Dry Pea, Lentil, Chickpea and Winter Legume Breeding

2012 Progress Report

Prepared by

Grain Legume Genetics and Physiology Research Unit

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Personnel, Cooperators and Cooperating Growers

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2012 PROGRESS REPORT: COOL SEASON FOOD LEGUME BREEDING

The 2012 Pacific Northwest growing season started with a very wet spring. Precipitation from 1 October 2011 to 1 May 2012 was 40.26 cm, which is about normal for that period, but March received about twice as much precipitation as normal. Consequently, our spring planting dates were delayed about 2-3 weeks and planting conditions were not ideal. Summer time temperatures were moderate and it was very dry. During the 2011-2012 winter, there was above average snow fall and snow cover was adequate. Soil moisture levels were above normal going into the spring. High soil moisture levels coupled with the wet spring, resulted in less than optimal planting conditions. Although planting was delayed, harvest was not delayed and the average number of days to flower and reach harvest maturity was less than normal. The moderate summer temperatures allowed good pollination, seed set and pod fill. Monthly average high and low temperatures very closely paralleled the historical averages. Overall, seed yields were very good in our trials in 2012.

Prior to planting, all seeds were treated[1] with Maxim 4FS (0.9 oz/cwt), Apron XL LS (.61oz/cwt), Mertec LSP (3.0oz/cwt), Molybdenum (as sodium molybdate) (16g/cwt) and Cruiser (30ml/cwt). All advanced and preliminary yield trials were planted in a RCB design with plots 1.4 m x 4.9 m. Target population densities were: spring peas 8 sds/ft^2; winter peas 10 sds/ft^2; spring lentils 8 sds/ft^2; winter lentils 12 sds/ft^2 and chickpeas 4 sds/ft^2. Weed control in the spring planted fields was accomplished using Sencor (6 oz/acre) and Lorox (1.25lbs/acre) applied post-plant, pre-emergence. Weed control in the autumn planted trials was accomplished with Sencor (6 oz/acre) and Lorox (1.25lbs/acre) applied post plant, pre-emergence. A spring application of Assure II (10 oz/acre) further controlled the volunteer small grains. Insecticides, Mustang (4 oz/acre), Dimethoate (1 pt/acre) and Warrior (2 oz/ac) were applied as required to control aphids, pea leaf weevils and pea seed weevils. Data were analyzed with the Nearest Neighbours module of Agrobase (Agronomix Software, Inc., Winnipeg, MB).

[1]Mention of trade names or commercial products in this report is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the U.S. Department of Agriculture

PEA BREEDING

SPRING PEA YIELD TRIALS

In 2012, 23 advanced breeding lines and four check varieties (Aragorn, Ariel, Banner and Columbian) of green peas were evaluated in the advanced yield trials. Identical trials were planted at the Washington State University Spillman Farm, Pullman, WA (9-10 May 2012), Fairfield, WA (12 May 2012), Garfield, WA (20 May 2012), Dayton, WA (6 May 2012) and Genesee, ID (8 May 2012). Mean yields at the five locations were: Garfield 1666kg/ha; Dayton 2196kg/ha; Spillman 2395kg/ha; Genesee 2806kg/ha and Fairfield 3017kg/ha. All the lines at all the locations out-yielded Columbian and most of the lines out-yielded both Aragorn and Ariel. Seed size of the checks ranged from 17.8g/100 seeds (Ariel) to 20.2g/100 seeds (Aragorn). Seed size of the advanced lines ranged from 19.2 to 23.9g/100 seeds. The earliest check to flower, Columbian, flowered in 45 days; the earliest breeding line, PS08100655, flowered in 49.7 days. Aragorn and Banner, the earliest checks to reach harvest maturity, matured in 82 days; the earliest breeding lines, PS09100034, PS03101445, PS08100655 and PS09100035, reached harvest maturity in approximately 83 days.

Eleven breeding lines and four check varieties (Universal, DS Admiral, Delta and Carousel) of yellow peas were evaluated in the yellow pea advanced yield trials. Identical trials were planted at the WSU Spillman Agronomy Research Farm, Pullman, WA (10 May 2012), Fairfield, WA (12 May 2012), Garfield, WA (20 May 2012) and Genesee, ID (8 May 2012). The mean yield at the four locations was: Garfield 1964kg/ha; Pullman 2546kg/ha; Fairfield 3136kg/ha and Genesee 3202kg/ha. Across all locations, yields of the checks were: DS Admiral 2404kg/ha; Delta 2430kg/ha; Universal 2560kg/ha and Carousel 2847kg/ha. The yields of the advanced lines ranged from 2389kg/ha to 3005kg/ha. Across all locations, the two highest yielding breeding lines, PS07100925 and PS08101004, out-yielded Delta by 24% and 20%, respectively. Seed size of the check varieties ranged from 21.7g/100 seeds (DS Admiral) to 22.8g/100 seeds (Carousel). Seed size of the advanced lines ranged from 21.2g/100 seeds (PS09100081) to 25.3g/100 seeds (PS08100933). PS08101022 and PS08101085 flowered slightly earlier (51.7 and 51.3 days, respectively) than did the early check, Universal (52 days). Universal and Delta both reached physiological maturity in 82 days; PS08101022 and PS08101085 matured in 82.7 days.

A resurgence of commercial interest in Marrowfat peas has led us to resume efforts to develop improved varieties of this pea market class. In 2012, ten breeding lines and two checks, Supra and Guido were planted in identical trials in Dayton, WA and Pullman, WA. Mean yields of Supra and Guido were 1679kg/ha and 1656kg/ha, respectively. Two breeding lines, PS02100739 and PS02100749, out-yielded Supra by more than 30%.

The 2012 preliminary yield trials were planted at the Spillman Farm. The green-seeded PYT was divided into two parts: the main trial consisted of 41 breeding lines derived from the traditional process. The smaller trial consisted of 9 lines derived from a series of crosses made to improve the tolerance/resistance to Aphanomyces root rot. In total, there were 50 advanced breeding lines and two checks (Aragorn and Banner) in the two PYTs. Approximately 12 lines will be advanced to the advanced yield trials in 2013. There were 12 breeding lines and two

checks (Universal and Carousel) in the yellow-seeded PYT. Approximately 5 lines will be advanced to the 2013 AYT.

The breeding lines were evaluated for resistance to Fusarium wilt, Race 1 in Pullman, WA, Aphanomyces root rot in Pullman and Kendrick, ID and Pea Enation Mosaic Virus and Pea Seed-borne Mosaic Virus in Corvallis, OR.

Potential end product quality of the green pea breeding lines was assessed visually. All entries in the green pea advanced and preliminary yield trials were subjected to a simulated high temperature, high humidity bleach test. All entries in the green and yellow advanced yield trials were subjected to cooking quality tests.

POTENTIAL SPRING VARIETY RELEASES

2012 was the third year in the advanced trials for the two sister lines PS05100735 and PS05100736. These breeding lines have consistently had top yields in the USDA-ARS trials and the Washington State Variety Trials, the Idaho State Variety Trials and the Western Regional Trials. Both lines are resistant to Pea Enation Mosaic Virus (PEMV). Resistance to PEMV has previously not been available in field peas. The data in Table 1 provide comparisons of the performance of PS05100736 with Aragorn, Ariel and Banner. This line has been presented to the USADPLC Variety Release Committee for consideration for release.

Table 1. Comparison of the performance of PS05100736 with three commercial varieties in 26 location-years.

Entry	FW R1	PM	PEMV	Leaf	Days to Flr	Days to Mat	Vine Length (cm)	Plnt Ht (cm)	PHI	Sd Wt (g/100sd)	Yield (kg/ha)
PS05100736	R	R	R	af	58.4	89.3	61.8	50.7	0.79	17.6	2379
Aragorn	R	R	S	af	60.3	89.5	63.0	50.3	0.82	15.1	2164
Ariel	R	R	S	af	59.9	90.0	68.0	45.0	0.67	17.7	2170
Banner	S?	S	S	af	62.7	93.8	56.3	43.7	0.75	20.7	2278

WINTER PEA YIELD TRIALS

We are actively developing autumn sown peas that have food quality characteristics: large seeds (HSW 19-21g), clear seed coat and hilum and either green or yellow cotyledons. The weather patterns that have been dominant in the PNW in the past two years are characterized by cool wet springs and warm dry summers (Tables 2 and 3). This is predicted to become more the norm as global climate change is realized (The Washington Climate Change Impacts Assessment, University of Washington, Climate Impacts Group, June 2009). Therefore, we believe that in the near future, it will become increasingly attractive to have varieties available that can be sown in the autumn and thus avoid delays in spring field work. Developing cold-hardy, high yielding, food quality legumes and the weed management practices has become one of major focal points of the pea and lentil breeding programs. To meet these goals, a large amount of new germplasm

has been infused into the winter breeding programs and will require screening for adequate levels of cold tolerance.

Table 2. Monthly Precipitation at Pullman, WA. Historical (1940-2005) and 2012 Averages. (Data from Western Regional Climate Center, www.wrcc.dri.edu)

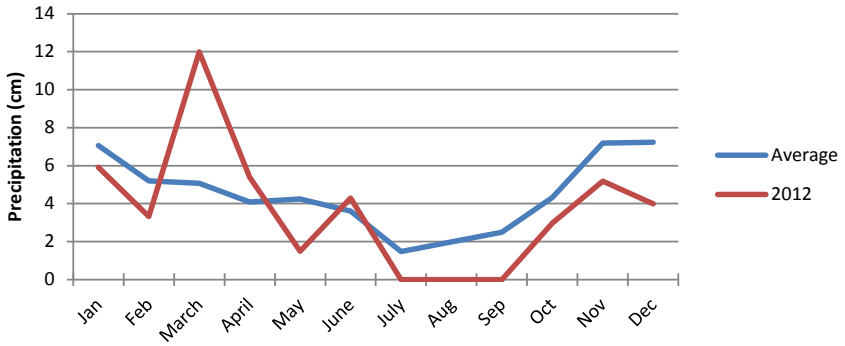
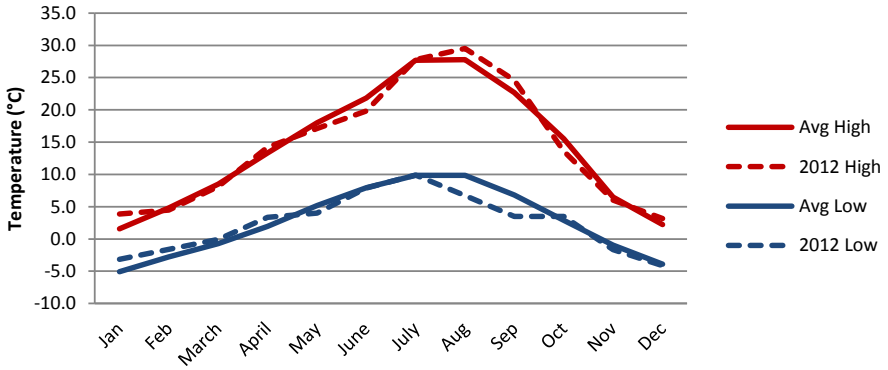


Table 3. Monthly Temperatures at Pullman, WA. Historical (1940-2005) and 2012 Averages.(Data from Western Regional Climate Center, www.wrcc.dri.edu)



2011-2012 was an excellent year for the winter pea variety trials and nurseries. Weed control at Spillman was extremely effective and winter survival was good. The cool spring and moderate summer, once again, helped us realize very high yields. The winter pea advanced yield trials were planted at Rosalia, Garfield, Pullman and Dayton, Washington between 29 September and 5 October. There were 13 breeding lines and two checks, Specter and Windham. The mean seed yields were: Dayton 3543kg/ha; Pullman 4657kg/ha; Garfield 5750kg/ha and Rosalia 3552kg/ha. The lower yields at Dayton and Rosalia are attributed primarily to competition from weeds (dog-fennel and bed straw, respectively). In Garfield, 8 breeding lines had yields greater than 6000kg/ha. Averaged across all locations, the highest yielding line was PS07300047W (5366kg/ha). PS0230F210 had the highest yield in Rosalia (4370kg/ha), PS05300180W had the highest yield at Dayton (4690kg/ha) and PS0730047W had the highest yield at both Garfield (6934kg/ha) and Pullman (5568kg/ha). The Preliminary Yield Trials were divided into Clear Seed Coat and Austrian Winter Peas (pigmented seed coat). Austrian Winter Peas typically (although not always) are characterized by very long vines and small seeds. The breeding objectives for the clear seed coat peas are large, food quality seeds and semi-dwarf vines with

good standability. The PYTs were planted only at Pullman. There were 16 breeding lines and two checks (Specter and Windham) in the clear seeded trial and 14 entries and two checks (Granger and Melrose) in the Austrian Winter Pea trial.

AUTUMN-SOWN PEA GERMPLASM AND VARIETY RELEASES

In September 2012, we registered, as germplasm, an autumn-sown pea with food quality characteristics, PS03101269W (J Plant Registrations 6(3):354-357). In September 2012 we submitted the autumn-sown pea variety, 'Lynx' (PS05300180W) for registration with exclusive rights assigned to Central Washington Grain Growers, Wilbur, Washington.

Agronomic Data for the Advanced Green Pea Yield Trial (1201)

Name	FW 1	PM	PEMV	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight
								..cm..	..cm..		..cm..	..cm..			..g..
PS05100736	R	R	R	57.0	89.0	14.5	2.0	47.6	43.8	0.92	60.0	57.5	0.96	4.9	22.2
PS05100735	R	R	R	56.7	89.0	15.6	2.0	46.5	41.3	0.89	57.7	52.8	0.92	3.9	22.2
PS08100218				58.3	89.0	16.9	2.0	49.5	45.4	0.91	63.0	56.0	0.89	4.1	23.4
PS08100133	R	R	R	57.3	89.0	15.1	2.0	53.9	43.2	0.80	72.0	56.7	0.79	4.9	19.6
PS05100120	R	R	R	54.7	87.0	16.1	2.0	48.9	36.2	0.74	66.9	52.0	0.78	5.9	19.6
Pro-091-7137				53.3	83.3	16.9	2.0	52.4	47.2	0.90	69.8	62.8	0.90	5.3	20.8
PS07100471	R	R	S	56.7	89.0	16.9	2.0	53.2	48.4	0.91	67.7	57.7	0.85	5.2	21.4
PS08100582	R	R	S	57.7	89.0	18.0	2.0	51.1	46.3	0.90	64.0	58.9	0.92	5.3	21.3
PS09100034		R		54.0	84.0	17.2	2.0	56.4	50.1	0.89	75.0	65.4	0.87	5.0	21.3
Pro-7040				53.7	82.7	17.4	2.0	53.6	48.5	0.91	68.4	61.5	0.90	5.0	19.4
PS10100037				58.0	89.0	14.7	2.0	48.7	39.8	0.82	59.3	50.5	0.86	3.9	19.4
PS03101445	R	R	S	54.0	82.7	15.7	2.0	50.8	40.7	0.80	65.0	55.7	0.85	4.4	19.5
PS05100840	R	R	S	57.3	89.0	19.7	2.0	55.1	46.3	0.84	64.3	57.1	0.89	3.2	20.4
PS08100655	R	S	S	49.7	83.3	13.0	2.0	43.9	33.9	0.77	60.7	54.5	0.90	6.2	20.9
PS09100052		R	S	55.7	88.0	17.2	2.0	62.9	55.2	0.88	72.8	66.3	0.91	3.2	21.4
Pro-081-7116				50.3	82.0	13.8	2.0	48.9	42.3	0.86	68.1	60.9	0.89	5.8	21.7
PS07100470	R	R	S	54.7	84.0	17.7	2.0	50.0	45.2	0.91	61.7	55.9	0.91	3.5	21.9
PS10100144				57.0	89.0	15.2	2.0	56.3	39.8	0.71	70.5	53.6	0.76	5.0	22.1
PS09100035		R/S	R/S	53.7	83.3	16.0	2.0	55.1	46.1	0.84	73.1	66.2	0.91	5.6	23.9
PS09100123		S		54.0	86.3	13.0	2.0	47.4	40.1	0.84	58.6	54.9	0.94	4.6	21.2
PS06100760	R	R	S	54.7	84.0	17.6	2.0	47.6	43.4	0.91	61.0	55.4	0.90	4.0	19.5
Banner	S	S	S	52.3	82.0	15.2	2.0	55.2	43.2	0.78	72.3	59.7	0.83	4.5	19.1
PS10100318				55.7	88.0	17.9	2.0	56.0	32.6	0.59	74.5	47.7	0.65	6.2	22.7
PS09100029		S	R	55.0	88.0	17.6	2.0	49.9	44.9	0.90	65.9	58.7	0.89	5.1	22.7
PS08100888				53.0	83.3	15.5	2.0	51.9	42.4	0.82	69.8	58.6	0.84	4.3	19.2
PS08100090				58.3	88.0	19.2	2.0	61.5	51.4	0.84	74.1	62.0	0.84	4.6	21.4
Aragorn	R	S	S	53.3	82.0	15.6	2.0	52.4	45.9	0.87	66.7	60.4	0.91	5.0	20.2
Ariel	R	S	S	54.0	82.7	15.0	2.0	49.0	43.0	0.88	64.5	58.0	0.90	4.9	17.8
PS10100123				56.7	89.0	16.1	2.0	65.1	42.5	0.66	82.5	58.8	0.72	5.8	22.3

FW 1 = Fusarium Wilt Race 1; R = resistant; S = susceptible. PM = Powdery Mildew; R = resistant; S = susceptible. PEMV = Pea Enation Mosiac Virus; R = resistant; S = susceptible,
Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/09/2012 Harvest Date: 08/10/2012

Agronomic Data for the Advanced Green Pea Yield Trial (1201)

Name	FW 1	PM	PEMV	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight
								..cm..	..cm..		..cm..	..cm..			..g..
Columbian L1	R	S	S	45.0	82.0	7.9	1.0	34.1	11.9	0.37	87.3	35.9	0.41	7.2	19.0
GRAND MEAN				54.7	85.8	15.9	1.9	51.8	42.6	0.82	67.9	57.0	0.85	4.8	20.9
CV				1.3	1.2	3.9	9.3	6.1	8.5	9.31	5.6	6.0	6.87	17.2	2.2
LSD				1.2	1.7	1.0	0.3	5.2	5.9	0.12	6.3	5.6	0.10	1.3	0.7

FW 1 = Fusarium Wilt Race 1; R = resistant; S = susceptible. PM = Powdery Mildew; R = resistant; S = susceptible. PEMV = Pea Enation Mosiac Virus; R = resistant; S = susceptible,
Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/09/2012 Harvest Date: 08/10/2012

Location Yield Summary for the Green Pea Advanced Yield Trial (1201)

Name	Leaf Type	Vine Type	Dayton Seed Yield	Fairfield Seed Yield	Genesee Seed Yield	Garfield Seed Yield	Pullman Seed Yield	Mean Seed Yield	% of Aragon
			kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	
PS08100133	-	-	2344	3615	3191	1711	2654	2703	122
PS05100736	-	-	2677	3156	3058	1644	2806	2668	120
Pro-091-7137			2408	3216	3130	1832	2599	2637	119
PS05100735	-	-	2584	3011	2866	1789	2779	2606	118
PS08100582	-	-	2364	3438	2981	1649	2500	2587	117
PS07100471	-	-	2230	3343	2703	1935	2512	2545	115
PS09100052	-		2388	3193	2902	1768	2426	2535	114
PS05100120	-	-	2382	2660	2970	1969	2605	2517	114
Pro-7040			2174	3033	3121	1782	2455	2513	113
PS10100144	-		2523	3010	2809	1823	2382	2509	113
PS03101445	-	-	2018	3164	3121	1691	2438	2487	112
Banner	-	-	2308	3094	2902	1750	2360	2483	112
PS10100037	-		2194	3289	2921	1546	2440	2478	112
PS08100218	-	-	2218	3071	2985	1282	2691	2449	111
PS09100034	-		2147	3122	2789	1684	2465	2441	110
PS07100470	-	-	2333	3114	2684	1681	2383	2439	110
PS09100123	-		1688	3114	3275	1632	2371	2416	109
PS09100035	-		2462	2713	2605	1828	2379	2397	108
PS08100655	-	-	1951	3132	2492	1956	2430	2392	108
PS09100029	-		2011	2940	2819	1769	2317	2371	107
PS05100840	-	-	1641	3109	2961	1669	2433	2363	107
PS06100760	-	-	2146	3042	2745	1491	2366	2358	106
Pro-081-7116			2637	2935	2225	1584	2389	2354	106
PS08100888	-	-	2067	2805	3025	1587	2246	2346	106
PS10100123	-		2258	2723	3077	1803	1849	2342	106
PS08100090	-	-	2097	2627	2960	1463	2217	2273	103
PS10100318	-		2169	2708	2356	1681	2358	2254	102
Aragorn	-	-	1980	2841	2602	1470	2134	2206	100
Ariel	-	-	2001	2872	1953	1513	2026	2073	94
Columbian L1	+	+	1491	2420	1939	991	1829	1734	78
GRAND MEAN			2196	3017	2806	1666	2395	2416	109
CV			14	7	11	9	4	10	0
LSD			523	345	534	269	173	145	6

Leaf Type: + = normal leaf; - = afila or semi-leafless.
Vine Type: + = tall vine; - = short vine.
Yield data are means of three replications at each location.

