn - lime	1668	18.9	22	12.6
5	Aragorn - no lime	1428	18.4	20	10.6
6	Ginny - lime	1609	19.0	20	11.5
6	Ginny - no lime	1651	19.0	21	11.8
7	Ariel - lime	1776	17.4	22	10.7
7	Ariel - no lime	1627	17.7	20	10.7
8	Exp. PS1 - lime	1262	18.2	17	4.1
8	Exp. PS1 - no lime	1209	18.2	19	4.1
9	Universal - lime	1846	19.8	22	9.7
9	Universal - no lime	1721	19.7	21	10.7
10	PS08101022 - lime	2060	21.7	19	11.2
10	PS08101022 - no lime	2158	21.8	18	10.5
Overall Average		1702	19.1	20	10.2
Average - lime		1717	19.2	20	10.3
Average - no lime		1687	19.1	20	10.0
C.V. %		12	4.1	10	16.0
LSD .05 - lime treatment		NS	NS	NS	NS
LSD .05 - variety		165	0.6	1.6	1.4
P value - lime treatment		0.5045	0.7851	0.864	0.3538
P value - variety		0.0000	0.0000	0.0068	0.0000
P value - lime trt. x variety		0.1497	0.7247	0.594	0.8794

The spring 2015 Walla Walla pea lime study was seeded on 3 April, 2015 using a conventional double disc plot drill following winter wheat. Seeds were placed at 8 seeds/sq.ft. rate in 7-inch row spacing. Seeds were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about four miles east of Walla Walla, WA (McKinney Farms, cooperator). On 26 September, 2014, the lime treatment was applied at a rate of 2000#/acre of CaCO<sub>3</sub> as liquid NuCal in a 1-2 micron particle size. Soil sampling in the top 3 inches shows an average change from pH 4.7 at lime application to pH 5.7 at crop seeding. There was no appreciable pH change in the 3-6 in soil sampled. Pea yield was below long term averages for this region due to unusual high temperatures and low precipitation during the growing season. However, the variability was acceptable and there was no significant agronomic effect from lime treatment and no interaction with variety.

**Table 29. 2015 Chickpea Lime Study in Dayton**

entry	variety - treatment	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plts/sqft
1	CDC Orion - lime	1000	40.7	11.8	4.5
1	CDC Orion - no lime	1066	42.5	12.3	5.2
2	Billy beans - lime	972	28.5	15.0	5.9
2	Billy beans - no lime	1179	28.3	14.8	6.1
3	CA0490B0223D - lime	1025	25.8	11.0	4.8
3	CA0490B0223D - no lime	923	25.4	10.8	4.6
4	CDC Frontier - lime	844	33.5	12.3	4.4
4	CDC Frontier - no lime	1005	33.4	12.3	3.8
5	Sawyer - lime	925	38.6	13.5	4.8
5	Sawyer - no lime	802	38.5	12.8	5.5
6	Myles - lime	1249	18.3	11.3	5.3
6	Myles - no lime	1026	18.1	11.0	5.6
7	Nash - lime	464	51.0	13.3	4.0
7	Nash - no lime	435	51.8	13.0	5.2
8	Sierra - lime	251	42.0	13.5	4.5
8	Sierra - no lime	334	41.9	13.8	4.9
9	Royal - lime	516	41.2	15.0	3.5
9	Royal - no lime	502	42.2	14.5	4.6
10	Dwelley - lime	118	42.9	13.5	4.9
10	Dwelley - no lime	275	41.4	12.8	5.4
	Overall Average	745	36.3	12.9	4.9
	Average - lime	736	36.2	13.0	4.7
	Average - no lime	755	36.3	12.8	5.1
	C.V. %	23	3.3	6.9	21.3
	LSD .05 - lime treatment	NS	NS	NS	NS
	LSD .05 - variety	145	1.0	0.7	0.9
	P value - lime treatment	0.6358	0.7326	0.2632	0.0942
	P value - variety	0.0000	0.0000	0.0000	0.0126
	P value - lime trt. x variety	0.2531	0.3603	0.9289	0.8192

The spring 2015 Dayton chickpea lime study was seeded on 3 April, 2015 using a conventional double disc plot drill following spring wheat. Seeds were placed at 5 seeds/sq.ft. rate in 7-inch row spacing. Seeds were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about six miles northwest of Dayton, WA (Jay Penner, cooperator). On 26 September, 2014, the lime treatment was applied at a rate of 2000#/acre of CaCO<sub>3</sub> as liquid NuCal in a 1-2 micron particle size. Soil sampling in the top 3 inches shows an average change from pH 5.1 at lime application to pH 6.5 at crop seeding. There was no appreciable pH change in the 3-6 in soil sampled. Chickpea yield was below long term averages for this region due to unusual high temperatures and low precipitation during the growing season. This increases variability and there was no significant agronomic effect from lime treatment and no interaction with variety.

**Table 30. 2015 Spring Chickpea Lime Study in Walla Walla**

entry	variety - treatment	Yield lbs/a	100 Seed Weight grams	Plant Height inches	Stand Count plts/sqft
1	CDC Orion - lime	1520	41.4	14.5	5.7
1	CDC Orion - no lime	1148	38.7	13.8	4.6
2	Billy beans - lime	1349	27.3	14.8	6.1
2	Billy beans - no lime	1252	28.0	15.5	6.0
3	CA0490B0223D - lime	1085	25.5	12.5	4.7
3	CA0490B0223D - no lime	1033	24.9	12.5	6.1
4	CDC Frontier - lime	1156	31.9	14.5	4.4
4	CDC Frontier - no lime	1359	31.7	14.3	5.3
5	Sawyer - lime	1097	36.9	15.0	6.2
5	Sawyer - no lime	1105	37.8	14.3	5.9
6	Myles - lime	936	16.4	13.5	5.9
6	Myles - no lime	1211	17.7	13.8	5.2
7	Nash - lime	1121	51.7	15.5	3.4
7	Nash - no lime	998	51.7	14.8	3.9
8	Sierra - lime	973	44.1	16.3	4.7
8	Sierra - no lime	1001	43.5	16.0	4.8
9	Royal - lime	931	45.1	15.5	4.1
9	Royal - no lime	825	44.5	15.3	4.0
10	Dwelley - lime	972	43.1	15.3	4.9
10	Dwelley - no lime	587	42.6	14.5	4.7
Overall Average		1083	36.2	14.6	5.1
Average - lime		1114	36.3	14.7	5.0
Average - no lime		1052	36.1	14.5	5.1
C.V. %		23	3.7	7.4	17.9
LSD .05 - lime treatment		NS	NS	NS	NS
LSD .05 - variety		208	1.1	0.9	0.8
P value - lime treatment		0.2697	0.4454	0.2568	0.8531
P value - variety		0.0005	0.0000	0.0000	0.0000
P value - lime trt. x variety		0.1898	0.2241	0.9041	0.1874

The spring 2015 Walla Walla chickpea lime study was seeded on 3 April, 2015 using a conventional double disc plot drill following winter wheat. Seeds were placed at 5 seeds/sq.ft. rate in 7-inch row spacing. Seeds were inoculated with compatible Rhizobia before planting. Seeding conditions were good and plants established well. The trial was located about four miles east of Walla Walla, WA (McKinney Farms, cooperator). On 26 September, 2014, the lime treatment was applied at a rate of 2000#/acre of CaCO<sub>3</sub> as liquid NuCal in a 1-2 micron particle size. Soil sampling in the top 3 inches shows an average change from pH 4.5 at lime application to pH 5.7 at crop seeding. There was no appreciable pH change in the 3-6 in soil sampled. Chickpea yield was below long term averages for this region due to unusual high temperatures and low precipitation during the growing season. A nearby chickpea variety trial had one irrigation and yielded nearly double this trial. Lower yield in dry conditions increases variability and there was no significant agronomic effect from lime treatment and no interaction with variety.

Table 31.

**Results of Winter Wheat Strips Planted over 2014 Legume Lime Study****2015 Winter Wheat strips planted over the 2014  
Chickpea Lime Trial in Dayton**

Treatment	Yield bu/a	Test Weight lbs/bu	Protein %
Lime	82	60.0	10.5
No Lime	80	59.9	10.5
Average	81	59.9	10.5
C.V. %	3	0.4	3.8
LSD 0.05	NS	NS	NS
P value	0.4326	0.5043	0.9347

**2015 Winter Wheat strips planted over the  
2014 Pea Lime Trial in Dayton**

Treatment	Yield bu/a	Test Weight lbs/bu	Protein %
Lime	81	60.4	10.7
No Lime	85	59.6	10.5
Average	83	59.9	10.6
C.V. %	6	1.6	5.6
LSD 0.05	NS	NS	NS
P value	0.4192	0.334	0.785

Winter wheat in these trials was seeded by the grower (Turner farm about 8 miles northeast of Dayton, WA) in the fall at a usual seeding date following peas that surrounded the 2014 lime trials. The locations of the lime and no-lime comparison strips were retained in 2015 and a wheat strip, about 4 X 100 ft, was harvested from the center of each lime treatment. Lime was applied April 19, 2014 in the strips at 2000 lbs. CaCO<sub>3</sub>/acre of liquid NuCal with a 1-2 micron particle size. Soil sampling shows a change in the top 3 inches from an average of pH 5.1 at lime applications to pH 6.5 in the spring of 2015. There was no significant agronomic response to lime found in both 2014 pea and chickpea trials. In 2015 there was also no significant agronomic or visual response of winter wheat to limed strips as shown above.