Mean Yields of the Dry Green Pea Advanced Yield Trial, 2008-2012

Name	Leaf Type	Vine Type	2012	2011	2010	2009	2008
			kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Ariel	-	-	2073	2072	1474	1964	2043
Columbian L1	+	+	1734	1544	1254	1611	1604
PS03101445	-	-	2487	2190	1627	2157	1986
PS05100120	-	-	2517	2301	1753	2130	2098
PS05100735	-	-	2606	2438	1669	2071	1860
PS05100736	-	-	2668	2433	1746	2148	2023
PS05100840	-	-	2363	2147	1626	2271	2015
Aragorn	-	-	2206	2209	1416	2024	1849
Banner	-	-	2483	2096	1587	1883	1959
PS06100760	-	-	2358	2357	1668	2322	
PS07100470	-	-	2439	2237	1797		
PS07100471	-	-	2545	2193	1760		
PS08100582	-	-	2587	2380			
PS08100655	-	-	2392				
PS08100888	-	-	2346				
PS08100090	-	-	2273				
PS08100133	-	-	2703	2268			
PS08100218	-	-	2449				
PS09100029	-		2371				
PS09100034	-		2441				
PS09100035	-		2397				
PS09100052	-		2535				
PS09100123	-		2416				
PS10100318	-		2254				
PS10100144	-		2509				
PS10100037	-		2478				
PS10100123	-		2342				
Pro-081-7116			2354				
Pro-091-7137			2637				
Pro-7040			2513				
C.V.			10.0	11.6	12.0	11.5	11.0
LSD			145.	264.	201.	190.	190.

Leaf Type: + = normal leaf, - = afila or semi-leafless type.
Plant Type: + = tall plant type, - = short plant type.
Yield data are means of three reps per location, 4 locations per year.

Agronomic Data for the Advanced Yellow Pea Yield Trial (1202)

Name	FW 1	PM	PEMV	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight
								..cm..	..cm..		..cm..	..cm..			..g..
Pro 822				52.3	82.0	13.4	2	53.1	43.7	0.82	72.6	61.5	0.85	5.5	24.2
PS07100925	R	R	S	54.3	85.7	14.4	2	46.1	43.3	0.94	57.5	54.0	0.94	3.9	23.8
Pro 793				54.0	84.3	14.4	2	53.4	45.7	0.86	70.1	61.2	0.88	5.1	25.4
PS08101022	S	R	S	51.7	82.7	13.4	2	46.2	39.5	0.86	63.5	56.4	0.89	5.0	23.0
Carousel	R	S	S	53.3	85.3	15.2	2	52.9	44.4	0.84	68.0	60.4	0.89	4.5	22.8
PS09100081		S		56.7	87.7	15.0	2	49.0	23.2	0.48	66.0	37.5	0.57	4.5	21.2
PS08100940				54.0	84.7	15.3	2	50.4	45.8	0.91	64.8	60.6	0.93	4.0	25.2
PS08101004	R	R	S	55.7	89.0	15.7	2	49.5	41.6	0.84	63.2	54.3	0.86	4.0	22.2
PS08100933				53.3	87.0	13.4	2	44.6	37.8	0.85	62.6	51.8	0.83	4.2	25.3
PS08101108	R	R	S	53.0	82.7	12.6	2	43.4	34.6	0.80	56.9	48.4	0.85	3.4	23.1
PS08101085	R	R	S	51.3	82.7	13.0	2	46.4	40.1	0.86	69.2	59.9	0.87	5.8	24.6
Universal	R/S	S	S	52.0	82.0	14.9	2	52.0	45.2	0.87	69.2	61.4	0.89	5.0	20.5
PS09100175		S	S	56.7	88.3	16.4	2	53.6	44.3	0.83	64.9	54.9	0.85	4.2	23.6
PS09100173		S	S	55.0	86.7	14.9	2	52.3	42.9	0.82	66.5	57.9	0.87	4.2	25.2
PS08101192				54.0	87.0	16.6	2	50.9	42.4	0.83	66.4	58.6	0.88	5.5	21.1
DS ADMIRAL	R	R	S	55.7	83.3	16.6	2	59.5	53.1	0.90	71.7	66.0	0.92	5.3	21.7
Delta	R	S	S	53.3	82.0	15.5	2	48.5	42.6	0.88	60.1	53.7	0.89	4.2	20.0
GRAND MEAN				53.9	84.8	14.7	2	50.1	41.7	0.83	65.4	56.3	0.86	4.6	23.1
CV				1.7	2.0	4.9	2	5.9	7.4	6.22	5.4	6.6	5.82	15.9	2.3
LSD				1.5	2.9	1.2	2	4.9	5.1	0.09	5.8	6.2	0.08	1.2	0.8

FW 1 = Fusarium Wilt Race 1; R = resistant; S = susceptible. PM = Powdery Mildew; R = resistant; S = susceptible. PEMV = Pea Enation Mosiac Virus; R = resistant; S = susceptible.
Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/09/2012 Harvest Date: 08/07/2012

Location Yield Summary for the Yellow Pea Advanced Yield Trial (1202)

Name	Leaf Type	Vine Type	Fairfield Seed Yield	Genesee Seed Yield	Garfield Seed Yield	Pullman Seed Yield	Mean Seed Yield	% of Carousel
			kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	
PS07100925	-	-	3220	3672	2318	2812	3005	105
Pro 793			3216	3786	2128	2768	2974	104
PS08101004	-	-	3202	3724	2115	2619	2915	102
PS09100081	-		3294	3578	1974	2679	2881	101
Pro 822			3396	3260	1991	2830	2869	100
Carousel	-	-	3358	3336	1986	2710	2847	100
PS08100933	-	-	3077	3525	2105	2558	2816	98
PS08100940			3220	3187	1975	2659	2761	96
PS08101108	-	-	3083	3111	2227	2527	2737	96
PS08101022	-	-	3123	2710	2027	2745	2651	93
PS09100173	-		3018	3233	1810	2428	2623	92
PS09100175	-		3174	2956	1913	2439	2621	92
PS08101085	-	-	2799	3207	1986	2488	2620	92
Universal	-	-	3120	3066	1613	2440	2560	89
Delta	-	-	3138	2844	1699	2039	2430	85
DS ADMIRAL	-	-	3032	2543	1826	2213	2404	84
PS08101192	-	-	2843	2696	1694	2322	2389	83
GRAND MEAN			3136	3202	1964	2546	2712	95
CV			6	14	10	5	10	0
LSD			314	761	350	239	188	6

Leaf Type: + = normal leaf; - = afila or semi-leafless.
Vine Type: + = tall vine; - = short vine.
Yield data are means of three replications at each location.

Name	Leaf Type	Vine Type	2012	2011	2010	2009	2008
			kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Universal	-	-	2560	2571	1942	2124	2376
Delta	-	-	2430	2130	1568	1781	2252
Carousel	-	-	2847	2252	1629	2192	2276
DS ADMIRAL	-	-	2404	2033	1765	2053	2012
PS07100925	-	-	3005	2707			
PS08100933	-	-	2816				
PS08100940			2761				
PS08101004	-	-	2915	2452			
PS08101022	-	-	2651	2318			
PS08101085	-	-	2620				
PS08101108	-	-	2737	2585			
PS08101192	-	-	2389				
PS09100081	-		2881				
PS09100173	-		2623				
PS09100175	-		2621				
Pro 822			2869				
Pro 793			2974				
C.V.			10.3	11.7	11.0	10.1	8.3
LSD			188.	285.	202.	172.	148.

Leaf Type: + = normal leaf, - = afila or semi-leafless type.
Plant Type: + = tall plant type, - = short plant type
Yield data are means of three reps per location, 4 locations per year.

Agronomic and Yield Data for the Advanced Green Dry Pea Yield Trial (1203)

Name	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Aragorn
					..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
PS10100379	57.0	89.0	15.6	2.0	50.9	32.6	0.65	66.0	43.4	0.66	5.5	24.0	2653	141
PS10100412	56.7	89.0	16.6	2.0	56.3	32.8	0.60	72.5	45.3	0.63	5.1	20.6	2439	129
PS10100158	57.0	88.0	15.9	2.0	47.7	40.2	0.85	61.9	53.9	0.88	4.5	17.8	2347	125
PS10100381	57.3	89.0	12.8	2.0	44.9	35.7	0.80	69.7	54.5	0.79	6.5	24.1	2342	124
Banner	53.0	82.0	15.5	2.0	53.7	45.6	0.86	72.4	61.2	0.86	4.5	19.4	2340	124
PS10100187	54.7	84.7	15.6	2.0	60.8	47.4	0.79	77.2	63.0	0.82	4.1	22.4	2324	123
PS10100205	54.0	84.0	15.9	2.0	48.9	42.3	0.87	62.9	53.1	0.85	4.3	20.9	2308	122
PS09100008	57.7	88.3	15.2	2.0	49.8	29.0	0.60	65.8	39.1	0.60	4.5	23.5	2245	119
PS10100416	55.0	86.3	15.4	2.0	55.2	15.6	0.29	70.1	26.0	0.38	4.7	19.9	2244	119
PS10100012	54.3	89.0	15.3	2.0	50.1	41.8	0.84	65.5	54.6	0.84	4.6	22.6	2232	118
PS10100370	54.0	84.0	17.9	2.0	50.2	42.6	0.85	68.8	60.0	0.87	5.0	21.8	2204	117
PS08100709	53.7	85.7	15.9	2.0	53.6	38.5	0.73	75.0	54.3	0.74	5.5	22.4	2200	117
PS10100145	57.0	88.0	17.3	2.0	66.0	51.6	0.77	77.9	64.4	0.82	4.3	24.2	2176	115
PS10100192	54.0	84.0	16.7	2.0	51.4	44.5	0.87	64.5	56.9	0.89	4.5	20.3	2170	115
PS10100004	57.0	88.3	15.8	2.0	48.4	40.5	0.84	61.9	54.4	0.89	4.2	22.3	2162	115
PS10100380	56.0	89.0	15.3	2.0	50.6	26.7	0.55	67.9	41.8	0.63	4.9	23.6	2156	114
PS10100295	55.7	85.7	15.4	2.0	67.2	42.4	0.65	83.4	61.6	0.75	4.6	20.9	2112	112
PS10100280	55.7	88.0	16.3	2.0	50.5	37.2	0.74	69.0	54.1	0.80	5.4	22.4	2111	112
PS10100148	56.3	84.0	15.9	2.0	47.9	35.8	0.75	62.5	48.1	0.77	4.2	20.0	2111	112
PS10100089	54.0	83.3	14.9	2.0	45.0	13.8	0.30	61.0	28.2	0.47	4.5	21.3	2109	112
PS10100171	54.0	84.0	15.5	2.0	48.9	34.9	0.73	61.4	45.8	0.75	4.9	18.0	2109	112
PS10100184	54.0	82.7	15.1	2.0	51.3	45.7	0.90	66.4	58.9	0.89	5.1	19.8	2104	112
PS10100355	58.3	89.0	15.4	2.0	46.9	36.3	0.79	64.0	49.8	0.78	5.1	20.2	2102	111
PS10100377	58.0	89.0	14.8	2.0	48.8	39.9	0.83	62.3	49.8	0.80	4.4	18.9	2098	111
PS10100099	53.7	87.3	14.6	2.0	53.0	15.4	0.30	70.9	30.8	0.44	4.3	21.5	2097	111
PS10100031	58.3	88.3	15.8	2.0	41.3	23.5	0.61	54.9	33.1	0.63	4.3	21.8	2096	111
PS10100343	57.0	86.7	15.9	2.0	51.5	29.3	0.59	66.9	42.3	0.66	4.7	20.1	2091	111
PS10100178	55.3	82.7	15.6	2.0	49.7	41.7	0.84	63.1	57.6	0.91	5.6	20.2	2045	108
PS10100264	56.7	89.0	14.6	2.0	47.9	30.6	0.65	61.8	48.0	0.79	5.3	20.1	2032	108

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/09/2012 Harvest Date: 08/12/2012

Agronomic and Yield Data for the Advanced Green Dry Pea Yield Trial (1203)

Name	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Aragorn
					..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
PS10100035	59.0	89.0	15.4	2.0	48.7	40.5	0.83	61.8	50.5	0.82	4.6	18.9	2016	107
PS10100325	54.3	87.3	17.1	2.0	52.5	34.5	0.66	68.3	52.1	0.77	4.8	21.7	2003	106
PS10100131	54.0	82.0	16.9	2.0	52.1	44.8	0.86	67.6	58.0	0.86	4.1	21.0	1996	106
PS10100558	55.7	83.3	15.1	2.0	52.7	44.4	0.84	69.5	60.2	0.87	5.2	20.8	1989	105
PS10100530	55.3	84.0	15.5	2.0	45.9	40.7	0.89	58.6	53.4	0.91	4.8	21.8	1927	102
PS10100406	55.0	83.3	15.9	2.0	47.0	43.0	0.92	64.4	59.1	0.92	5.1	17.8	1908	101
PS10100143	58.3	89.0	16.6	2.0	53.6	42.1	0.79	69.0	56.2	0.82	5.9	22.7	1902	101
PS08100827	47.0	88.3	13.3	2.0	50.5	39.9	0.80	72.9	63.5	0.87	7.8	22.9	1890	100
Aragorn	53.0	82.0	15.8	2.0	46.2	42.2	0.91	62.0	57.1	0.93	5.0	20.7	1876	100
PS10100219	57.3	86.3	16.9	2.0	47.4	39.0	0.83	62.5	54.9	0.88	5.4	19.5	1870	99
PS10100127	54.0	85.0	14.0	2.0	43.4	32.8	0.75	60.2	47.4	0.79	5.0	21.5	1865	99
PS10100079	56.7	85.7	15.5	2.0	42.3	16.6	0.39	55.0	30.2	0.57	3.7	20.6	1835	97
PS10100222	54.0	87.3	12.3	2.0	43.3	22.4	0.52	62.0	43.2	0.70	5.9	20.2	1782	94
PS10100010	54.0	88.0	16.7	2.0	52.8	22.1	0.43	64.3	35.2	0.56	4.0	20.2	1737	92
GRAND MEAN	55.4	86.2	15.5	1.9	50.3	35.7	0.72	66.1	50.1	0.76	4.9	21.0	2101	
CV	1.1	1.6	9.7	4.4	11.9	14.3	13.18	9.6	10.2	*.**	21.9	4.3	5	
LSD	1.0	2.2	2.4	0.1	9.7	8.3	0.15	10.4	8.3	0.13	1.7	1.4	190	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/09/2012 Harvest Date: 08/12/2012

Agronomic and Yield Data for the New Zealand Preliminary Green Dry Pea Yield Trial (1203NZ)

Name	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Aragorn
					..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
Banner	52.0	82.0	15.2	2.0	51.3	39.6	0.78	65.6	54.4	0.83	3.7	19.6	2169	112
PS10100146	57.0	85.7	18.7	2.0	60.5	49.4	0.82	73.1	61.2	0.85	3.4	25.4	2056	106
PS10100039	56.7	83.3	15.9	2.0	44.4	19.9	0.45	56.8	31.1	0.55	4.3	19.3	2003	104
PS10100401	55.3	84.7	18.2	2.0	45.6	37.1	0.82	60.5	50.3	0.83	4.7	21.3	1949	101
Aragorn	52.3	82.0	16.4	2.0	46.2	40.1	0.87	58.9	53.7	0.91	4.0	20.4	1923	100
PS10100119	56.0	88.3	13.7	2.0	46.6	23.1	0.50	63.5	37.7	0.61	4.5	21.9	1814	94
PS10100155	49.0	83.3	13.3	2.0	37.3	28.5	0.79	55.1	43.0	0.79	4.8	18.1	1754	91
PS10100041	57.0	86.3	15.5	2.0	42.5	34.9	0.83	54.8	46.5	0.86	3.8	17.6	1742	90
PS10100575	50.7	84.0	11.3	2.0	28.2	19.0	0.71	44.8	36.2	0.82	4.8	20.5	1703	88
PS10100323	57.7	89.0	17.9	2.0	52.9	37.5	0.72	68.8	53.8	0.79	5.4	23.2	1700	88
PS10100142	59.0	89.0	16.4	2.0	53.4	31.0	0.58	65.0	42.9	0.67	3.9	21.1	1687	87
GRAND MEAN	54.7	85.2	15.6	1.9	46.2	32.7	0.72	60.6	46.4	0.77	4.3	20.7	1864	
CV	1.9	1.0	5.2	8.8	6.7	9.4	*.**	5.6	7.9	9.15	14.3	2.8	7	
LSD	1.7	1.5	1.4	0.3	5.2	5.3	0.16	5.8	6.3	0.12	1.0	1.0	247	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/12/2012

Agronomic and Yield Data for the Yellow Dry Pea Preliminary Yield Trial (1204)

Name	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Carousel
					..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
Universal	52.0	82.0	15.5	2.0	45.9	40.8	0.89	65.0	57.8	0.89	4.9	21.1	2487	102
PS08101021	56.7	84.7	17.0	2.0	47.4	28.6	0.60	60.6	40.9	0.68	4.5	20.5	2442	100
Carousel	53.3	84.0	16.0	2.0	52.9	42.4	0.80	65.9	55.5	0.84	3.9	22.4	2438	100
PS08100950	54.7	86.3	14.8	2.0	40.2	36.5	0.91	51.8	47.1	0.91	3.4	23.9	2376	97
PS10100207	54.0	86.3	15.1	2.0	57.0	50.4	0.89	77.4	68.5	0.89	5.9	23.1	2274	93
PS10100505	56.7	89.0	15.2	2.0	48.7	22.1	0.46	62.1	34.3	0.56	4.7	22.2	2231	91
PS10100438	58.3	88.3	17.2	2.0	61.8	33.6	0.54	76.0	44.3	0.58	5.0	23.4	2189	89
PS10100535	49.0	82.0	11.5	2.0	38.2	27.4	0.72	50.9	42.0	0.82	5.0	19.5	2172	89
PS09100174	56.3	89.0	15.3	2.0	45.9	30.6	0.65	56.2	40.9	0.72	3.5	23.1	2095	85
PS10100567	59.0	89.0	16.0	2.0	47.0	18.4	0.40	56.8	25.9	0.46	4.1	18.7	2080	85
PS10100513	53.0	83.3	12.9	2.0	39.0	20.6	0.53	56.2	34.9	0.63	5.4	21.3	2067	84
PS10100510	54.0	82.7	14.4	2.0	43.9	28.1	0.64	56.7	42.1	0.75	4.4	24.1	2024	83
PS10100503	54.3	89.0	13.1	2.0	38.4	21.7	0.57	53.8	34.5	0.65	6.9	21.7	1873	76
PS10100506	55.3	88.3	13.4	2.0	48.4	41.1	0.85	64.9	54.9	0.85	5.7	23.7	1798	73
GRAND MEAN	54.7	86.0	14.8	1.9	46.7	31.6	0.67	61.0	44.5	0.73	4.8	22.0	2182	
CV	0.9	1.5	6.6	13.6	10.1	21.0	20.06	7.4	12.8	*.**	12.7	5.1	8	
LSD	0.8	2.2	1.6	0.2	7.9	11.1	0.23	7.5	9.5	0.16	1.0	1.9	313	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/12/2012

Agronomic and Yield Data for the Advanced Marrowfat Dry Pea Yield Trial (1233)

Name	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Aragorn
					..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
PS99101364	51.0	86.0	15.0	2.0	38.2	22.4	0.59	57.3	38.9	0.68	3.5	29.9	1101	65
PS01102929	50.3	82.3	12.9	2.0	36.4	22.9	0.63	53.1	36.5	0.69	4.0	30.3	1306	78
PS9101365	50.0	85.3	13.4	2.0	40.9	21.2	0.52	56.8	36.9	0.65	4.3	30.8	1320	78
PS710909	53.0	90.0	12.9	2.0	35.2	12.0	0.36	47.9	24.4	0.53	3.5	30.5	1521	91
SUPRA	54.3	88.0	14.2	2.0	42.0	35.4	0.84	56.4	50.0	0.89	4.1	31.5	1671	100
GUIDO	56.0	88.0	13.9	2.0	38.9	28.9	0.74	52.6	40.9	0.78	4.1	31.5	1711	102
PS02100735	53.3	88.0	13.8	2.0	46.2	36.3	0.79	59.3	52.5	0.89	4.4	32.4	1864	111
PS02100725	54.7	87.3	14.8	2.0	47.5	41.8	0.88	60.9	52.6	0.86	3.0	32.7	1864	111
PS02100726	53.0	88.0	14.0	2.0	52.0	42.8	0.83	67.9	57.4	0.85	5.0	33.7	1911	114
PS03101328	56.0	88.0	18.9	2.0	56.9	48.4	0.85	68.8	58.6	0.85	3.8	31.4	2091	125
PS02100740	54.3	88.0	17.5	2.0	46.2	41.9	0.91	59.0	53.1	0.90	3.3	31.9	2235	133
PS02100739	57.0	88.0	15.5	2.0	49.3	44.5	0.90	58.5	54.3	0.93	4.0	32.8	2543	152
GRAND MEAN	53.5	87.2	14.7	1.8	44.1	33.2	0.74	58.2	46.3	0.79	3.9	31.6	1762	
CV	1.0	1.3	6.8	21.0	5.2	11.4	13.40	6.8	7.9	9.03	16.2	3.2	7	
LSD	0.9	1.9	1.7	0.3	3.9	6.4	0.17	6.7	6.2	0.12	1.0	1.7	217	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/09/2012 Harvest Date: 08/12/2012

Location Yield Summary for the Marrowfat Pea Advanced Yield Triall (1233)

Name	Dayton Seed Yield	Pullman Seed Yield	Mean Seed Yield	% of Supra
	kg/ha	kg/ha	kg/ha	
PS02100739	2082	2543	2313	137
PS02100740	2233	2235	2234	133
PS03101328	1958	2091	2025	120
PS02100725	1873	1864	1869	111
PS02100726	1803	1911	1857	110
PS02100735	1744	1864	1804	107
SUPRA	1686	1671	1679	100
GUIDO	1601	1711	1656	98
PS710909	1392	1521	1457	86
PS01102929	1466	1306	1386	82
PS9101365	1302	1320	1311	78
PS99101364	1356	1101	1228	73
GRAND MEAN	1708	1762	1735	103
CV	8	7	7	0
LSD	245	217	132	7

Yield data are means of three replications at each location.

Agronomic Data for the Advanced Winter Pea Yield Trial (1222)

Name	FW 1	PM	PEMV	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight
								..cm..	..cm..		..cm..	..cm..			..g..
PS07300047W		R	S	244	302	16.1	2.0	43.1	22.5	0.54	77.2	49.5	0.64	9.5	14.0
Specter	R	S	S	239	296	15.8	2.0	84.9	21.0	0.25	138.6	55.9	0.41	6.9	12.2
PS05300180W	R	S	S	244	303	16.4	2.0	45.0	19.0	0.45	90.0	39.6	0.44	9.2	13.8
PS05300234W	R	S	S	233	302	17.1	2.0	24.7	20.5	0.83	84.3	42.7	0.51	13.7	16.1
PS03100848W	R	S	R/S	244	299	16.7	2.0	123.5	16.4	0.14	188.7	46.5	0.25	7.8	15.4
PS07300150W				245	297	16.8	2.0	98.8	26.9	0.27	162.7	65.3	0.40	7.8	13.9
PS0017018W	R	S	S	246	296	14.6	2.0	106.7	21.5	0.20	187.8	56.1	0.30	8.5	13.5
Windham	R	S	S	241	293	15.3	2.0	40.4	25.9	0.65	68.0	49.5	0.74	8.8	13.7
PS03101160W	R	S	S	246	299	17.9	2.0	41.1	18.3	0.46	85.5	38.2	0.45	11.0	13.9
PS03101269W	R	S	S	250	299	17.3	2.0	128.5	22.5	0.18	185.4	58.6	0.32	7.3	14.0
PS0230F210	R	S	S	239	303	16.1	2.0	109.5	19.3	0.20	189.9	45.7	0.24	10.0	14.7
PS07300045W		R	S	242	299	14.4	2.0	35.3	28.6	0.81	67.6	52.2	0.77	8.3	12.9
PS06300008W				241	300	17.3	2.0	74.2	21.9	0.29	163.0	46.3	0.29	11.4	13.3
PS07300169W				254	299	16.7	2.0	133.1	25.6	0.20	184.7	52.1	0.28	6.5	13.8
PS0230F092	R	S	S	243	299	17.2	2.0	31.7	18.2	0.57	70.0	36.2	0.52	11.2	12.9
GRAND MEAN				243	299	16.3	2.0	74.7	21.8	0.40	129.5	48.9	0.44	9.2	13.8
CV				1	0	17.2	21.7	18.9	17.7	30.07	10.6	9.9	13.77	16.9	3.4
LSD				5	5	4.7	0.7	23.6	6.5	0.20	27.6	9.7	0.12	2.6	0.9

FW 1 = Fusarium Wilt Race 1; R = resistant; S = susceptible. PM = Powdery Mildew; R = resistant; S = susceptible. PEMV = Pea Enation Mosiac Virus; R = resistant; S = susceptible,
Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 10/01/2011 Harvest Date: 07/30/2012

Location Yield Summary for the Winter Pea Advanced Yield Trial (1222)

Name	Rosalia Seed Yield	Garfield Seed Yield	Dayton Seed Yield	Pullman Seed Yield	Mean Seed Yield	% of Windham
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	
PS07300047W	3524	6934	3282	5568	5366	130
PS0017018W	3978	6681	4354	4792	5305	129
PS05300180W	3821	6496	4690	5042	5256	127
PS0230F210	4370	6564	3972	4340	5029	122
PS07300150W	3506	6071	3838	4860	4970	121
PS03100848W	3358	6221	3159	4894	4871	118
PS05300234W	2879	5847	4138	5015	4830	117
Specter	5351	5372	3435	5384	4768	116
PS03101269W	3275	6338	2954	4401	4601	112
PS06300008W	3121	6227	3072	4095	4461	108
PS07300169W	3210	5372	3213	4088	4226	102
Windham	3592	4418	3149	4742	4106	100
PS0230F092	3598	5076	3358	3771	4081	99
PS07300045W	2201	5184	3460	4147	4047	98
PS03101160W	3494	3444	3069	4716	3831	93
GRAND MEAN	3552	5750	3543	4657	4650	113
CV	22	24	24	12	20	0
LSD	1588	2827	1748	1166	747	18

Yield data are means of three replications at each location.

Agronomic and Yield Data for the Winter Dry Pea Preliminary Yield Trial (1223)

Name	Leaf Type	Vine Type	FW 1	PM	PEMV	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Windham
										..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
PS06300024W	-	-			S	233.3	291.3	12.6	2.0	36.8	32.9	0.9	86.0	56.2	0.6	11.4	17.6	6446	120
PS09300107W						241.7	296.0	14.8	2.0	48.7	11.9	0.2	92.3	34.5	0.3	9.4	13.5	6313	118
PS09300104W						248.0	298.0	18.8	2.0	40.9	33.4	0.8	70.6	59.0	0.8	7.4	16.9	6227	116
PS07300125W	-	-			S	241.7	294.0	14.4	2.0	40.8	34.3	0.8	86.1	56.0	0.6	9.5	15.8	6031	112
Specter	-	+	R	S	S	242.0	295.0	17.3	2.0	92.4	28.0	0.3	159.9	57.7	0.3	8.7	12.4	5804	108
PS07300047W	-	-		R	S	240.7	294.3	16.0	2.0	44.3	34.2	0.7	72.1	55.4	0.7	9.3	13.8	5770	108
PS06300028W	-	-				239.7	299.7	17.4	2.0	67.7	18.2	0.2	103.1	37.1	0.3	7.6	16.0	5726	107
PS06300060W	-	-			S	242.3	294.3	16.6	2.0	47.7	28.8	0.6	72.3	54.6	0.7	7.6	13.9	5696	106
PS07300136W	-	-			S	245.0	299.3	16.5	2.0	44.1	23.8	0.5	79.9	41.4	0.5	8.3	16.3	5598	104
PS10300014W						253.7	299.0	19.3	2.0	55.3	32.9	0.6	82.2	53.9	0.6	7.1	14.0	5428	101
PS06300132W	-	-				248.3	303.0	16.2	2.0	47.4	23.4	0.5	82.5	47.8	0.5	8.1	15.3	5399	101
Windham	-	-	R	S	S	241.3	292.7	16.5	2.0	42.9	28.3	0.6	69.6	46.9	0.7	8.2	13.7	5339	100
PS09300097W						238.7	298.0	20.2	1.0	103.7	27.7	0.2	147.6	55.8	0.3	5.5	12.5	5299	99
PS10300025W						241.0	291.0	15.1	2.0	40.3	30.3	0.7	79.3	44.2	0.5	10.2	14.4	5110	95
PS09300067W						243.3	301.3	17.4	2.0	105.2	25.3	0.2	169.0	57.1	0.3	8.3	15.0	4992	93
PS10300004W						240.0	296.7	19.2	2.0	94.8	31.0	0.3	169.2	55.2	0.3	10.0	12.6	4966	93
PS07300059W	-	-				240.0	295.0	20.9	2.0	109.0	29.2	0.2	178.3	57.7	0.3	8.2	13.8	4909	91
PS07300058W	-	-		R	S	239.7	298.3	20.3	2.0	113.9	29.7	0.2	186.6	65.4	0.3	9.0	14.2	4422	82
GRAND MEAN						242.2	296.5	17.2	1.9	65.3	27.9	0.5	110.3	52.0	0.5	8.5	14.5	5526	
CV						0.8	1.2	10.9	14.1	13.2	20.4	22.4	12.2	11.6	16.5	17.5	3.3	9	
LSD						3.4	5.9	3.1	0.4	14.3	9.5	0.1	22.4	10.0	0.1	2.4	0.8	894	

Leaf Type: + = normal leaf; - = afila or semi-leafless. Vine Type: + = tall vine; - = short vine.

FW 1 = Fusarium Wilt Race 1; R = resistant; S = susceptible. PM = Powdery Mildew; R = resistant; S = susceptible. PEMV = Pea Enation Mosiac Virus; R = resistant; S = susceptible.

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.

Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.

Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 10/01/2011 Harvest Date: 07/30/2011

Agronomic and Yield Data for the Austrian Winter Dry Pea Preliminary Yield Trial (1223 AWP)

Name	Leaf Type	Vine Type	FW 1	PM	PEMV	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Granger
										..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
PS09300129W						243.0	293.7	19.7	2.0	79.9	21.8	0.2	123.2	47.2	0.3	6.3	11.2	5819	108
PS10300031W						243.3	291.3	20.7	2.0	95.1	31.3	0.3	147.3	57.6	0.3	7.4	14.8	5593	104
PS07300092W	-	-			S	250.0	292.0	21.2	2.0	100.5	23.5	0.2	119.8	46.1	0.3	4.0	14.6	5568	103
PS09300095W						238.7	290.3	19.0	2.0	89.3	34.9	0.4	131.6	57.4	0.4	6.4	16.0	5554	103
PS07300124W	-	-		R	S	244.0	290.3	16.0	2.0	39.9	26.7	0.6	65.3	45.5	0.7	5.4	14.8	5450	101
PS10300135W						249.7	290.3	19.5	2.0	42.4	13.5	0.3	64.2	27.8	0.4	6.0	14.6	5369	100
Granger	-	+	R	S	S	240.0	292.7	18.7	2.0	84.4	28.1	0.3	131.4	49.0	0.3	5.7	13.0	5366	100
PS09300128W						245.0	298.3	18.5	2.0	84.0	20.0	0.2	134.5	38.3	0.2	7.0	11.0	5346	99
PS10300129W						239.7	291.3	19.6	1.0	72.6	27.8	0.3	123.1	49.8	0.4	6.8	12.9	5308	98
PS09300098W						239.3	296.0	19.4	2.0	99.3	27.2	0.2	141.0	56.3	0.4	6.5	15.3	5298	98
PS10300117W						244.0	295.0	17.6	2.0	96.1	23.0	0.2	143.8	47.5	0.3	8.4	11.4	5244	97
PS07300116W	-	+			S	240.7	294.3	18.4	2.0	94.9	38.7	0.4	127.9	60.8	0.4	7.0	14.4	5168	96
PS10300127W						250.0	296.7	20.8	2.0	111.9	27.2	0.2	165.9	54.0	0.3	7.8	12.5	4828	89
PS09300127W						238.7	291.3	22.4	2.0	106.2	21.9	0.2	148.9	44.9	0.3	4.9	13.8	4669	87
PS09300077W						244.0	296.7	18.2	2.0	90.8	21.1	0.2	137.1	47.7	0.3	7.9	12.3	4397	81
Melrose	+	+	S	S	S	246.0	294.3	15.3	2.0	91.9	29.2	0.3	138.4	52.4	0.3	7.3	11.5	3655	68
GRAND MEAN						243.5	293.4	19.0	1.9	86.2	25.9	0.3	127.7	48.9	0.4	6.5	13.3	5164	
CV						0.5	0.8	11.4	12.4	10.4	17.1	20.0	12.1	9.4	19.0	25.0	3.7	7	
LSD						2.3	4.0	3.6	0.4	15.0	7.4	0.1	25.8	7.7	0.1	2.7	0.8	635	

Leaf Type: + = normal leaf; - = afila or semi-leafless. Vine Type: + = tall vine; - = short vine.

FW 1 = Fusarium Wilt Race 1; R = resistant; S = susceptible. PM = Powdery Mildew; R = resistant; S = susceptible. PEMV = Pea Enation Mosiac Virus; R = resistant; S = susceptible.

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.

Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.

Repr Nodes = average number of reproductive nodes on a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 10/01/2011 Harvest Date: 08/01/2012

Agronomic and Yield Data for the Winter Dry Pea Observation Nursery (1225)

Name	Leaf Type	Vine Type	FW 1	PM	PEMV	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Windham
										..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
PS11300087W						242.0	305.0	18.3	2.0	67.8	23.5	0.35	116.3	65.3	0.56	10.0	17.4	6793	220
PS11300288W						241.0	305.0	18.0	2.0	54.0	14.3	0.26	79.5	32.0	0.40	6.0	18.5	6546	212
PS11300199W						247.0	305.0	16.5	2.0	42.5	24.3	0.57	104.0	62.8	0.60	12.0	15.8	5703	184
PS11300201W						248.0	305.0	11.3	2.0	28.0	25.3	0.90	85.8	46.3	0.54	12.3	16.9	5477	177
PS11300289W						247.0	310.0	16.5	2.0	49.5	17.3	0.35	76.3	40.8	0.53	5.5	18.7	4901	158
PS11300290W						256.0	305.0	18.8	3.0	84.5	9.5	0.11	141.8	37.5	0.26	8.5	15.9	4778	154
PS11300041W						239.0	304.0	16.0	2.0	33.0	32.5	0.98	83.5	55.5	0.66	11.8	14.3	4572	148
PS11300108W						242.0	310.0	21.5	2.0	93.0	11.0	0.12	195.3	43.8	0.22	10.3	11.7	4558	147
PS11300149W						241.0	310.0	20.0	2.0	61.8	17.5	0.28	150.3	46.3	0.31	13.0	11.2	4528	146
PS11300060W						235.0	305.0	13.8	2.0	43.5	10.3	0.24	94.3	43.0	0.46	11.3	12.4	4358	141
PS11300287W						256.0	296.0	20.0	3.0	42.3	22.0	0.52	56.8	34.5	0.61	5.8	17.8	4316	139
PS11300307W						235.0	305.0	17.0	2.0	39.3	15.8	0.40	106.5	36.3	0.34	13.0	14.9	4216	136
PS11300042W						240.0	305.0	15.8	2.0	37.3	23.8	0.64	86.5	49.3	0.57	12.0	14.3	4145	134
Granger	-	+		S		239.0	305.0	13.3	2.0	56.0	11.3	0.20	129.5	45.8	0.35	8.8	13.2	4124	133
PS10300068W						254.0	303.0	19.0	2.0	57.5	15.5	0.27	94.8	44.5	0.47	8.3	14.0	4105	133
PS11300039W						241.0	296.0	19.5	2.0	45.3	29.3	0.65	71.3	51.3	0.72	6.8	14.8	3976	128
PS11300189W						252.0	305.0	16.8	2.0	35.3	20.3	0.58	79.3	45.8	0.58	10.8	14.7	3975	128
PS11300200W						248.0	305.0	15.5	2.0	52.3	38.8	0.74	101.8	72.8	0.72	11.3	17.6	3973	128
PS10300122W						233.0	289.0	17.5	2.0	85.5	34.5	0.40	131.0	47.0	0.36	5.8	15.2	3956	128
PS11300069W						240.0	303.0	21.3	2.0	55.3	30.3	0.55	102.8	78.8	0.77	8.8	17.5	3894	126
PS11300279W						244.0	298.0	16.5	1.0	36.8	30.8	0.84	68.5	51.3	0.75	8.8	16.8	3877	125
PS10300080W						239.0	303.0	18.5	2.0	64.3	12.0	0.19	131.3	26.3	0.20	9.0	12.5	3810	123
PS11300139W						244.0	310.0	17.5	2.0	35.8	23.0	0.64	85.8	40.0	0.47	9.3	13.2	3699	119
PS11300057W						242.0	303.0	17.3	2.0	68.0	22.8	0.34	129.0	29.0	0.22	8.3	14.1	3699	119
PS11300197W						247.0	310.0	15.3	2.0	51.5	16.8	0.33	106.0	36.5	0.34	10.8	16.3	3652	118
PS10300121W						251.0	296.0	16.3	2.0	66.5	35.0	0.53	118.5	54.3	0.46	9.5	13.4	3606	116
PS11300040W						241.0	293.0	19.8	2.0	36.8	28.3	0.77	73.8	41.8	0.57	8.0	14.0	3557	115

Leaf Type: + = normal leaf; - = afila or semi-leafless. Vine Type: + = tall vine; - = short vine.
FW 1 = Fusarium Wilt Race 1: R = resistant; S = susceptible; PM = Powdery Mildew: R = resistant; S = susceptible; PEMV = Pea Enation Mosiac Virus: R = resistant; S = susceptible.
Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Planting Date: 10/01/2011 Harvest Date: 08/3/2012

Agronomic and Yield Data for the Winter Dry Pea Observation Nursery (1225)

Name	Leaf Type	Vine Type	FW 1	PM	PEMV	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Windham
										..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
PS11300293W						256.0	305.0	21.8	3.0	84.8	21.3	0.25	109.8	34.5	0.31	6.3	15.9	3518	114
PS11300054W						231.0	289.0	21.5	2.0	79.0	23.0	0.29	124.0	46.0	0.37	5.8	12.9	3491	113
PS11300158W						241.0	310.0	12.5	2.0	58.8	14.0	0.24	128.5	37.0	0.29	10.0	12.4	3443	111
PS10300026W						244.0	296.0	23.8	1.0	91.3	6.8	0.07	104.8	19.3	0.18	4.0	14.7	3400	110
PS11300052W						231.0	286.0	14.0	1.0	61.8	38.3	0.62	94.3	54.0	0.57	5.3	15.4	3349	108
PS10300053W						239.0	298.0	18.0	2.0	67.3	9.0	0.13	131.3	17.3	0.13	8.5	11.6	3298	106
PS10300010W						235.0	296.0	17.0	2.0	67.3	25.3	0.38	137.0	41.8	0.31	9.5	13.2	3286	106
PS10300134W						251.0	286.0	16.0	2.0	41.3	23.8	0.58	61.0	40.3	0.66	5.3	15.4	3285	106
PS11300240W						239.0	303.0	17.0	2.0	52.0	39.3	0.76	100.0	71.5	0.72	9.3	15.3	3235	104
PS11300277W						244.0	303.0	18.8	2.0	47.3	12.0	0.25	100.8	44.3	0.44	12.0	13.8	3229	104
PS11300104W						254.0	303.0	19.5	2.0	65.0	16.8	0.26	104.3	35.8	0.34	6.8	13.4	3214	104
PS10300118W						243.0	296.0	18.8	2.0	58.8	13.8	0.23	96.5	28.5	0.30	8.0	14.0	3196	103
PS11300037W						240.0	289.0	18.0	2.0	41.8	27.3	0.65	67.5	45.8	0.68	7.0	14.3	3153	102
PS11300027W						258.0	296.0	20.3	2.0	49.5	22.0	0.44	80.3	43.8	0.55	8.3	14.6	3132	101
PS11300173W						241.0	288.0	18.0	2.0	33.3	17.3	0.52	40.5	27.3	0.67	3.0	14.6	3117	101
Windham	-	-		S		241.0	289.0	18.5	2.0	31.3	14.8	0.47	48.5	34.8	0.72	5.3	14.7	3084	100
PS10300120W						239.0	289.0	19.3	2.0	82.0	32.3	0.39	100.5	43.0	0.43	5.0	15.7	3080	99
PS11300019W						238.0	298.0	18.8	2.0	74.8	18.8	0.25	144.8	48.3	0.33	8.3	14.8	3057	99
PS10300090W						247.0	298.0	16.3	2.0	34.5	16.8	0.49	62.0	27.3	0.44	5.5	14.8	3051	98
PS10300047W						256.0	298.0	20.5	2.0	93.0	22.5	0.24	121.0	45.8	0.38	7.3	12.6	3001	97
PS10300055W						238.0	289.0	19.0	2.0	67.3	12.8	0.19	134.3	34.8	0.26	7.8	12.8	2989	96
PS11300046W						240.0	289.0	17.5	2.0	73.3	22.3	0.30	112.8	36.8	0.33	4.5	15.6	2983	96
PS10300023W						242.0	289.0	22.3	2.0	37.5	26.0	0.69	47.0	35.5	0.76	4.8	14.6	2953	95
PS10300116W						251.0	296.0	16.8	2.0	79.8	18.8	0.24	119.0	35.3	0.30	8.0	13.1	2930	94
PS11300282W						239.0	289.0	18.8	2.0	48.8	30.5	0.63	66.3	57.5	0.87	5.8	17.5	2849	92
PS10300044W						240.0	296.0	23.3	2.0	86.3	18.3	0.21	107.0	45.0	0.42	4.5	14.4	2827	91
PS11300283W						242.0	291.0	17.8	2.0	35.8	20.5	0.57	59.8	40.0	0.67	7.0	15.8	2824	91

Leaf Type: + = normal leaf; - = afila or semi-leafless. Vine Type: + = tall vine; - = short vine.
FW 1 = Fusarium Wilt Race 1: R = resistant; S = susceptible; PM = Powdery Mildew: R = resistant; S = susceptible; PEMV = Pea Enation Mosiac Virus: R = resistant; S = susceptible.
Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Planting Date: 10/01/2011 Harvest Date: 08/3/2012

Agronomic and Yield Data for the Winter Dry Pea Observation Nursery (1225)

Name	Leaf Type	Vine Type	FW 1	PM	PEMV	Days to Flower	Days to Maturity	Flower Node	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	# Repr Nodes	100 Seed Weight	Seed Yield	% of Windham
										..cm..	..cm..		..cm..	..cm..			..g..	kg/ha	
PS10300029W						240.0	289.0	21.3	2.0	99.8	26.8	0.27	130.3	47.5	0.36	5.5	14.0	2809	91
PS11300310W						247.0	310.0	22.3	2.0	68.8	17.0	0.25	131.5	33.5	0.25	10.0	14.7	2655	86
PS11300281W						239.0	289.0	18.0	2.0	44.5	34.5	0.78	64.3	44.8	0.70	5.8	17.8	2440	79
PS10300133W						241.0	286.0	15.3	2.0	28.0	17.3	0.62	48.5	32.8	0.68	7.8	14.6	2378	77
PS11300036W						240.0	289.0	17.5	2.0	26.3	16.5	0.63	47.5	36.5	0.77	5.3	13.7	2338	75
PS11300311W						256.0	303.0	16.5	3.0	34.3	29.0	0.85	52.3	43.5	0.83	7.5	14.9	1923	62
PS10300021W						242.0	289.0	17.8	2.0	36.3	22.3	0.61	43.5	32.3	0.74	4.3	14.5	1888	61
PS10300046W						240.0	298.0	18.8	2.0	60.5	14.3	0.24	103.5	31.3	0.30	6.5	13.9	1887	61
GRAND MEAN						243.3	298.3	18.0	2.0	55.9	21.5	0.44	97.1	42.4	0.49	7.9	14.7	3582	
CV						2.6	2.5	13.7	16.6	34.3	36.5	50.38	32.6	27.5	39.00	31.3	11.4	26	
LSD																			

Leaf Type: + = normal leaf; - = afila or semi-leafless. Vine Type: + = tall vine; - = short vine.
FW 1 = Fusarium Wilt Race 1: R = resistant; S = susceptible; PM = Powdery Mildew: R = resistant; S = susceptible; PEMV = Pea Enation Mosiac Virus: R = resistant; S = susceptible.
Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Repr Nodes = average number of reproductive nodes on a plant. Planting Date: 10/01/2011 Harvest Date: 08/3/2012

LENTIL BREEDING

In 2012, identical advanced lentil yield trials were planted at Pullman, WA (9-10 May), Garfield, WA (20 May), and Fairfield, WA (12 May). The green seed coat, yellow cotyledon market classes were divided into three groups: Eston Types: smallest seed size (mean seed size = 3.9g/100 seeds); Richlea Types: medium seed size (mean seed size = 6.0g/100 seeds); and Laird Types: large seed size (Mean seed size = 7.3g/100 seeds. Pardina Types have small seeds (mean seed size = 4.5g/100 seeds) with yellow cotyledons and brown seed coats. The Turkish Red Types have small seeds (mean seed size = 4.0g/100 seeds) with red/orange cotyledons and brown seed coats. The Zero Tannin Types have medium-large seeds (mean seed size = 5.3g/100 seeds) with any color cotyledon and clear seed coats.

The 2012 Eston Type advanced yield trial had four entries and two checks, Essex and Eston. The mean yield at Pullman was 1151kg/ha, the mean yield at Garfield was 483kg/ha and the mean yield at Fairfield was 2135kg/ha. Essex was overall the highest yielding entry. However, its seed size is too large for Eston types and too small for the Richlea market class. We will drop this line from further testing. Yields at Garfield were extremely and uncharacteristically low. The best performing breeding line, LC01602273E has seed size of 3.2g/100 seeds compared to Eston seed size of 3.1g/100 seeds and across all locations, yielded 20% more than Eston. LC01602273E has been presented to the USADPLC Variety Release Committee for consideration for release and registration. Breeder seed has been produced.

The Richlea advanced yield trial had five entries and three checks, Richlea, Brewer and Merrit. The average yield at Pullman was 1780kg/ha, at Garfield mean yield was 751kg/ha and at Fairfield average yield was 1952kg/ha. The breeding line LC01602300R has performed well in previous years and performed very well in the Washington and Idaho state wide trials. It is slightly taller (38.7cm) than Richlea (37.4cm) at harvest and had similar days to maturity. Its seed size is 5.9g/100 seeds, compared to Richlea's 5.3g/100 seeds. LC01602300R has been presented to the USADPLC Variety Release Committee for consideration for release and registration. Breeder seed has been produced and transferred to the Washington State Crop Improvement Association.

The Laird advanced yield trial had 13 entries and four checks, Pennell, Merrit, Riveland and Brewer. One entry, LC07600233e, is persistent green: when it dried down, the foliage remains green and the seeds are a very bright green color. The average yields were: Pullman: 1531kg/ha; Garfield: 619kg/ha; Fairfield: 2124kg/ha. The yield of most of the breeding lines was greater than Merrit, the most widely grown check. Five breeding lines, LC00860B130L, LC06601734L, LC07600247L, LC07600541L and LC07600376L had yields that were significantly greater (P=.05) than Merrit. They yielded 9-13% more than Merrit. These breeding lines had seed size (6.7-7.6g/100 seeds) that was comparable to Merrit (6.7g/100sds). They ranged in height at harvest from 33.9cm to 38.6cm and had plant height indices of 0.82 to 0.90. The breeding objectives of this class of lentils include improving seed shape to minimize seed damage during harvest and processing.

The Pardina advanced yield trial had 12 entries and two checks, Pardina and Morena. Mean yield at Pullman was 1486kg/ha, 557kg/ha at Garfield and 2090kg/ha at Fairfield. Two sister

lines, LC08600116P, LC08600113P were the top yielders in 2012. They also were very high yielding in 2010 and 2011. LC08600113P had an average yield of 1525kg/ha and LC08600116P had an average yield of 1584kg/ha, compared to Pardina 1407kg/ha. The plant height of the two lines (30.7cm and 35.9cm, respectively) is also greater than Pardina (28.3cm) and not significantly different from Morena (31.7cm). Seed sizes are: LC08600113P is 4.6g/100 seeds and LC08600116P is 5.1g/100 seeds. Morena has seed size 4.0g/100 seeds and Pardina has seed size 4.2g/100 seeds. The seed size of LC08600116 is too large for this market class and it will be dropped. Breeder seed has been made of LC08600113P. Breeding objectives of this class of lentils continues to include improved height and standability and increased yield.

The 2012 Turkish Red advanced yield trials contained nine entries and one check, Crimson. The average seed yields were: Pullman: 1348kg/ha; Garfield: 593kg/ha; and Fairfield: 2133kg/ha. Most of the breeding lines out-yielded Crimson in at least one location. All the retained breeding lines had seed size (4.0-4.8g/100 seeds) greater than Crimson (3.4g/100 seeds). Acceptability of larger seed size is yet to be determined. We will continue to make improvements in yield and maintain taller, erect plant architecture.

The 2012 Zero Tannin advanced yield trials had six entries and two checks, Shasta and Cedar. One entry, LC99602585RZ has red cotyledons, the other five have yellow cotyledons. Average yields were Pullman: 1650kg/ha; Garfield: 735kg/ha and Fairfield: 2146kg/ha. The zero tannin lentils have relatively large seed size (average = 5.2g/100 seeds in 2012). The zero tannin lentils tend to be tall (average height at maturity was 34cm) and have good lodging tolerance. They tend to be late maturing (average days to harvest = 93.6) and the pods tend to drop and shatter more readily than other lentil classes. Consequently, the primary breeding objectives for this class is to make them earlier maturing and to decrease the tendency for pod drop and shatter.

Potential Variety Releases

LC01602300R has been a top performer in the medium seeded green lentil advanced trials since 2004, the Western Regional Trials since 2006 and in the Washington and Idaho State Variety Trials since 2011. It has a seed size similar to Richlea (approximately 5g/100 seeds) and has yielded an average of 1320 kg/ha over more than 50 location years of advanced trials. This represents a yield increase of approximately 10% over Richlea (Table 4.). Pre-breeder seed was made in 2010 and increased in 2011 and transferred to Washington State Crop Improvement Association in 2012. We have proposed this breeding line for release.

Table 4. Comparison of the performance of LC01602300R with Richlea in 50 location-years.

Entry	Canopy Ht (cm)	Days to Mat	Plant Ht Index	Seed Size (g/100 sds)	Yield (kg/ha)
LC01602300R	34.4	97.5	0.95	4.9	1319
Richlea	33.4	96.5	0.91	5.2	1197

WINTER LENTIL YIELD TRIALS

Advanced yield trials for the fall-sown, winter-hardy lentils included seven lines and the check variety Morton. All breeding lines and Morton are Turkish Red types. The trials were planted in Rosalia, Garfield, Pullman and Dayton. Only Pullman was harvested. At the other three locations, the fields were prepared by disking twice. The soils were very compact and our drill was not capable of penetrating deeply enough. Consequently, most of the seedlings 'heaved-out' and were lost.

Average seed yield was 4036kg/ha. Morton was the highest yielding entry (4762kg/ha) and LC05600512WT was the highest yielding breeding line (4684kg/ha) and its yield was not significantly different from Morton.

The breeding objectives for the autumn-sown lentils include improved winter hardiness, increased yield and especially development of additional market classes. We have identified lines with seed characteristics that would place them in the Eston and Richlea market classes. Ten lines with yellow cotyledons and green seed coats were evaluated in the 2012 observation trials and will be advanced to the 2013 Preliminary Yield Trials.

Agronomic Data for the Eston Lentil Type Advanced Yield Trial (1251E)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight
				..cm..	..cm..		..cm..	..cm..		..g..
Essex	55.7	88.0	3.0	18.9	12.4	0.66	39.1	34.3	0.8	4.3
LC01602273E	53.0	87.0	3.0	17.3	14.2	0.82	34.5	28.5	0.8	3.2
LC08600005E	52.7	88.0	2.0	18.8	16.3	0.87	35.3	31.4	0.8	4.7
LC09600066E	52.7	87.0	2.0	13.1	9.3	0.71	31.2	27.8	0.8	3.4
LC09600054E	51.7	88.0	2.0	15.7	12.8	0.83	31.0	28.8	0.9	3.8
Eston	52.0	88.0	3.0	16.9	14.3	0.84	33.4	28.9	0.8	3.1
GRAND MEAN	52.9	87.6	2.4	16.7	13.2	0.79	34.0	29.9	0.8	3.7
CV	1.3	1.6	16.1	9.4	12.6	11.10	6.0	7.0	4.6	2.4
LSD	1.3	2.6	0.7	2.8	3.0	0.16	3.7	3.8	0.0	0.1

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Location Yield Summary for the Eston Type Lentil Advanced Yield Trial (1251E)

Name	Pullman Seed Yield	Garfield Seed Yield	Fairfield Seed Yield	Kendrick Seed Yield	Mean Seed Yield	% of Eston
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Essex	1450	635	2146		1410	130
LC01602273E	1308	434	2217		1319	121
LC08600005E	1196	492	2262		1316	121
LC09600054E	957	464	2196		1206	111
LC09600066E	1171	513	1929		1204	111
Eston	825	363	2062		1083	100
GRAND MEAN	1151	483	2135		1257	115
CV	13	13	9		12	1
LSD	276	118	376		120	11

~~Kendrick was not planted for 2012.~~
Yield data are means of three replications at each location.

Mean Yields of the Eston Type Lentil Advanced Yield Trial, 2008-2012

Name	2012	2011	2010	2009	2008
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Eston	1083	1291	1350	1143	954.
LC01602273E	1319	1429	1676	1271	999.
Essex	1410	1654	1554		1160
LC08600005E	1316	1574	1622		
LC09600054E	1206	1450			
LC09600066E	1204	1384			
C.V.	12.0	14.9	6.0	11.5	10.4
LSD	120.	257.	107.	132.	92.6

Yield data are means of three reps per location, 4 locations per year.

Agronomic Data for the Richlea Type Lentil Advanced Yield Trial (1252R)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight
				..cm..	..cm..		..cm..	..cm..		..g..
LC01602300R	53.0	89.0	3.0	20.9	15.2	0.7	40.0	35.5	0.8	5.0
LC07600151R	50.0	87.0	2.0	18.4	13.7	0.7	38.5	33.4	0.8	5.8
Richlea	53.3	92.0	3.0	23.7	17.2	0.7	42.9	36.8	0.8	5.3
LC06601616R	53.0	93.0	3.0	21.2	17.4	0.8	41.9	37.4	0.8	5.7
LC07600553R	53.0	91.0	3.0	18.2	14.5	0.8	35.8	29.9	0.8	5.9
Merrit	48.0	87.0	2.0	18.2	14.5	0.8	38.8	33.7	0.8	6.5
LC09600228R	54.0	91.0	3.0	19.9	15.8	0.7	37.3	34.7	0.9	6.4
Brewer	46.0	87.0	2.0	20.8	15.7	0.7	39.2	32.8	0.8	6.0
GRAND MEAN	51.2	89.6	2.5	20.1	15.5	0.7	39.2	34.2	0.8	5.8
CV	1.7	1.8	7.9	8.6	10.9	8.9	6.8	5.7	6.2	2.6
LSD	1.5	2.9	0.3	3.0	2.9	0.1	4.7	3.4	0.1	0.2

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the green plant height at the green pod stage.
Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Location Yield Summary for the Richlea Type Lentil Advanced Yield Trial (1252R)

Name	Pullman Seed Yield	Garfield Seed Yield	Fairfield Seed Yield	Kendrick Seed Yield	Mean Seed Yield	% of Richlea
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Richlea	1861	871	2105		1612	100
LC07600151R	1984	851	1880		1572	97
LC01602300R	1989	727	1986		1568	97
LC07600553R	1785	707	2067		1520	94
LC06601616R	1785	839	1913		1512	93
Merrit	1703	712	1873		1429	88
LC09600228R	1624	658	1941		1408	87
Brewer	1512	642	1853		1335	82
GRAND MEAN	1780	751	1952		1494	92
CV	5	10	4		5	0
LSD	178	140	151		70	4

Kendrick was not planted for 2012.
Yield data are means of three replications at each location.

Mean Yields of the Richlea Type Lentil Advanced Yield Trial, 2008-2012

Name	2012	2011	2010	2009	2008
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Brewer	133	129	158	129	
Richlea	161	164	173	150	112
Merrit	142	127	175	143	991
LC01602300R	156	180	170	156	120
LC06601616R	151	163	169	148	
LC07600151R	157	175	174		
LC07600553R	152	148	177		
LC09600228R	140				
C.V.	6.0	13.	16.	13.	11.
LSD	70.	258	309	167	106

Yield data are means of three reps per location, 4 locations per year.

Agronomic and Yield Data for the Richlea Type Lentil Observation Nursery (1255R)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Richlea
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600369R	53.0	90.0	3.00	23.3	15.5	0.67	38.0	31.0	0.82	5.2	1457	110
Richlea	53.0	88.0	3.00	24.5	17.3	0.71	44.0	33.3	0.76	5.6	1314	100
LC11600370R	53.0	92.0	3.00	24.3	16.8	0.69	44.0	35.8	0.81	5.1	1276	97
LC11600362R	56.0	90.0	3.00	27.0	17.3	0.64	42.0	30.3	0.72	4.8	1159	88
LC11600361R	53.0	86.0	2.00	25.3	13.8	0.55	40.3	26.5	0.66	4.9	1158	88
LC11600363R	53.0	92.0	2.00	25.3	13.8	0.55	45.0	20.5	0.46	5.5	997	75
LC11600365R	52.0	86.0	3.00	22.0	11.0	0.50	36.5	26.8	0.73	4.9	889	67
GRAND MEAN	53.2	89.1	2.71	24.5	15.0	0.62	41.4	29.1	0.71	5.1	1179	
CV	2.1	2.6	16.64	6.0	14.3	12.27	7.2	16.0	16.01	5.5	15	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic Data for the Laird Type Lentil Advanced Yield Trial (1252L)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight
				..cm..	..cm..		..cm..	..cm..		..g..
LC0860B130L	50.0	92.0	2.0	19.8	13.9	0.69	41.4	33.9	0.82	7.2
LC07600524L	52.0	94.0	2.0	18.9	13.0	0.69	39.8	36.1	0.90	7.2
LC07600536L	54.0	93.0	3.0	24.6	18.3	0.74	41.1	34.1	0.83	6.7
LC07600376L	55.0	94.0	3.0	28.6	19.4	0.69	42.8	36.8	0.86	7.5
LC07600378L	53.7	93.0	3.0	26.4	21.5	0.81	43.2	38.6	0.90	7.6
LC07600541L	53.7	92.0	3.0	26.3	19.5	0.74	42.8	37.0	0.87	7.2
LC06601734L	50.7	92.0	2.0	20.6	17.0	0.84	41.0	34.0	0.83	7.0
Riveland	50.3	88.0	2.0	20.8	14.8	0.71	41.2	32.9	0.80	7.4
Brewer	47.3	87.0	2.0	19.4	14.5	0.74	37.4	32.7	0.87	5.9
LC09600414L	50.0	88.0	2.0	18.9	13.0	0.69	36.6	29.6	0.81	7.5
LC0860B123L	50.0	87.0	2.0	24.0	18.3	0.77	37.9	35.0	0.92	9.1
LC07600247L	50.0	92.0	2.0	22.0	16.1	0.73	37.8	33.2	0.88	7.2
LC0860B113L	53.0	92.0	2.0	21.8	17.6	0.81	38.0	32.5	0.86	7.1
Pennell	53.0	92.0	3.0	22.9	18.0	0.78	38.6	33.4	0.87	7.0
LC09600180L	52.3	90.0	3.0	26.5	21.1	0.80	40.7	36.8	0.90	6.9
Merrit	48.0	87.0	2.0	18.9	13.8	0.75	37.6	33.8	0.90	6.7
LC07600233e	52.7	102.0	3.0	23.5	18.5	0.79	47.6	42.9	0.90	6.0
GRAND MEAN	51.5	91.4	2.4	22.5	16.9	0.75	40.3	34.9	0.87	7.1
CV	1.9	2.0	13.2	12.0	12.2	12.41	5.9	5.7	4.82	2.6
LSD	1.6	3.0	0.5	4.5	3.4	0.16	4.0	3.3	0.07	0.3

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Location Yield Summary for the Laird Type Lentil Advanced Yield Trial (1252L)

Name	Pullman Seed Yield	Garfield Seed Yield	Fairfield Seed Yield	Kendrick Seed Yield	Mean Seed Yield	% of Merrit
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
LC0860B130L	1725	624	2314		1554	113
LC06601734L	1544	717	2325		1529	111
LC07600247L	1479	546	2505		1510	110
LC07600541L	1555	694	2257		1502	109
LC07600376L	1602	642	2243		1496	109
LC07600524L	1690	650	2066		1469	107
Riveland	1540	620	2234		1465	107
LC07600378L	1594	651	2112		1452	106
LC09600180L	1449	698	2177		1441	105
LC09600414L	1508	762	2022		1430	104
LC07600536L	1609	588	2016		1404	102
Brewer	1539	529	2118		1395	102
Pennell	1458	519	2148		1375	100
Merrit	1437	590	2070		1366	100
LC0860B113L	1458	517	1972		1315	96
LC0860B123L	1494	583	1814		1297	94
LC07600233e	1340	589	1718		1216	89
GRAND MEAN	1531	619	2124		1425	104
CV	10	14	8		10	0
LSD	256	148	295		113	8

Kendrick was not planted in 2012.
Yield data are means of three replications at each location.

Mean Yields of the Large Yellow Type Lentil Advanced Yield Trial, 2008-2012

Name	2012	2011	2010	2009	2008
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Brewer	139	923	158	129	
Merrit	136	109	175	143	991
Pennell	137	117			
Riveland	146	104	171	126	107
LC06601734L	152	122	190	145	
LC07600233e	121	937			
LC07600247L	151				
LC07600376L	149	147	171		
LC07600378L	145				
LC07600524L	146	122	168		
LC07600536L	140	139	164		
LC07600541L	150	136			
LC0860B113L	131				
LC0860B123L	129	116			
LC0860B130L	155	119			
LC09600180L	144				
LC09600414L	143				
C.V.	10.	13.	16.	13.	11.
LSD	113	170	309	167	106

Yield data are means of three reps per location, 4 locations per year.

Agronomic and Yield Data for the Large Yellow Type Lentil Preliminary Yield Trail (1254)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Merrit
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC09600408L	51.0	89.0	2.0	17.7	14.5	0.8	35.6	32.1	0.9	7.2	1844	115
LC09600307L	53.0	94.0	2.0	25.3	17.4	0.6	41.3	36.1	0.8	9.1	1811	113
LC09600410L	52.0	88.0	2.0	19.2	15.2	0.7	36.3	30.8	0.8	7.5	1808	112
LC09600381R	53.0	95.0	3.0	23.7	19.4	0.8	43.4	36.9	0.8	6.9	1781	111
LC09600476L	50.0	89.0	2.0	17.1	14.8	0.8	36.8	32.7	0.8	7.0	1729	108
LC09600308L	53.0	95.0	2.0	20.4	16.9	0.8	40.8	35.8	0.8	9.4	1711	106
LC09600481L	54.0	95.0	3.0	24.9	20.6	0.8	47.0	39.7	0.8	6.9	1704	106
Riveland	52.0	93.0	2.0	20.4	16.3	0.8	42.4	38.6	0.9	7.6	1701	106
LC09600183R	53.3	90.0	3.0	22.4	15.9	0.7	40.6	35.2	0.8	6.4	1668	104
Richlea	52.3	92.0	3.0	18.6	15.4	0.8	38.1	31.7	0.8	5.4	1661	103
LC09600361L	50.7	89.0	2.0	20.2	17.2	0.8	39.4	35.7	0.9	7.7	1657	103
LC07600556L	53.0	95.0	3.0	20.0	17.4	0.8	40.4	35.8	0.8	6.3	1609	100
LC09600366L	50.3	90.0	2.0	18.4	14.4	0.7	39.5	33.4	0.8	7.0	1606	100
Merrit	46.7	87.0	2.0	17.2	11.4	0.6	37.1	32.8	0.8	6.2	1600	100
LC09600173L	50.3	92.0	2.0	19.4	16.1	0.8	43.6	35.8	0.8	7.4	1579	98
LC09600500L	52.3	94.0	2.0	18.1	16.2	0.9	37.5	35.0	0.9	7.7	1492	93
LC09600450R	52.7	95.0	3.0	20.4	16.9	0.8	38.3	34.4	0.9	6.2	1470	91
LC09600392R	55.0	95.0	3.0	22.4	18.5	0.8	42.0	36.9	0.8	6.7	1468	91
GRAND MEAN	51.9	92.0	2.3	20.3	16.3	0.8	40.0	34.9	0.8	7.1	1661	
CV	1.7	1.9	18.2	8.3	11.0	10.4	5.8	5.4	6.1	1.9	7	
LSD	1.5	2.9	0.6	2.8	3.0	0.1	3.8	3.1	0.0	0.2	195	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the green plant height at the green pod stage.
Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic and Yield Data for the Laird Type Lentil Observation Nursery (1255L)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Merrit
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600323L	53.0	88.0	3.0	27.0	14.3	0.53	44.0	31.5	0.72	6.3	2083	179
LC11600330L	51.0	88.0	2.0	22.5	13.5	0.60	42.0	33.3	0.79	7.0	1731	148
LC11600348L	46.0	86.0	2.0	21.3	12.8	0.60	43.0	32.0	0.74	5.8	1685	145
LC11600380L	53.0	88.0	2.0	23.3	18.5	0.79	44.3	39.0	0.88	7.3	1657	142
LC11600200L	50.0	88.0	3.0	21.8	16.5	0.76	45.8	37.3	0.81	6.9	1652	142
LC11600161L	55.0	95.0	3.0	26.5	20.8	0.78	42.5	37.3	0.88	6.8	1650	141
LC11600078L	57.0	95.0	3.0	28.5	20.5	0.72	50.8	38.0	0.75	6.2	1636	140
LC11600299L	50.0	88.0	2.0	19.5	16.0	0.82	38.3	33.0	0.86	7.5	1627	140
LC11600193L	50.0	86.0	2.0	19.8	14.3	0.72	39.0	31.8	0.82	6.7	1612	138
LC11600177L	57.0	95.0	2.0	32.3	22.3	0.69	47.8	39.3	0.82	6.3	1603	137
LC11600179L	57.0	95.0	3.0	29.0	20.0	0.69	52.0	39.0	0.75	6.0	1593	137
LC11600343L	48.0	88.0	2.0	20.5	14.3	0.70	37.3	31.3	0.84	6.0	1592	137
LC11600298L	50.0	88.0	3.0	21.5	18.5	0.86	41.3	35.3	0.85	7.3	1589	136
LC11600228L	53.0	88.0	3.0	19.0	16.0	0.84	38.0	30.8	0.81	6.0	1562	134
LC11600360L	52.0	88.0	2.0	26.0	20.0	0.77	45.8	37.3	0.81	5.6	1562	134
LC11600324L	50.0	88.0	3.0	19.5	16.8	0.86	41.0	37.0	0.90	7.1	1538	132
LC11600198L	53.0	88.0	3.0	21.3	19.8	0.93	38.5	36.5	0.95	7.1	1534	132
LC11600175L	56.0	95.0	2.0	26.5	22.0	0.83	46.3	42.0	0.91	6.6	1533	131
LC11600220L	50.0	88.0	2.0	21.3	16.0	0.75	41.8	31.3	0.75	7.3	1531	131
LC11600288L	50.0	88.0	2.0	22.3	18.0	0.81	41.8	37.0	0.89	7.7	1529	131
LC11600181L	46.0	85.0	3.0	26.5	10.3	0.39	44.3	27.5	0.62	6.2	1529	131
LC11600173L	53.0	88.0	3.0	25.8	15.5	0.60	49.0	32.8	0.67	6.4	1523	131
LC11600325L	53.0	95.0	2.0	19.5	13.0	0.67	40.0	33.0	0.83	7.0	1514	130
LC11600284L	48.0	88.0	2.0	19.8	10.3	0.52	41.5	31.0	0.75	6.9	1502	129
LC11600212L	50.0	95.0	2.0	21.5	16.3	0.76	48.0	38.8	0.81	6.4	1490	128
LC11600347L	46.0	86.0	2.0	19.8	12.3	0.62	38.0	31.3	0.82	5.8	1490	128
LC11600199L	53.0	95.0	2.0	22.3	21.0	0.94	46.8	37.5	0.80	7.4	1486	127

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic and Yield Data for the Laird Type Lentil Observation Nursery (1255L)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Merrit
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600342L	48.0	86.0	2.0	25.0	18.3	0.73	43.8	38.3	0.87	5.7	1473	126
LC11600139L	51.0	86.0	3.0	22.8	9.5	0.42	42.3	28.3	0.67	7.2	1470	126
LC11600180L	57.0	95.0	3.0	31.0	23.3	0.75	49.5	41.8	0.84	5.9	1452	124
LC11600065L	53.0	95.0	2.0	26.8	14.3	0.53	54.0	34.0	0.63	6.0	1451	124
LC11600208L	53.0	95.0	2.0	20.3	18.5	0.91	43.8	38.8	0.89	7.2	1449	124
LC11600205L	53.0	88.0	2.0	23.5	20.0	0.85	44.5	36.8	0.83	7.1	1447	124
LC11600060L	55.0	95.0	2.0	31.8	15.0	0.47	49.8	27.5	0.55	6.5	1444	124
LC11600048L	51.0	95.0	3.0	25.3	12.0	0.47	46.3	23.0	0.50	8.2	1440	123
LC11600217L	53.0	88.0	2.0	20.0	17.3	0.87	37.5	32.0	0.85	6.1	1437	123
LC11600276L	48.0	88.0	2.0	20.5	10.5	0.51	38.8	22.3	0.57	6.7	1430	123
LC11600331L	50.0	92.0	2.0	22.3	18.8	0.84	37.8	34.5	0.91	6.9	1427	122
LC11600378L	51.0	92.0	3.0	22.5	20.5	0.91	48.0	39.3	0.82	6.9	1422	122
LC11600226L	53.0	88.0	2.0	19.5	16.8	0.86	39.8	35.3	0.89	6.3	1420	122
LC11600219L	53.0	88.0	3.0	20.3	16.3	0.80	42.0	34.0	0.81	5.8	1415	121
LC11600081L	57.0	95.0	3.0	27.8	14.5	0.52	49.3	27.5	0.56	7.1	1405	120
Riveland	50.0	88.0	2.0	21.0	17.3	0.82	39.0	28.0	0.72	7.0	1397	120
LC11600345L	53.0	88.0	2.0	20.0	7.8	0.39	35.5	23.8	0.67	6.6	1379	118
LC11600376L	53.0	88.0	2.0	22.8	20.8	0.91	44.0	39.3	0.89	7.3	1375	118
LC11600350L	50.0	88.0	2.0	22.5	11.5	0.51	46.3	20.0	0.43	7.7	1367	117
LC11600291L	50.0	88.0	2.0	19.8	12.8	0.65	37.3	25.3	0.68	7.1	1365	117
LC11600381L	53.0	85.0	2.0	23.3	19.8	0.85	42.5	37.3	0.88	7.1	1343	115
LC11600028L	57.0	94.0	3.0	26.0	17.8	0.68	41.5	32.0	0.77	6.9	1332	114
LC11600182L	53.0	86.0	2.0	25.0	17.5	0.70	42.8	34.8	0.81	5.8	1329	114
LC11600264L	48.0	85.0	2.0	19.0	10.3	0.54	43.8	26.3	0.60	4.8	1325	114
LC11600153L	53.0	102.0	2.0	21.8	14.5	0.67	40.5	34.5	0.85	8.1	1323	113
LC11600131L	51.0	99.0	2.0	22.3	17.8	0.80	42.3	31.0	0.73	7.1	1315	113
LC11600158L	53.0	88.0	2.0	23.0	15.0	0.65	42.8	28.8	0.67	6.9	1313	112

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic and Yield Data for the Laird Type Lentil Observation Nursery (1255L)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Merrit
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600164L	56.0	95.0	2.0	25.3	20.3	0.80	46.8	38.3	0.82	6.4	1305	112
LC11600384L	53.0	88.0	2.0	21.8	18.5	0.85	44.5	37.3	0.84	7.1	1300	111
LC11600339L	53.0	88.0	3.0	24.0	22.0	0.92	44.0	38.3	0.87	7.1	1296	111
LC11600305L	55.0	88.0	2.0	23.5	20.8	0.89	39.8	35.8	0.90	5.8	1288	110
LC11600223L	53.0	88.0	2.0	17.3	15.0	0.87	39.8	32.3	0.81	6.7	1276	109
LC11600114L	51.0	92.0	2.0	23.0	17.0	0.74	38.0	31.8	0.84	8.8	1272	109
LC11600344L	50.0	88.0	2.0	22.5	16.0	0.71	39.0	34.5	0.88	6.4	1268	109
LC11600097L	53.0	95.0	3.0	25.5	17.8	0.70	46.3	36.3	0.78	7.6	1261	108
LC11600211L	50.0	88.0	2.0	24.0	16.0	0.67	46.8	30.8	0.66	6.9	1259	108
LC11600383L	53.0	88.0	2.0	23.0	16.0	0.70	43.3	36.3	0.84	7.0	1259	108
LC11600282L	48.0	88.0	2.0	20.5	10.0	0.49	37.8	24.3	0.64	6.8	1256	108
LC11600385L	50.0	88.0	3.0	25.5	17.8	0.70	47.5	35.0	0.74	8.3	1252	107
LC11600375L	57.0	95.0	4.0	25.8	22.3	0.86	44.8	37.0	0.83	6.1	1251	107
LC11600109L	53.0	95.0	2.0	24.3	17.5	0.72	39.3	32.0	0.81	7.6	1251	107
LC11600030L	57.0	95.0	3.0	22.8	19.3	0.85	40.8	29.0	0.71	6.8	1241	106
LC11600206L	54.0	95.0	3.0	21.8	18.8	0.86	47.0	38.5	0.82	7.1	1239	106
LC11600306L	50.0	88.0	2.0	17.0	12.5	0.74	39.0	33.8	0.87	7.7	1236	106
LC11600366L	52.0	88.0	3.0	26.3	16.0	0.61	46.0	24.5	0.53	5.3	1234	106
LC11600207L	53.0	88.0	3.0	28.8	16.5	0.57	48.5	31.5	0.65	7.1	1232	106
LC11600388L	53.0	88.0	2.0	19.3	16.5	0.85	41.3	30.0	0.73	7.9	1232	106
LC11600047L	52.0	95.0	2.0	23.0	11.8	0.51	42.5	27.5	0.65	8.4	1230	105
LC11600135L	53.0	88.0	3.0	20.3	9.5	0.47	37.8	31.3	0.83	7.0	1223	105
LC11600290L	50.0	88.0	2.0	21.3	11.5	0.54	36.5	32.3	0.88	7.6	1215	104
LC11600036L	53.0	86.0	2.0	23.3	12.8	0.55	39.3	28.3	0.72	6.8	1209	104
LC11600059L	57.0	95.0	3.0	30.8	17.3	0.56	52.0	30.8	0.59	6.6	1209	104
LC11600112L	51.0	86.0	2.0	22.5	12.0	0.53	40.0	28.5	0.71	8.8	1206	103
LC11600068L	48.0	86.0	2.0	25.5	19.5	0.76	46.3	32.0	0.69	6.4	1199	103

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic and Yield Data for the Laird Type Lentil Observation Nursery (1255L)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Merrit
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600101L	50.0	88.0	2.0	21.3	12.3	0.58	39.5	30.0	0.76	6.2	1194	102
LC11600184L	53.0	88.0	2.0	24.5	19.8	0.81	43.5	36.8	0.85	5.8	1194	102
LC11600067L	50.0	88.0	3.0	22.5	14.3	0.64	43.5	32.0	0.74	6.9	1192	102
LC11600379L	53.0	92.0	3.0	25.3	19.5	0.77	42.0	33.5	0.80	7.2	1189	102
LC11600272L	48.0	86.0	2.0	19.0	8.5	0.45	38.5	27.5	0.71	6.9	1189	102
LC11600295L	50.0	88.0	2.0	20.5	12.5	0.61	40.0	30.0	0.75	7.4	1184	101
LC11600057L	57.0	95.0	2.0	28.0	21.8	0.78	52.3	40.8	0.78	6.0	1184	101
LC11600183L	56.0	88.0	3.0	27.0	20.5	0.76	48.0	36.8	0.77	5.8	1183	101
LC11600302L	55.0	88.0	3.0	21.8	11.5	0.53	39.5	22.5	0.57	6.6	1182	101
LC11600328L	50.0	93.0	3.0	25.0	18.3	0.73	39.0	34.0	0.87	6.9	1178	101
LC11600202L	53.0	92.0	2.0	23.5	18.8	0.80	42.8	37.5	0.88	6.9	1171	100
LC11600313L	53.0	88.0	3.0	24.5	13.0	0.53	42.5	32.8	0.77	6.1	1162	100
Merrit	48.0	86.0	2.0	21.8	16.5	0.76	36.5	30.3	0.83	6.6	1162	100
LC11600312L	50.0	95.0	3.0	20.3	15.8	0.78	38.8	34.5	0.89	5.7	1160	99
LC11600034L	57.0	95.0	4.0	23.0	18.0	0.78	34.8	26.8	0.77	6.8	1150	98
LC11600064L	50.0	95.0	2.0	23.3	18.3	0.79	46.0	33.0	0.72	7.4	1146	98
LC11600132L	53.0	99.0	2.0	21.3	16.0	0.75	40.5	35.8	0.88	7.3	1131	97
LC11600185L	53.0	88.0	3.0	22.0	17.8	0.81	42.5	34.5	0.81	5.5	1128	97
LC11600178L	53.0	92.0	2.0	30.5	15.8	0.52	46.5	31.8	0.68	6.3	1125	96
LC11600169L	53.0	86.0	2.0	23.8	10.8	0.45	45.0	24.5	0.54	6.5	1122	96
LC11600039L	50.0	94.0	2.0	20.0	12.5	0.63	42.3	31.3	0.74	7.2	1110	95
LC11600278L	50.0	88.0	2.0	19.3	8.8	0.46	36.3	27.0	0.74	7.5	1108	95
LC11600194L	53.0	88.0	2.0	21.0	18.0	0.86	46.5	39.3	0.85	6.8	1107	95
LC11600160L	53.0	94.0	3.0	28.5	18.0	0.63	47.8	31.5	0.66	7.3	1102	94
LC11600088L	57.0	95.0	3.0	26.3	20.5	0.78	47.0	39.5	0.84	6.9	1100	94
LC11600358L	51.0	88.0	2.0	19.5	12.8	0.66	38.5	30.3	0.79	7.4	1099	94
LC11600040L	57.0	94.0	3.0	25.5	21.3	0.84	42.8	31.3	0.73	6.5	1098	94

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic and Yield Data for the Laird Type Lentil Observation Nursery (1255L)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Merrit
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600315L	57.0	95.0	3.0	22.0	16.0	0.73	41.8	36.8	0.88	5.8	1097	94
LC11600054L	56.0	95.0	2.0	29.8	14.8	0.50	56.8	33.3	0.59	6.5	1094	94
LC11600051L	56.0	95.0	2.0	27.0	21.0	0.78	50.0	34.5	0.69	6.6	1087	93
LC11600332L	53.0	88.0	2.0	23.3	14.3	0.61	39.0	29.5	0.76	5.8	1086	93
LC11600287L	50.0	95.0	2.0	22.5	19.0	0.84	43.0	35.0	0.81	7.7	1075	92
LC11600280L	48.0	88.0	3.0	20.3	12.8	0.63	37.8	30.0	0.79	7.8	1074	92
LC11600033L	57.0	95.0	3.0	22.3	19.0	0.85	35.3	29.5	0.84	7.4	1074	92
LC11600189L	53.0	95.0	3.0	21.0	18.3	0.87	38.3	35.3	0.92	7.1	1072	92
LC11600149L	53.0	102.0	2.0	19.3	13.8	0.72	36.5	32.0	0.88	8.4	1071	92
LC11600187L	56.0	88.0	3.0	23.3	20.8	0.89	40.5	36.8	0.91	6.0	1057	91
LC11600026L	53.0	88.0	3.0	19.8	12.5	0.63	39.8	21.5	0.54	6.4	1054	90
LC11600229L	53.0	88.0	3.0	19.5	14.0	0.72	38.8	28.5	0.73	5.8	1054	90
LC11600089L	57.0	95.0	3.0	27.0	22.8	0.84	44.3	35.8	0.81	7.2	1047	90
LC11600143L	54.0	102.0	3.0	22.8	20.5	0.90	44.5	37.3	0.84	7.6	1041	89
LC11600221L	51.0	86.0	3.0	19.8	14.0	0.71	37.3	29.5	0.79	6.8	1034	88
LC11600080L	57.0	95.0	3.0	28.8	20.5	0.71	39.5	33.3	0.84	7.0	1032	88
LC11600113L	52.0	86.0	2.0	21.0	9.3	0.44	39.3	29.3	0.75	8.3	1030	88
LC11600082L	57.0	95.0	3.0	29.0	20.0	0.69	43.5	26.8	0.62	7.3	1028	88
LC11600192L	53.0	95.0	3.0	20.5	19.8	0.97	41.3	31.5	0.76	7.0	1025	88
LC11600091L	57.0	95.0	3.0	28.5	10.3	0.36	47.0	25.3	0.54	7.0	1022	87
LC11600129L	50.0	88.0	2.0	19.3	6.8	0.35	43.3	22.0	0.51	7.7	1014	87
LC11600201L	50.0	88.0	2.0	21.8	20.5	0.94	42.8	38.5	0.90	7.1	1010	86
LC11600045L	50.0	88.0	2.0	22.0	15.8	0.72	39.5	30.0	0.76	7.3	1005	86
LC11600374L	55.0	88.0	3.0	26.8	21.0	0.78	42.8	35.3	0.82	6.4	998	85
LC11600085L	55.0	95.0	3.0	28.3	22.8	0.81	43.8	30.8	0.70	7.2	997	85
LC11600386L	53.0	88.0	2.0	20.3	17.8	0.88	40.8	33.3	0.82	8.3	995	85
LC11600292L	50.0	92.0	2.0	18.3	16.0	0.87	39.0	33.0	0.85	7.5	993	85

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic and Yield Data for the Laird Type Lentil Observation Nursery (1255L)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Merrit
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600071L	53.0	88.0	3.0	26.5	21.0	0.79	45.0	39.0	0.87	6.5	993	85
LC11600140L	53.0	99.0	3.0	21.0	15.8	0.75	43.5	30.8	0.71	8.1	990	85
LC11600072L	53.0	88.0	3.0	22.5	20.8	0.92	43.3	34.0	0.79	5.9	989	85
LC11600141L	53.0	99.0	2.0	20.3	15.8	0.78	37.5	31.5	0.84	8.0	985	84
LC11600111L	53.0	86.0	2.0	20.5	17.5	0.85	33.0	31.8	0.96	8.4	982	84
LC11600053L	57.0	92.0	2.0	28.8	18.0	0.63	46.5	41.5	0.89	6.2	980	84
LC11600151L	53.0	102.0	2.0	23.5	17.0	0.72	43.0	32.0	0.74	7.9	974	83
LC11600275L	48.0	88.0	2.0	19.3	10.3	0.53	39.0	23.8	0.61	6.2	971	83
LC11600119L	53.0	95.0	3.0	22.8	18.8	0.82	38.0	33.0	0.87	7.2	949	81
LC11600076L	57.0	95.0	3.0	27.5	23.0	0.84	46.8	36.3	0.78	6.3	936	80
LC11600333L	50.0	88.0	3.0	24.3	14.5	0.60	41.3	30.5	0.74	6.8	931	80
LC11600075L	57.0	95.0	4.0	27.8	26.0	0.94	43.5	35.8	0.82	5.9	928	79
LC11600106L	51.0	85.0	2.0	18.8	15.8	0.84	35.0	31.5	0.90	8.8	928	79
LC11600117L	50.0	85.0	2.0	22.3	17.5	0.78	37.8	35.3	0.93	7.9	923	79
LC11600210L	53.0	93.0	2.0	22.0	18.0	0.82	39.0	38.3	0.98	6.3	918	79
LC11600070L	55.0	95.0	3.0	37.5	22.0	0.59	50.3	35.8	0.71	7.0	915	78
LC11600128L	53.0	95.0	3.0	19.0	14.0	0.74	36.3	29.8	0.82	7.0	914	78
LC11600186L	53.0	86.0	2.0	25.0	20.0	0.80	44.8	35.3	0.79	6.0	900	77
LC11600092L	57.0	95.0	3.0	29.0	17.3	0.60	47.5	29.0	0.61	6.5	892	76
LC11600077L	57.0	95.0	3.0	34.8	16.8	0.48	47.3	29.8	0.63	6.8	866	74
LC11600055L	56.0	95.0	3.0	31.3	13.0	0.42	51.0	25.3	0.50	6.4	855	73
LC11600086L	57.0	95.0	3.0	27.8	22.0	0.79	42.3	32.5	0.77	6.6	842	72
LC11600090L	55.0	95.0	3.0	20.5	14.8	0.72	41.5	34.3	0.83	7.5	841	72
LC11600336L	51.0	88.0	2.0	17.0	12.8	0.75	40.3	33.0	0.82	6.6	840	72
LC11600029L	57.0	95.0	4.0	29.8	21.8	0.73	45.0	36.0	0.80	6.9	828	71
LC11600035L	54.0	88.0	3.0	24.5	14.5	0.59	39.3	29.8	0.76	6.2	806	69
Brewer	46.0	85.0	2.0	19.3	9.5	0.49	34.8	29.3	0.84	5.6	805	69

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic and Yield Data for the Laird Type Lentil Observation Nursery (1255L)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Merrit
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600351L	57.0	93.0	3.0	30.0	11.3	0.38	48.3	25.0	0.52	6.4	802	69
LC11600056L	53.0	88.0	2.0	28.3	10.8	0.38	46.0	34.5	0.75	6.7	786	67
LC11600338L	50.0	86.0	2.0	21.0	13.3	0.63	41.0	27.0	0.66	6.6	755	65
LC11600334L	53.0	88.0	3.0	22.3	17.3	0.78	41.8	29.8	0.71	7.0	755	65
LC11600171L	53.0	95.0	2.0	21.8	11.8	0.54	43.8	22.8	0.52	6.9	748	64
LC11600157L	50.0	86.0	2.0	23.5	13.5	0.57	39.5	31.3	0.79	7.8	735	63
LC11600300L	55.0	88.0	2.0	21.8	15.5	0.71	37.0	31.5	0.85	5.7	730	62
LC11600335L	50.0	88.0	2.0	22.8	14.0	0.61	37.5	29.3	0.78	6.7	729	62
LC11600357L	46.0	86.0	2.0	16.5	7.0	0.42	32.5	25.0	0.77	5.8	713	61
LC11600115L	51.0	86.0	2.0	23.3	12.3	0.53	38.3	29.5	0.77	8.4	696	59
LC11600138L	57.0	102.0	3.0	30.8	19.3	0.63	49.8	37.0	0.74	6.8	625	53
LC11600102L	50.0	86.0	2.0	19.3	17.3	0.90	34.5	31.0	0.90	7.7	588	50
LC11600093L	50.0	95.0	2.0	21.5	17.3	0.80	33.3	28.3	0.85	8.9	517	44
LC11600044L	50.0	92.0	2.0	18.3	10.0	0.55	31.3	24.0	0.77	7.9	510	43
LC11600127L	57.0	99.0										
LC11600337L												
GRAND MEAN	52.2	90.3	2.4	23.3	16.2	0.70	41.8	32.3	0.77	6.8	1182	
	9.2	8.8	22.1	15.7	23.4	21.06	15.0	14.1	*.**	11.0	22	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic Data for the Pardina Type Advanced Yield Trial (1251P)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight
				..cm..	..cm..		..cm..	..cm..		..g..
LC08600116P	51.3	88.0	3.0	19.5	13.5	0.7	33.8	25.5	0.7	4.9
Pardina	48.7	88.0	2.0	13.8	9.6	0.7	33.5	24.8	0.7	3.8
Morena	50.0	88.0	2.0	18.3	11.5	0.6	37.7	28.6	0.7	3.8
LC10600221P	48.7	88.0	2.0	14.2	11.4	0.8	31.3	26.1	0.8	4.2
LC09600507P	50.7	88.0	2.0	18.1	13.0	0.7	34.2	26.9	0.7	4.3
LC08600114P	48.7	87.0	2.0	15.6	11.9	0.7	32.2	29.1	0.9	4.6
LC10600712P	53.0	90.0	3.0	23.2	15.4	0.6	38.5	26.7	0.6	4.5
LC10600260P	52.0	90.0	3.0	22.7	13.3	0.5	38.4	30.3	0.7	4.3
LC08600113P	51.7	88.0	3.0	19.6	11.4	0.5	36.4	26.6	0.7	4.4
LC10600411P	52.3	91.0	3.0	19.3	11.6	0.6	38.9	30.9	0.8	4.1
LC08600109P	48.0	86.0	2.0	14.6	11.3	0.7	33.2	29.3	0.8	4.4
LC08600115P	51.7	89.0	3.0	19.1	13.4	0.7	34.9	26.5	0.7	4.4
LC10600398P	53.0	91.0	3.0	19.7	12.7	0.6	37.0	31.2	0.8	4.2
LC10600397P	54.0	91.0	3.0	22.6	13.9	0.6	38.4	32.1	0.8	4.2
GRAND MEAN	50.9	88.7	2.4	18.5	12.4	0.6	35.5	28.1	0.8	4.2
CV	1.9	0.9	14.1	7.3	14.5	15.5	6.3	11.6	12.5	2.7
LSD	1.6	1.3	0.5	2.3	3.0	0.1	3.7	5.5	0.1	0.2

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Location Yield Summary for the Pardina Type Lentil Advanced Yield Trial (1251P)

Name	Pullman Seed Yield	Garfield Seed Yield	Fairfield Seed Yield	Kendrick Seed Yield	Mean Seed Yield	% of Pardina
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
LC08600116P	1669	778	2306		1584	112
LC08600113P	1483	839	2252		1525	108
LC10600712P	1538	572	2362		1491	105
LC08600115P	1438	725	2249		1470	104
LC10600260P	1520	419	2402		1447	102
LC08600109P	1457	671	2157		1428	101
Pardina	1628	601	1992		1407	100
LC09600507P	1550	758	1908		1405	99
LC10600221P	1556	575	2078		1403	99
LC08600114P	1549	564	2090		1401	99
LC10600411P	1480	237	1994		1237	87
Morena	1619	477	1578		1225	87
LC10600398P	1307	283	1844		1145	81
LC10600397P	1017	294	2053		1121	79
GRAND MEAN	1486	557	2090		1378	97
CV	7	12	9		10	0
LSD	187	108	348		111	7

Kendrick was not planted for 2012.
Yield data are means of three replications at each location.
Check variety = Pardina

Mean Yields of the Pardina Type Lentil Advanced Yield Trial, 2008-2012

Name	2012	2011	2010	2009	2008
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Pardina	1407	1214	1399	1443	943
Morena	1225	1196	1477	1507	114
LC08600109P	1428	1223	1542		
LC08600113P	1525	1374	1721		
LC08600114P	1401	1221	1598		
LC08600115P	1470	1373	1455		
LC08600116P	1584	1435	1494		
LC09600507P	1405	1319			
LC10600221P	1403				
LC10600260P	1447				
LC10600397P	1121				
LC10600398P	1145				
LC10600411P	1237				
LC10600712P	1491				
C.V.	10.3	13.3	13.0	10.5	16.
LSD	111.	175.	218.	137.	115

Yield data are means of three reps per location, 4 locations per year.

Agronomic and Yield Data for the Preliminary Pardina Type Lentil Yield Trial (1254P)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Pardina
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC10600753P	54.7	91.0	3.0	19.2	14.5	0.76	34.9	30.4	0.87	4.9	1657	112
LC10600732P	53.7	91.0	3.0	18.2	13.6	0.75	36.4	32.9	0.90	4.9	1654	112
LC10600759P	57.7	93.0	3.0	19.6	15.2	0.77	35.5	32.0	0.90	4.7	1600	108
LC10600494P	49.3	89.0	2.0	18.6	13.9	0.74	38.2	34.0	0.89	4.5	1589	107
LC10600675P	53.3	91.0	3.0	19.4	12.9	0.67	35.6	31.9	0.89	4.7	1586	107
LC10600709P	57.3	93.0	3.0	21.2	17.1	0.80	36.6	31.6	0.87	4.7	1534	103
LC10600649P	54.3	92.0	3.0	21.0	15.9	0.75	36.0	29.6	0.82	4.9	1494	101
Pardina	47.3	88.0	2.0	14.3	9.7	0.68	32.3	28.5	0.89	4.2	1476	100
LC10600624P	55.0	93.0	3.0	23.5	15.0	0.64	36.5	28.6	0.78	4.5	1448	98
LC10600742P	52.3	87.0	2.0	16.0	11.0	0.69	36.9	32.2	0.87	4.5	1423	96
LC10600231P	52.7	87.0	2.0	13.4	10.3	0.77	32.2	29.8	0.93	4.6	1421	96
LC10600246P	36.3	61.0	3.0	22.1	17.4	0.78	24.6	31.4	0.85	2.9	1410	95
LC10600476P	47.3	87.0	2.0	12.4	9.3	0.76	30.6	26.9	0.88	4.3	1403	95
LC10600207P	52.0	92.0	2.0	14.7	10.3	0.70	34.9	31.0	0.89	4.6	1400	94
LC10600620P	47.3	88.0	2.0	15.3	11.3	0.73	33.1	28.0	0.85	5.0	1396	94
Morena	52.3	90.0	2.0	15.0	9.7	0.66	37.1	30.5	0.82	4.1	1386	93
LC10600704P	56.3	91.0	3.0	22.9	17.0	0.75	37.4	33.0	0.89	4.6	1357	91
LC10600625P	55.7	93.0	3.0	18.5	13.9	0.76	34.5	30.4	0.88	4.9	1324	89
LC10600265P	53.0	94.0	3.0	17.5	13.2	0.76	36.4	31.8	0.87	4.1	1316	89
LC10600241P	52.3	87.0	2.0	13.9	10.8	0.79	33.6	29.4	0.88	4.5	1303	88
LC10600725P	48.0	88.0	2.0	17.5	11.7	0.67	35.4	31.7	0.89	4.8	1295	87
LC10600349P	52.3	87.0	2.0	15.6	9.9	0.65	34.0	28.7	0.84	4.7	1285	87
LC10600075P	51.7	87.0	2.0	17.6	12.9	0.73	36.3	30.6	0.84	5.0	1276	86
LC10600249P	53.0	92.0	2.0	17.9	14.4	0.81	34.4	31.1	0.90	4.2	1248	84
LC10600617P	54.0	95.0	3.0	19.8	15.2	0.77	36.8	31.4	0.86	4.2	1215	82
LC10600470P	55.7	94.0	3.0	22.3	14.7	0.66	37.6	32.4	0.86	4.6	1205	81
LC10600018P	52.0	88.0	2.0	16.6	10.9	0.65	34.1	27.9	0.82	4.8	1204	81
LC10600096P	47.3	87.0	2.0	15.4	10.5	0.69	34.2	28.7	0.84	4.6	1185	80

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Agronomic Data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic and Yield Data for the Preliminary Pardina Type Lentil Yield Trial (1254P)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Pardina
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC10600513P	56.3	95.0	3.0	21.1	18.0	0.85	38.2	34.0	0.89	4.5	1124	76
GRAND MEAN	52.0	89.4	2.5	17.9	13.1	0.73	34.9	30.7	0.87	4.5	1387	
CV	11.4	11.2	13.1	9.8	12.7	14.57	13.1	6.3	6.19	11.6	11	
LSD	9.7	16.4	0.5	2.8	2.7	0.17	7.5	3.2	0.09	0.8	254	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Agronomic Data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic and Yield Data for the Pardina Type Lentil Observation Nursery (1255P)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Pardina
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600023P	44.0	86.0	2.0	22.0	6.8	0.31	36.8	27.0	0.73	4.0	1999.	117
LC11600243P	51.0	88.0	2.0	21.0	13.5	0.64	43.0	30.0	0.70	5.4	1824.	107
LC11600236P	48.0	88.0	2.0	15.8	7.0	0.44	36.0	28.3	0.79	4.0	1815.	106
Morena	50.0	88.0	2.0	18.5	14.0	0.76	41.3	27.0	0.65	3.7	1809.	106
LC11600014P	48.0	88.0	2.0	15.0	9.0	0.60	38.3	27.8	0.73	3.8	1796.	105
LC11600015P	46.0	86.0	2.0	14.5	7.5	0.52	33.8	24.5	0.72	3.6	1733.	101
LC11600240P	51.0	88.0	2.0	21.0	14.3	0.68	40.8	29.0	0.71	5.1	1727.	101
LC11600250P	51.0	86.0	2.0	19.8	9.8	0.49	38.3	19.0	0.50	5.0	1712.	100
Pardina	48.0	86.0	2.0	15.5	10.0	0.65	36.5	21.3	0.58	3.9	1701.	100
LC11600230P	48.0	88.0	2.0	14.0	9.0	0.64	37.3	28.3	0.76	4.4	1673.	98
LC11600004P	48.0	86.0	2.0	14.5	12.8	0.88	38.5	29.3	0.76	4.3	1668.	98
LC11600010P	46.0	88.0	2.0	14.5	12.0	0.83	37.8	27.3	0.72	4.1	1660.	97
LC11600237P	50.0	88.0	2.0	13.3	10.3	0.77	33.0	27.3	0.83	4.4	1608.	94
LC11600016P	46.0	85.0	2.0	16.8	10.8	0.64	41.8	25.3	0.61	4.0	1604.	94
LC11600234P	48.0	86.0	2.0	17.0	9.0	0.53	36.8	25.3	0.69	4.2	1599.	93
LC11600232P	48.0	88.0	2.0	17.3	10.0	0.58	35.3	28.8	0.82	4.6	1556.	91
LC11600009P	48.0	86.0	3.0	17.8	8.0	0.45	38.5	25.8	0.67	3.6	1549.	91
LC11600021P	48.0	88.0	2.0	15.3	8.3	0.54	36.3	22.5	0.62	4.9	1462.	85
LC11600020P	46.0	85.0	2.0	16.8	9.3	0.55	35.0	28.5	0.81	4.2	1443.	84
LC11600246P	51.0	88.0	2.0	20.5	17.0	0.83	41.8	35.8	0.86	5.2	1427.	83
LC11600255P	48.0	86.0	3.0	20.8	12.8	0.62	43.8	32.5	0.74	4.6	1366.	80
LC11600235P	50.0	88.0	2.0	22.0	17.3	0.79	40.0	32.3	0.81	4.6	1344.	79
LC11600024P	48.0	88.0	2.0	17.8	8.3	0.47	37.5	24.3	0.65	4.4	1303.	76
LC11600251P	51.0	88.0	2.0	25.5	8.5	0.33	43.8	28.0	0.64	4.8	1303.	76
LC11600258P	50.0	88.0	2.0	23.3	11.3	0.48	38.5	29.8	0.77	4.4	1286.	75
LC11600005P	52.0	88.0	2.0	17.0	9.0	0.53	34.5	24.8	0.72	4.6	1283.	75
LC11600006P	48.0	88.0	2.0	11.8	8.5	0.72	35.8	26.3	0.73	4.0	1279.	75
LC11600022P	48.0	86.0	2.0	16.3	8.8	0.54	39.3	27.0	0.69	4.1	1215.	71

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

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Agronomic and Yield Data for the Pardina Type Lentil Observation Nursery (1255P)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Pardina
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC11600001P	46.0	85.0	2.0	12.0	6.5	0.54	38.8	25.0	0.64	4.4	1183.	69
LC11600248P	53.0	88.0	2.0	19.3	7.3	0.38	37.0	24.8	0.67	4.9	999.6	58
GRAND MEAN	48.6	87.1	2.0	17.5	10.2	0.59	38.2	27.1	0.71	4.3	1531.	
CV	4.2	1.3	12.0	18.9	27.3	24.47	7.3	12.1	11.10	10.7	15.20	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Agronomic Data for the Turkish Red Type Advanced Yield Trial (1251T)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight
				..cm..	..cm..		..cm..	..cm..		..g..
LC09600037T	52.0	90.0	2.0	13.8	10.2	0.88	30.7	27.1	0.88	4.4
LC05600043T	47.3	88.0	3.0	15.4	10.5	0.89	33.6	29.9	0.89	4.8
LC09600142T	51.3	88.0	2.0	14.2	9.9	0.83	32.7	26.9	0.83	4.6
LC0860B085T	48.7	88.0	2.0	13.4	10.7	0.92	30.3	27.9	0.92	4.7
LC09600532T	50.0	89.0	2.0	12.3	6.9	0.72	34.5	25.0	0.72	4.6
LC09600545T	48.7	88.0	2.0	13.4	8.9	0.87	29.6	26.0	0.87	4.1
LC01602062T	47.3	88.0	2.0	15.8	9.3	0.83	33.9	28.1	0.83	4.5
LC0860B098T	46.7	88.0	2.0	15.8	8.7	0.85	33.7	28.8	0.85	4.0
LC08600132T	50.0	89.0	2.0	12.9	9.4	0.87	30.1	26.3	0.87	4.5
Crimson	53.0	89.0	3.0	14.2	9.7	0.79	32.4	25.4	0.79	3.4
GRAND MEAN	49.5	88.5	2.2	14.1	9.4	0.85	32.1	27.1	0.85	4.3
CV	2.6	0.6	12.3	16.4	21.6	*.**	6.8	11.5	*.**	2.7
LSD	2.2	1.0	0.4	3.9	3.5	0.15	3.7	5.3	0.15	0.2

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Location Yield Summary for the Turkish Red Type Lentil Advanced Yield Trial (1251T)

Name	Pullman Seed Yield	Garfield Seed Yield	Fairfield Seed Yield	Kendrick Seed Yield	Mean Seed Yield	% of Crimson
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
LC09600037T	1636	790	2448		1625	130
LC05600043T	1411	704	2234		1450	116
LC09600142T	1388	713	2207		1436	114
LC01602062T	1319	534	2278		1377	110
LC09600532T	1327	596	2127		1350	108
LC0860B085T	1367	645	1969		1327	106
LC0860B098T	1285	508	2008		1267	101
LC08600132T	1266	486	2027		1259	100
Crimson	1161	474	2113		1249	100
LC09600545T	1325	485	1917		1242	99
GRAND MEAN	1348	593	2133		1358	108
CV	9	8	6		8	0
LSD	230	90	235		90	7

Kendrick was not planted for 2012.
Yield data are means of three replications at each location.

Mean Yields of the Turkish Red Type Lentil Advanced Yield Trial, 2008-2012

Name	2012	2011	2010	2009	2008
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Crimson	1249	1330	1214	1099	613
LC01602062T	1377	1355	1312	1328	934
LC05600043T	1450	1540	1271	1199	693
LC0860B085T	1327	1384	1159		
LC0860B098T	1267	1385	1283		
LC08600132T	1259	1543	1165		
LC09600142T	1436	1397			
LC09600532T	1350	1532			
LC09600545T	1242	1510			
LC09600037T	1625	1536			
C.V.	8.4	18.2	28.9	16.2	16.
LSD	90.3	306.	374.	173.	108

Yield data are means of three replications at each location, over 4 locations each year.

Agronomic Data for the Zero Tannin Type Lentil Advanced Yield Trial (1261)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight
				..cm..	..cm..		..cm..	..cm..		..g..
LC99602585RZ	50.0	88.0	2.0	18.0	13.1	0.72	39.7	34.1	0.86	3.9
LC06600930YZ	50.7	95.0	2.0	19.3	15.6	0.81	44.4	36.3	0.82	5.0
LC07600224YZ	50.0	95.0	2.0	18.9	14.9	0.80	42.0	35.9	0.85	5.9
LC04600389YZ	50.7	94.0	2.0	18.4	14.2	0.77	39.5	32.3	0.82	5.9
LC04600415YZ	51.3	95.0	2.0	18.2	14.9	0.83	39.8	32.9	0.83	5.9
Shasta	50.3	95.0	2.0	21.0	15.9	0.76	42.7	36.4	0.85	5.6
Cedar	50.0	93.0	2.0	18.3	13.5	0.74	38.7	32.8	0.85	4.3
LC06600939YZ	51.3	95.0	2.0	19.1	13.6	0.72	42.5	33.4	0.79	5.1
GRAND MEAN	50.5	93.6	2.0	18.9	14.4	0.77	41.1	34.2	0.84	5.2
CV	1.8	0.9	10.0	10.6	14.7	10.00	4.7	5.7	6.97	3.3
LSD	1.6	1.5	0.3	3.5	3.7	0.13	3.3	3.4	0.10	0.3

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/15/2012

Location Yield Summary for the Zero Tannin Type Lentil Advanced Yield Trial (1261)

Name	Pullman Seed Yield	Garfield Seed Yield	Fairfield Seed Yield	Kendrick Seed Yield	Mean Seed Yield	% of Cedar
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
LC99602585RZ	1811	889	2121		1607	103
LC07600224YZ	1693	803	2300		1599	103
Cedar	1556	759	2324		1546	100
Shasta	1612	700	2279		1530	98
LC06600930YZ	1746	728	2056		1510	97
LC04600415YZ	1623	737	2055		1472	95
LC04600389YZ	1643	673	1930		1415	91
LC06600939YZ	1519	590	2105		1405	90
GRAND MEAN	1650	735	2146		1510	97
CV	9	19	6		9	0
LSD	272	253	253		117	7

Kendrick was not planted for 2012.
Yield data are means of three replications at each location.

Mean Yields of the Zero Tannin Type Lentil Advanced Yield Trial, 2008-2012

Name	2012	2011	2010	2009	2008
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Shasta	153	162	101	141	103
LC99602585RZ	160	145	111	133	714
Cedar	154	145	119	136	638
LC04600389YZ	141	141	888	121	890
LC04600415YZ	147	145	914	119	911
LC06600930YZ	151	164	886	127	962
LC06600939YZ	140	173	115	122	100
LC07600224YZ	159	152	942	147	
C.V.	9.8	11.	16.	14.	14.
LSD	117	222	201	171	121

Yield data are means of three reps per location, 4 locations per year.

Agronomic Data for the Winter Lentil Advanced Yield Trial (1241)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Morton
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
Morton	234.3	294.0	2.0	18.3	10.4	0.59	46.3	27.3	0.59	2.8	4761.7	100.0
LC05600512WT	231.0	294.0	2.0	9.8	8.0	0.81	45.4	28.5	0.65	3.6	4684.3	98.3
LC05600004WT	231.0	300.0	2.0	21.2	10.2	0.51	54.6	30.7	0.58	3.8	4312.1	90.5
LC1060F0005W	231.0	298.0	2.0	14.9	9.1	0.64	52.3	25.4	0.52	3.5	4209.2	88.3
LC08600327WT	232.3	295.0	2.0	14.1	7.7	0.54	37.6	28.6	0.76	3.0	4199.2	88.1
LC02601276WT	236.0	303.0	2.0	17.9	11.0	0.64	58.7	25.8	0.47	2.9	4165.2	87.4
LC1060F0003W	231.0	298.0	2.0	15.5	8.2	0.55	52.9	23.2	0.44	3.4	4135.1	86.8
LC1060F0008W	231.0	297.0	2.0	19.4	9.0	0.50	53.4	24.8	0.50	3.6	4041.7	84.8
LC1060F0011W	239.0	298.0	2.0	22.7	11.3	0.53	49.5	26.4	0.55	2.8	3909.6	82.1
LC1060F0006W	231.0	297.0	2.0	16.2	9.6	0.62	51.0	26.1	0.54	3.6	3896.5	81.8
LC1060F0010W	231.7	303.0	2.0	19.2	7.6	0.40	47.7	26.6	0.56	4.0	3895.4	81.8
LC1060F0009W	231.0	295.0	2.0	19.0	8.9	0.48	55.3	23.3	0.43	3.4	3859.6	81.0
LC1060F0007W	231.0	296.0	2.0	19.1	9.4	0.52	52.1	23.8	0.47	3.5	3791.1	79.6
LC03600232WT	238.7	301.0	2.0	23.4	11.7	0.51	60.4	30.4	0.54	3.2	3789.2	79.5
LC1060F0004W	231.0	297.0	2.0	15.0	8.7	0.58	48.0	24.0	0.51	3.5	2893.8	60.7
GRAND MEAN	232.7	297.7	2.0	17.7	9.3	0.56	51.0	26.3	0.54	3.3	4036.2	
CV	0.7	0.9	14.5	19.4	23.2	26.09	12.2	12.1	21.11	6.8	15.8	
LSD	2.7	4.5	0.5	5.7	3.6	0.24	10.4	5.3	0.19	0.3	1067.3	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index was determined by dividing pod height at harvest maturity by the green pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 10/01/2011 Harvest Date: 08/01/2012

Agronomic and Yield Data for the Winter Lentil Observation Nursery (1245)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Morton
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC1160W0078W	240.0	296.0	3.0	15.5	12.0	0.77	36.0	27.5	0.76	3.4	2980	104
LC1160W0030W	237.0	293.0	2.0	21.0	15.8	0.75	36.0	30.8	0.86	3.5	2929	103
Morton	239.0	310.0	2.0	15.5	10.3	0.66	72.5	25.8	0.36	3.0	2838	100
LC1160W0073W	241.0	289.0	2.0	16.3	13.3	0.82	36.0	28.5	0.79	2.8	2686	94
LC1160W0071W	233.0	286.0	2.0	15.8	13.8	0.87	34.5	30.8	0.89	2.9	2674	94
LC1160W0020W	233.0	303.0	3.0	29.8	10.0	0.34	50.3	20.5	0.41	2.9	2654	93
LC1160W0072W	240.0	289.0	3.0	16.5	12.8	0.78	33.0	27.5	0.83	3.1	2646	93
LC1160W0017W	235.0	305.0	3.0	15.5	11.5	0.74	67.8	26.5	0.39	3.1	2641	93
LC1160W0068W	251.0	289.0	2.0	16.8	13.0	0.77	30.3	29.0	0.96	2.8	2527	89
LC1160W0041W	233.0	296.0	3.0	18.3	11.8	0.64	42.5	25.5	0.60	4.1	2512	88
LC1160W0031W	235.0	296.0	3.0	23.3	19.3	0.83	38.5	31.8	0.83	3.4	2507	88
LC1160W0026W	238.0	296.0	2.0	20.5	10.8	0.53	38.0	25.8	0.68	3.4	2468	86
LC1160W0038W	251.0	293.0	2.0	20.3	16.0	0.79	43.5	30.0	0.69	3.9	2344	82
LC1160W0048W	233.0	296.0	2.0	22.8	9.5	0.42	47.0	25.0	0.53	3.9	2328	82
LC1160W0054W	233.0	289.0	2.0	12.0	6.8	0.57	34.8	27.5	0.79	3.7	2283	80
LC1160W0081W	243.0	310.0	1.0	22.5	8.8	0.39	67.5	21.5	0.32	3.5	2281	80
LC1160W0057W	233.0	303.0	2.0	20.3	7.8	0.38	61.3	18.3	0.30	4.0	2256	79
LC1160W0063W	254.0	310.0	2.0	43.0	8.8	0.20	80.0	25.8	0.32	3.4	2235	78
LC1160W0070W	240.0	289.0	2.0	13.5	10.3	0.76	28.5	24.5	0.86	3.6	2180	76
LC1160W0079W	240.0	298.0	2.0	30.8	11.0	0.36	51.8	24.5	0.47	2.7	2159	76
LC1160W0036W	238.0	296.0	3.0	21.0	17.3	0.82	39.0	30.0	0.77	4.1	2125	74
LC1160W0039W	240.0	296.0	2.0	17.8	12.5	0.70	37.0	29.0	0.78	4.0	2079	73
LC1160W0018W	235.0	303.0	2.0	23.0	12.3	0.53	51.5	24.0	0.47	3.0	2014	70
LC1160W0080W	241.0	305.0	2.0	28.8	10.3	0.36	48.5	23.8	0.49	3.1	1902	67
LC1160W0053W	233.0	289.0	2.0	13.3	9.5	0.71	36.5	26.5	0.73	4.2	1672	58
LC1160W0082W	235.0	305.0	2.0	19.0	10.8	0.57	51.0	29.0	0.57	3.1	1670	58
LC1160W0060W	239.0	305.0	2.0	31.0	7.8	0.25	61.3	23.0	0.38	3.9	1604	56

Pod height was measured at the green pod stage and at harvest maturity. Pod height index was determined by dividing pod height at harvest maturity by the green pod height.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 10/01/2011 Harvest Date: 08/01/2012

Agronomic and Yield Data for the Winter Lentil Observation Nursery (1245)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Morton
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
LC10600109W	233.0	305.0	2.0	11.5	7.5	0.65	67.8	22.3	0.33	3.6	1544	54
LC1160W0061W	248.0	310.0	1.0	27.5	8.3	0.30	62.0	22.0	0.35	4.7	1509	53
LC1160W0067W	242.0	310.0	2.0	17.3	10.3	0.60	56.8	27.0	0.48	3.0	1487	52
LC10600141W	235.0	305.0	2.0	15.0	9.8	0.65	68.0	28.5	0.42	3.7	1482	52
LC1160W0062W	243.0	305.0	2.0	12.5	9.0	0.72	55.8	27.3	0.49	4.0	1242	43
LC10600038W	240.0	305.0	2.0	14.0	8.5	0.61	66.3	16.8	0.25	3.5	1047	36
LC10600072W	233.0	305.0	2.0	16.3	11.8	0.72	75.3	27.5	0.37	3.6	983	34
LC1160W0065W	243.0	305.0	2.0	33.3	11.3	0.34	78.5	27.8	0.35	4.6	709	24
LC10600036W	239.0	310.0	2.0	8.8	5.0	0.57	39.3	29.8	0.76	3.3	611	21
LC1160W0066W	241.0	305.0	2.0	19.3	9.8	0.51	67.8	29.8	0.44	4.2	610	21
LC1160W0085W	237.0	310.0										
GRAND MEAN	238.8	300.2	2.1	19.9	10.9	0.59	51.1	26.2	0.57	3.5	2011	
CV	2.2	2.5	22.2	35.1	26.3	30.88	29.3	13.1	36.27	14.3	32	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index was determined by dividing pod height at harvest maturity by the green pod height.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Planting Date: 10/01/2011 Harvest Date: 08/01/2012

CHICKPEA BREEDING

Kabuli Chickpea Advanced Yield Trials

In 2012, 18 café kabuli chickpea breeding lines, four Spanish White chickpea breeding lines and six check varieties were included in the Advanced Chickpea Yield Trials. The six check varieties included four café kabuli types (Sawyer, Sierra, Dwelley and CDC-Frontier), the Spanish White variety Troy and PNW 1, a small round café 'billybean'. Trials were planted at Dayton, WA on May 6, Genesee, ID on May 8, at Pullman, WA on May 10, and at Kendrick, ID on May 15. Prior to planting all seeds were treated and *Mesorhizobium ciceri* inoculant was added to each seed lot prior to planting. Approximately 14 d before harvest each location received a single application of gramoxone (2 pints/acre) to promote desiccation prior to harvest.

The grand mean of all entries over all locations was 1735 kg/ha (1549 lb/acre). The highest yielding location was Genesee, ID, which was harvested on September 4 with a mean yield of 2547 kg/ha (2274 lb/acre). The mean yield at the trial conducted at the Washington State University Spillman Farm in Pullman, WA, harvested on August 30, was 1859 kg/ha (1660 lb/acre). The mean yield for the trial conducted in Kendrick, ID, harvested on August 29, was 1509 kg/ha (1348 lb/acre). The mean yield for the Dayton trial, harvested on August 24, was 1027 kg/ha (914 lb/ac). Advanced yield trials conducted at Pullman, Genesee, and Kendrick in 2011 included the majority of the entries included in the 2012 trials, which allows us to compare yields and seed size for a location across both years. The grand mean of all entries at Pullman in 2012 was 67% the yield observed in 2011. Similarly, the grand mean of entries at Kendrick in 2012 was 79% the mean yield observed in 2011, while the grand mean at Genesee in 2012 was 111% of the mean yield observed in 2011. Reductions in yield observed in Kendrick and Pullman in 2012 likely are due predominately to the extremely cool and wet conditions encountered during planting in 2012, which were followed by only trace amounts of precipitation during the remainder of the growing season. However, differences within locations over multiple years are also due to the cumulative effects of many other sources of variance, which include differences over years in crop rotation history, disease and weed pressure. Our trials in Genesee have historically suffered considerable losses due to grazing by deer. In 2012 the trial at Genesee was planted in a different location that suffered less pressure from deer, which likely is primarily responsible for increased yields observed at Genesee in 2012. Seed size of entries was only determined for the Pullman, WA location, where the grand mean for 100 seed weight was 51.7 grams, which was 97% of the mean observed in 2011. These observations emphasize the critical importance of evaluating advanced breeding lines and varieties for multiple years in specific growing regions to accurately estimate yield stability.

The advanced breeding line CA0790B0547C, which was included in the Advanced Yield Trials for the first time in 2012, was the highest yielding entry over all locations, averaging 2099 kg/ha. The 10 entries with the highest mean yield across all locations included eight advanced kabuli café chickpea lines from the ARS breeding program, the 'billybean' variety PNW 1 and the small café kabuli variety CDC-Frontier. CA0790B0547 demonstrated promising yield stability, being ranked in the top five yielding entries at three locations (Kendrick, Dayton and Genesee), for which this line was the highest yielding entry at both Kendrick and Dayton. The billybean PNW 1 also exhibited excellent yield stability, being ranked in the top five yielding entries at all

four locations. Other lines demonstrating promising yield stability include CA0790B0043C and CA0790B0733C, which were ranked among the top ten highest yielding entries at all locations. The highest yielding variety was the billybean PNW 1 (2069 kg/ha), followed in descending order by the small café kabuli varieties CDC-Frontier and Sawyer, the widely cultivated larger café kabuli varieties Dwelley and Sierra, and finally the Spanish White variety Troy. Yields were essentially equal for Dwelley and Sierra (approximately 1540 kg/ha). Nine ARS breeding lines had mean yields that were at least 20% greater than the mean yield of Dwelley across all locations.

The breeding line CA0790B0034C had the highest yield (2213 kg/ha) at Pullman, WA, which was a 28% increase over the yield of Dwelley (1731 kg/ha). The advanced breeding lines ranged in yield from 1287-2213 kg/ha, while the yields of the six check cultivars ranged from 1616 kg/ha (Troy) to 2074 kg/ha (PNW 1). The top 10 yielding entries at Pullman, WA included 9 USDA-ARS café kabuli breeding lines and the billybean variety PNW 1. The café kabuli chickpea varieties Sawyer and Sierra had yields that were respectively, 104% and 108% the yield of Dwelley.

At the trials conducted in Kendrick, ID, the breeding line CA0790B0547C had the highest yield (1852 kg/ha), which was a 39% increase over the yield of Dwelley (1329 kg/ha). The advanced breeding lines ranged in yield from 1157-1852 kg/ha, while the yields of the six check cultivars ranged from 1097 kg/ha (Sawyer) to 1763 kg/ha (PNW 1). The top 10 yielding entries at Kendrick, ID included eight USDA-ARS café kabuli breeding lines, the billybean variety PNW 1, and CDC-Frontier. The café kabuli chickpea varieties Sawyer and Sierra had yields that were respectively, 83% and 95% the yield of Dwelley.

At the trials conducted in Dayton, WA, the breeding line CA0790B0547C had the highest yield (1678 kg/ha), which was an 86% increase over the yield of Dwelley (903 kg/ha). The advanced breeding lines ranged in yield from 573-1678 kg/ha, while the yields of the six check cultivars ranged from 862 kg/ha (Sierra) to 1522 kg/ha (PNW 1). The top 10 yielding entries at Dayton, WA included 9 USDA-ARS café kabuli breeding lines and the billybean variety PNW 1. The café kabuli chickpea varieties Sawyer and Sierra had yields that were respectively, 136% and 95% the yield of Dwelley.

At the trials conducted in Genesee, ID, the small café kabuli variety CDC-Frontier had the highest yield (3256 kg/ha), which was a 46% increase over the yield of Dwelley (2230 kg/ha). The advanced breeding lines ranged in yield from 1833-3098 kg/ha, while the yields of the six check cultivars ranged from 2123 kg/ha (Sierra) to 3256 kg/ha (CDC-Frontier). The top 10 yielding entries at Genesee, ID included eight USDA-ARS café kabuli breeding lines, the billybean variety PNW 1, and CDC-Frontier. The café kabuli chickpea varieties Sawyer and Sierra had yields that were respectively, 103% and 95% the yield of Dwelley. All entries at Genesee except for the Spanish White breeding line CA0890B0101W had yields greater than 2000 kg/ha (1780 lb/ac).

At the Pullman, WA trial all entries were also evaluated for other important traits including days to maturity, canopy height, plant height index, and 100 seed weight. Plant height index is the ratio of the total length of the vine of the plant/canopy height, and accordingly can range in value

from 0-1. The plant height index is considered to be a measure of tolerance to lodging, with more tolerant lines having higher plant height index scores. All breeding lines and check varieties had PHI > 0.80, which suggests the entries were very tolerant to lodging under the field conditions encountered during the trial. Significant differences were observed among entries for days required until maturity. The entries matured within a range of 95-105 days. The ten highest yielding lines, which had yields that averaged 17.8% greater than Dwelley, matured in 96-104 days. The maturity of the check varieties ranged from 95 days (Sawyer) to 102 days for Dwelley and Troy. Sawyer was significantly earlier than Dwelley or Troy. The earliest entry, CA04900851C, reached maturity in 95 days. This line was also the earliest entry in the 2011 Advanced Yield Trials.

The seed size of breeding lines ranged from 46.8-58.3 g/100 seeds. The seed size of the check varieties ranged from 30.2 (PNW 1; Billybean)-57.4 g (Troy; Spanish White). The seed sizes of Sierra (54.5 g) and Dwelley (52.4 g) were similar. Dwelley and Sierra seed were significantly larger than seed of Sawyer (43.6 g). CDC-Frontier seed (37.1 g) was significantly larger than PNW 1 (30.2 g) but significantly smaller than all other entries. PNW 1 seed was significantly smaller than any other entry. The ten highest yielding breeding lines had seed sizes ranging from 46.8-58.3 g. For the second year in a row, the breeding line CA04900843C produced the largest seed (58.3 g) of all entries.

Preliminary Chickpea Yield Trial

Recently selected chickpea breeding lines were evaluated in a preliminary yield trial conducted at the Washington State University Spillman Farm in Pullman, WA. A total of 20 entries were evaluated including nine café kabuli breeding lines, five Spanish White breeding lines, and six check varieties; Sawyer, Sierra, Dwelley, Troy, CDC-Frontier and PNW 1. Trials were planted on May 10, 2012 and harvested on September 7, 2011. Three replicated plots (1.5 m x 6.1 m) were planted for each entry at a density of 44 seeds/m^2. Pre-plant seed treatment and herbicide applications were done as described above for the Advanced Yield Trial conducted at Pullman, WA.

The mean yield for all entries was 1655 kg/ha. The preliminary breeding lines ranged in yield from 868-1841 kg/ha, while the yields of the six check cultivars ranged from 1570 (Dwelley) to 2024 kg/ha (PNW 1). The top 10 yielding entries included four café kabuli breeding lines, a Spanish White breeding line (CA0890B0628W) and the check cultivars PNW 1, CDC-Frontier, Troy and Sierra. Four breeding lines, one Spanish White and three café kabuli, had yields that were at least 11 % greater than Dwelley.

All entries were also evaluated for other important traits including days to maturity, canopy height, plant height index, and 100 seed weight. The plant height index was greater than 0.80 for all entries, indicating that all breeding lines and varieties exhibited excellent tolerance to lodging. Significant differences were observed among entries for days required until maturity. The entries matured within a range of 95-105 days. The maturity of the check varieties ranged from 96 days (PNW 1 and Sawyer) to 102 days for Dwelley and Troy. The earliest maturing entry, CA0890B0286C (95 days), was the second earliest maturing entry in the Preliminary Yield Trials in 2011. The seed size of breeding lines ranged from 45.8-56.6 g/100 seeds, with the

exception of CA0890B0286C, which was exceptionally small (15.6 g/100 seed). The seed size of the check varieties ranged from 30.0 (PNW 1)-54.9 (Troy). CDC-Frontier produced small seed (36.1 g), which was significantly smaller than all entries except PNW 1 and CA0890B0286C. CA0890B0085W, a Spanish White breeding line, had the largest seed (56.6.0 g) of all entries, for the second year in a row. However, the line only yielded 89% of the check Dwelley and also was one of the latest maturing lines.

Preliminary Desi Chickpea Yield Trial

Although desi chickpeas are not currently grown on any significant acreage within the US, there has been interest expressed recently in examining how different desi materials perform in the Pacific Northwest. In 2012 we evaluated seven desi breeding lines and the desi variety Myles in a preliminary yield trial conducted at the Washington State University Spillman Farm in Pullman, WA. . Trials were planted on May 10, 2012 and harvested on August 30, 2011. Three replicated plots (1.5 m x 6.1 m) were planted for each entry at a density of 44 seeds/m^2. Pre-plant seed treatment and herbicide applications were done as described above for the Advanced Yield Trial conducted at Pullman, WA.

The mean yield for all entries was 1719 kg/ha, with breeding lines ranging in yield from 1498-2248 kg/ha and the check variety Myles yielding 1562 kg/ha. All entries had plant height index values > 0.80, which indicates that the lines have good tolerance to lodging. Seed size among breeding lines ranged from 14.4-29.4 g/100 seeds. The two highest yielding lines, CA0490B0223D and CA0890B0526D, produced seed that was significantly larger that seed of Myles (17.4 g/100 seed). Although the number of entries was small compared to the kabuli chickpea advanced yield trials, the desi entries, which ranged in maturity from 89-100 days, appeared to mature in generally the same amount of time as the majority of the kabuli chickpeas evaluated in 2012. The check Myles, which matured in 94 days, was significantly earlier than breeding lines CA0890B0526 (high yielding) and CA0490B0214D (low yielding) but significantly later in maturing than breeding lines CA0890B0556D and CA0890B0555D.

Promising Advanced Café Kabuli Breeding Lines

The results of Advanced Yield Trials of chickpea breeding lines over several years in the Pacific Northwest have identified several café kabuli breeding lines that consistently produce larger yields than the commercially popular cultivars Dwelley and Sierra (Table 5). Each of these lines has been evaluated in a minimum of ten locations in WA and ID over the past three years. A summary of yield and agronomic performance of several promising advanced breeding lines is presented below. Data for the varieties Dwelley, Sierra and Sawyer collected from the same trials is included for comparative purposes.

CA04900843C is a consistently high yielding advanced breeding line produces exceptionally large seed. This line has performed especially well in Pullman, ranking 2nd, 1st, and 5th among all entries in 2010, 2011, and 2012, respectively. The first increase of ‘breeder’ seed was produced for CA04900843C in 2012. CA04900843C will be presented to the Variety Release Committee of the USA Dry Pea and Lentil Council in Feb. 2013 for consideration of its release as either an

improved germplasm or a new variety. Washington State Crop Improvement Association will likely increase seed of CA04900843C in 2013.

In 2012 over 200 plants were individually harvested and threshed for each of the following high performing advanced breeding lines: CA0790B0042, CA07900B043C, CA0690B0250C and CA0790B0034C. Breeder seed will be produced for each of these lines in 2013.

Table 5. Performance of Elite USDA-ARS Chickpea Breeding Lines in Yield Trials in WA and ID (2010 and 2011; N = ten locations over 3 years).

Line	Days to Mature	100 seed weight (g)	Mean Yield kg/h (% Dwelley)
CA0790B0042C	**109**	**46.6**	**1820 (124)**
CA0790B0549C	**110**	**46.9**	**1796 (122)**
CA0790B0043C	**110**	**54.6**	**1784 (122)**
CA0790B0733C	**109**	**48.5**	**1782 (121)**
CA0490B0843C	**108**	**59.4**	**1760 (120)**
CA0690B0250C	**110**	**53.9**	**1671 (114)**
CA0790B0034C	**109**	**56.1**	**1617 (113)**
Dwelley	**112**	**51.7**	**1468 (100)**
Sierra	**106**	**52.6**	**1464 (100)**
Sawyer	**104**	**43.9**	**1632 (111)**

Agronomic and Yield Data for the Large Kabuli Chickpea Advanced Yield Trial (1281)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Dwelley
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
CA0790B0034C	54.3	99.0	1	30.6	25.7	0.84	54.5	47.8	0.88	56.4	2213	127
CA0790B0054C	54.7	104.0	1	30.9	27.0	0.88	55.1	49.0	0.89	54.2	2077	119
PNW 1	52.3	96.0	1	27.4	21.8	0.80	53.3	46.7	0.88	30.2	2074	119
CA0790B0043C	55.7	103.0	1	30.5	24.8	0.82	52.3	44.8	0.86	52.3	2058	118
CA04900843C	54.7	101.0	1	30.6	24.5	0.80	49.4	40.5	0.82	58.3	2051	118
CA0790B0549C	54.3	100.0	1	26.0	21.3	0.82	46.0	40.8	0.89	46.8	2019	116
CA0890B0427C	56.3	100.0	1	25.7	22.3	0.86	44.9	39.4	0.88	49.3	2011	116
CA0890B0429C	53.0	96.0	1	26.9	20.4	0.76	48.9	40.5	0.82	55.7	2008	115
CA0690B0250C	54.7	103.0	1	33.7	26.5	0.79	57.4	49.9	0.87	54.0	2008	115
CA0790B0042C	54.3	102.0	1	28.9	25.0	0.86	50.4	43.2	0.86	49.2	2000	115
CA0790B0733C	53.0	100.0	1	27.7	23.0	0.83	46.0	41.2	0.89	50.0	1967	113
CA0790B0547C	54.3	102.0	1	26.0	22.5	0.86	46.0	39.8	0.86	49.6	1931	111
Sierra	54.7	99.0	1	28.5	24.6	0.86	46.5	39.9	0.86	54.5	1876	108
CA04900851C	57.0	95.0	1	31.8	26.5	0.84	46.8	42.5	0.91	54.8	1865	107
CA0390B007C	57.0	104.0	1	32.9	27.8	0.85	52.3	44.9	0.86	50.3	1833	105
CA0790B0804W	54.7	102.0	1	28.0	21.2	0.76	45.7	37.0	0.81	55.9	1825	105
CA0790B0808W	54.0	98.0	1	25.7	21.2	0.83	40.7	33.9	0.83	55.8	1822	105
CA0790B0642C	53.7	103.0	1	25.8	18.5	0.72	46.6	39.1	0.85	54.5	1812	104
Sawyer	53.0	95.0	1	30.5	23.4	0.78	43.4	39.2	0.90	43.6	1803	104
CA0690B0427C	54.0	102.0	1	25.9	21.3	0.83	46.6	39.2	0.84	53.5	1801	104
CDC-FRONTIER	56.0	100.0	1	26.9	23.0	0.86	43.9	40.2	0.91	37.1	1732	100
Dwelley	56.3	102.0	1	31.6	24.6	0.78	46.5	41.2	0.89	52.4	1731	100
CA0890B0130C	55.0	102.0	1	24.7	21.1	0.85	38.8	35.8	0.92	50.2	1730	99
CA0790B0053C	54.3	104.0	1	31.7	25.3	0.80	50.4	42.4	0.84	57.1	1724	99
CA0890B0356W	53.7	102.0	1	22.8	16.8	0.73	42.3	37.7	0.90	55.8	1659	95
Troy	55.0	102.0	1	26.7	20.5	0.77	43.9	37.6	0.86	57.4	1616	93
CA04900608C	54.0	97.0	1	28.9	21.8	0.75	43.8	39.1	0.89	56.8	1533	88
CA0890B0101W	57.3	105.0	1	28.1	22.3	0.80	46.9	42.4	0.91	54.4	1287	74
GRAND MEAN	54.6	100.6	1	28.4	23.0	0.81	47.4	41.2	0.87	51.7	1859	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.

Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.

Rep Nodes = average number of reproducing nodes to a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/30/2012

Agronomic and Yield Data for the Large Kabuli Chickpea Advanced Yield Trial (1281)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Dwelley
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
CV	2.0	2.7	1	7.8	8.8	7.00	5.8	5.6	6.40	2.9	12	
LSD	1.8	4.5	1	3.6	3.3	0.09	4.5	3.7	0.09	2.4	386	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.

Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.

Rep Nodes = average number of reproducing nodes to a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/30/2012

Location Yield Summary for the Large Kabuli Chickpea Advanced Yield Trial (1281)

Name	Leaf Type	Seed Type	Pullman Seed Yield	Kendrick Seed Yield	Dayton Seed Yield	Genesee Seed Yield	Mean Seed Yield	% of Dwelley
			kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	
CA0790B0547C	C	C	1931	1852	1678	2934	2099	135
PNW 1			2074	1763	1522	2916	2069	133
CA0790B0043C	C	C	2058	1667	1227	3098	2012	130
CA0790B0034C	C	C	2213	1702	1161	2837	1978	127
CA0790B0042C	C	C	2000	1514	1251	3055	1955	126
CDC-FRONTIER	C	C	1732	1691	1033	3256	1928	124
CA0790B0733C	C	C	1967	1783	1119	2798	1917	123
CA0790B0549C	C	C	2019	1838	1063	2710	1907	123
CA0890B0427C	C	C	2011	1570	1180	2812	1893	122
CA0890B0429C	C	C	2008	1583	1325	2598	1878	121
CA04900843C	C	C	2051	1668	1456	2289	1866	120
CA0790B0642C	C	C	1812	1616	1403	2553	1846	119
CA0390B007C	C	C	1833	1606	942	2858	1810	116
CA0790B0054C	C	C	2077	1467	805	2716	1766	114
CA0690B0250C	C	C	2008	1581	573	2736	1725	111
CA0790B0053C	C	C	1724	1509	859	2576	1667	107
Sawyer	S	C	1803	1097	1230	2291	1605	103
CA0690B0427C	C	C	1801	1547	710	2232	1572	101
CA0890B0130C	C	C	1730	1343	867	2331	1568	101
CA0790B0808W	C	W	1822	1280	646	2511	1565	101
CA0790B0804W	C	W	1825	1395	806	2210	1559	100
Dwelley	S	C	1731	1329	903	2230	1548	100
Sierra	S	C	1876	1267	862	2123	1532	99
CA0890B0356W	C	W	1659	1439	748	2223	1517	98
CA04900851C	S	C	1865	1401	613	2170	1512	97
CA04900608C	S	C	1533	1305	936	2167	1485	95
Troy	C	W	1616	1279	776	2243	1479	95
CA0890B0101W	C	W	1287	1157	1067	1833	1336	86
GRAND MEAN			1859	1509	1027	2547	1735	
CV			12	7	18	10	12	
LSD			386	181	313	441	141	

Leaf Type: C = compound leaf, S = simple leaf type. Seed type; W = white seed type, C = cafe seed type
Yield data are means of three replications at each location.

Name	Leaf Type	Seed Type	2012	2011	2010	2009	2008
			kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
Dwelley	S	C	1548	2082	772.	1430	1144
Sierra	S	C	1532	2090	767.	1288	1223
Troy	C	W	1479				911.
Sawyer	S	C	1605	2380	908.	1508	1483
CDC-FRONTIER	C	C	1928	2216			
CA0390B007C	C	C	1810	2520	851.	1531	1325
CA04900608C	S	C	1485	2161	689.	1345	1384
CA04900843C	C	C	1866	2434	978.	1602	1382
CA04900851C	S	C	1512	2260	838.	1415	1491
CA0690B0250C	C	C	1725	2478	808.	1644	
CA0690B0427C	C	C	1572	2324	693.	1435	
CA0790B0034C	C	C	1978	2319	914.		
CA0790B0042C	C	C	1955	2520	984.		
CA0790B0043C	C	C	2012	2618	721.		
CA0790B0053C	C	C	1667	2242	651.		
CA0790B0054C	C	C	1766	2345	747.		
CA0790B0547C	C	C	2099				
CA0790B0549C	C	C	1907	2614	866.		
CA0790B0642C	C	C	1846				
CA0790B0733C	C	C	1917	2486	940.		
CA0790B0804W	C	W	1559				
CA0790B0808W	C	W	1565				
CA0890B0101W	C	W	1336				
CA0890B0130C	C	C	1568				
CA0890B0356W	C	W	1517				
CA0890B0427C	C	C	1893				
CA0890B0429C	C	C	1878				
PNW 1			2068	2473			
C.V.			12.1	11.1	12.9	14.2	18.0
LSD			141.	319.	87.7	189.	216.

Leaf Type: C = Compound leaf, S = Simple leaf
Seed Type: C = Cafe seed type, W = White seed type
Yield data are means of three reps per location, 4 locations per year.

Agronomic and Yield Data for the Large Kabuli Chickpea Preliminary Yield Trial (1283)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Dwelley
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
PNW 1	52.0	96.0	1	29.2	19.0	0.65	53.4	45.1	0.84	30.0	2024	128
CDC-FRONTIER	55.7	97.0	1	25.2	19.9	0.79	47.4	40.8	0.86	36.1	1997	127
CA0890B0628W	55.0	100.0	1	23.8	19.6	0.83	41.1	33.5	0.82	54.3	1841	117
CA0890B0551C	52.3	102.0	1	23.8	18.0	0.76	41.0	34.6	0.84	55.6	1815	115
Sawyer	53.0	96.0	1	25.3	20.8	0.82	45.9	39.0	0.85	41.9	1800	114
CA0890B0531C	52.0	99.0	1	28.0	20.1	0.72	47.3	39.2	0.83	53.8	1766	112
CA0890B0434C	52.7	100.0	1	25.3	19.3	0.76	43.5	37.1	0.85	52.3	1751	111
Troy	55.0	102.0	1	21.2	18.4	0.87	39.5	35.4	0.90	54.9	1749	111
Sierra	55.0	99.0	1	26.9	22.6	0.84	47.0	41.0	0.87	53.6	1736	110
CA0890B0435C	54.7	100.0	1	33.3	24.0	0.73	60.5	53.0	0.87	52.9	1719	109
CA0890B0581C	53.0	100.0	1	22.6	19.6	0.87	40.4	33.9	0.84	45.9	1713	109
CA0890B0496C	56.0	97.0	1	27.1	21.8	0.80	44.5	38.8	0.87	53.1	1693	107
CA0890B0648W	55.0	102.0	1	23.0	18.5	0.80	38.5	33.5	0.87	55.9	1670	106
Dwelley	57.7	102.0	1	30.3	24.7	0.82	46.2	41.0	0.89	49.2	1570	100
CA0890B0437W	54.3	105.0	1	26.6	20.3	0.76	49.4	40.4	0.82	45.8	1557	99
CA0790B0099C	56.3	101.0	1	26.7	18.7	0.70	48.1	41.7	0.87	55.0	1543	98
CA0890B0103W	56.7	104.0	1	25.5	21.1	0.82	47.1	40.8	0.87	55.1	1459	92
CA0890B0074C	57.0	103.0	1	25.9	19.4	0.75	45.2	37.8	0.84	54.3	1432	91
CA0890B0085W	58.0	104.0	1	29.5	24.8	0.84	48.2	42.0	0.87	56.6	1399	89
CA0890B0286C	53.0	95.0	1	15.9	8.9	0.56	40.5	35.9	0.89	15.6	868	55
GRAND MEAN	54.7	100.2	1	25.7	19.9	0.77	45.7	39.2	0.86	48.6	1655	
CV	2.8	3.1	1	6.7	9.9	8.29	6.8	7.0	6.83	4.4	10	
LSD	2.5	5.1	1	2.8	3.2	0.11	5.2	4.5	0.10	3.5	285	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.
Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.
Rep Nodes = average number of reproducing nodes to a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date 05/10/2012 Harvest Date: 09/07/2012

Agronomic and Yield Data for the Desi Type Chickpea Advanced Yield Trial (1284)

Name	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Myles
				..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
CA0490B0223D	53.0	95.0	1	20.8	17.1	0.82	37.4	32.3	0.86	29.4	2248	143
CA0890B0526D	55.0	100.0	1	27.9	22.7	0.82	40.9	37.3	0.91	28.9	1958	125
CA0890B0555D	51.0	88.0	1	18.3	12.5	0.70	31.9	27.3	0.86	14.4	1716	109
CA0490B0221D	50.7	98.0	1	18.9	15.2	0.80	31.5	28.8	0.91	24.3	1683	107
CA0490B0224D	51.0	95.0	1	20.3	15.5	0.78	41.4	36.0	0.87	29.2	1563	100
Myles	50.7	94.0	1	20.2	17.1	0.85	39.3	34.9	0.89	17.4	1562	100
CA0890B0556D	50.0	89.0	1	21.1	16.6	0.79	40.5	35.5	0.88	18.3	1522	97
CA0490B0214D	52.0	99.0	1	21.6	15.6	0.72	38.5	34.4	0.89	25.1	1498	95
GRAND MEAN	51.6	94.8	1	21.1	16.5	0.79	37.6	33.3	0.89	23.3	1719	
CV	2.3	1.8	1	9.4	12.6	14.71	5.3	5.0	4.03	3.6	10	
LSD	2.1	3.0	1	3.5	3.6	0.20	3.5	2.9	0.06	1.4	321	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index = pod height at harvest maturity divided by the pod height at the green pod stage.

Plant height was measured at the green pod stage and at harvest maturity. Plant height index = plant height at harvest maturity divided by the plant height at the green pod stage.

Rep Nodes = average number of reproducing nodes to a plant. Agronomic data are means of three replications at Pullman, WA. Planting Date: 05/10/2012 Harvest Date: 08/30/2012

Location Yield Summary for the Desi Type Chickpea Advanced Yield Trial (1284)

Name	Leaf Type	Seed Type	Pullman Seed Yield	Dayton Seed Yield	Genesee Seed Yield	Mean Seed Yield	% of Myles
			kg/ha	kg/ha	kg/ha	kg/ha	
CA0490B0223D	C	D	2248.9	2217.7	2876.2	2447.60	118.9
CA0890B0555D	C	D	1716.8	1812.9	3373.2	2301.00	111.8
Myles	C	D	1562.4	1512.5	3100.3	2058.40	100.0
CA0490B0221D	C	D	1683.2	1406.5	2540.5	1876.70	91.2
CA0490B0224D	C	D	1563.7	1804.1	2256.7	1874.80	91.1
CA0890B0526D	C	D	1958.1	1324.6	1919.4	1734.00	84.2
CA0890B0556D	C	D	1522.6	1889.2	1783.4	1731.70	84.1
CA0490B0214D	C	D	1498.2	1484.7	2110.6	1697.80	82.5
GRAND MEAN			1719.2	1681.5	2495.0	1965.27	
CV			10.6	7.0	8.7	9.06	
LSD			321.5	208.7	386.0	141.19	

Leaf Type: C = compound leaf, S = simple leaf type. Seed type; D = Desi seed type
Yield data are means of three replications at each location.

Agronomic and Yield Data for the Large Kabuli Chickpea Observation Nursery (1285)

Name	Leaf Type	Seed Type	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Troy
						..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
CA11900088C	.NUL	.NULL	52.00	102.0	1	40.80	24.00	0.59	50.50	28.00	0.55	54.40	2226.	123.0
CA11900028C	.NUL	.NULL	55.00	102.0	1	45.50	25.50	0.56	50.00	19.50	0.39	56.20	2134.	117.9
CA11900127W	.NUL	.NULL	53.00	99.00	1	42.00	27.30	0.65	51.30	27.80	0.54	45.30	2080.	114.9
CA11900068W	.NUL	.NULL	57.00	111.0	1	44.30	30.30	0.68	56.30	31.30	0.56	45.80	2037.	112.5
CA11900064W	.NUL	.NULL	54.00	102.0	1	33.80	23.50	0.70	43.80	26.30	0.60	51.10	2005.	110.8
CA11900139W	.NUL	.NULL	54.00	99.00	1	46.80	28.00	0.60	49.00	31.50	0.64	46.30	1968.	108.7
CA11900113W	.NUL	.NULL	57.00	109.0	1	38.80	23.50	0.61	47.30	30.50	0.64	55.20	1914.	105.8
CA11900050C	.NUL	.NULL	53.00	97.00	1	46.80	28.30	0.60	47.00	27.00	0.57	48.10	1882.	104.0
CA11900014C	.NUL	.NULL	55.00	102.0	1	46.30	27.30	0.59	50.30	29.80	0.59	58.70	1881.	103.9
CA11900031W	.NUL	.NULL	54.00	102.0	1	47.80	27.50	0.58	52.00	19.30	0.37	57.50	1880.	103.9
CA11900143C	.NUL	.NULL	55.00	109.0	1	64.50	37.00	0.57	62.30	44.00	0.71	50.30	1855.	102.5
CA11900142W	.NUL	.NULL	57.00	109.0	1	61.30	41.80	0.68	61.30	36.00	0.59	46.40	1848.	102.1
CA11900038C	.NUL	.NULL	53.00	97.00	1	42.00	28.30	0.67	46.00	23.00	0.50	49.10	1825.	100.8
CA11900056C	.NUL	.NULL	53.00	102.0	1	45.80	25.50	0.56	43.50	19.30	0.44	53.50	1822.	100.7
CA11900036W	.NUL	.NULL	55.00	99.00	1	45.00	28.50	0.63	47.00	28.30	0.60	58.20	1819.	100.5
CA11900108W	.NUL	.NULL	55.00	102.0	1	39.30	24.50	0.62	48.30	28.00	0.58	53.30	1814.	100.2
Troy	C	W	57.00	108.0	1	43.30	25.50	0.59	46.80	28.00	0.60	58.20	1809.	100.0
CA11900104W	.NUL	.NULL	53.00	99.00	1	42.80	23.00	0.54	48.30	26.30	0.54	47.90	1724.	95.31
CA11900116C	.NUL	.NULL	54.00	102.0	1	38.50	25.00	0.65	48.80	26.00	0.53	52.50	1711.	94.56
CA11900103C	.NUL	.NULL	55.00	115.0	1	37.80	23.30	0.62	49.00	23.30	0.48	56.70	1700.	93.98
CA11900119W	.NUL	.NULL	57.00	109.0	1	36.30	26.30	0.72	53.50	24.30	0.45	52.80	1685.	93.12
CA11900132C	.NUL	.NULL	53.00	109.0	1	46.80	26.80	0.57	43.30	30.50	0.70	47.40	1677.	92.72
CA11900072W	.NUL	.NULL	53.00	109.0	1	40.00	21.30	0.53	48.80	28.00	0.57	49.80	1650.	91.21
CA11900141W	.NUL	.NULL	53.00	104.0	1	61.50	38.50	0.63	64.80	37.80	0.58	52.60	1611.	89.05
CA11900077W	.NUL	.NULL	53.00	106.0	1	40.30	27.80	0.69	51.80	25.50	0.49	65.50	1597.	88.25

Pod height was measured at the green pod stage and at harvest maturity. Pod height index was determined by dividing pod height at harvest maturity by the green pod height.
Plant height was measured at the green plant stage and at harvest maturity. Plant height index was determined by dividing plant height at harvest maturity by the green plant height at the green plant stag
Agronomic data are means of three replications at Pullman, WA. Planting Date 05/10/2012. Harvest Date: 09/07/2012

Agronomic and Yield Data for the Large Kabuli Chickpea Observation Nursery (1285)

Name	Leaf Type	Seed Type	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Troy
						..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
CA11900124W	.NUL	.NULL	53.00	99.00	1	39.50	24.30	0.62	53.50	23.80	0.44	54.40	1580.	87.35
CA11900140W	.NUL	.NULL	57.00	104.0	1	62.30	37.50	0.60	63.00	40.30	0.64	47.40	1559.	86.17
CA11900026C	.NUL	.NULL	55.00	109.0	1	44.00	24.30	0.55	48.30	21.80	0.45	50.10	1528.	84.49
CA11900025W	.NUL	.NULL	53.00	102.0	1	41.80	28.80	0.69	48.50	24.50	0.51	62.10	1528.	84.48
CA11900123W	.NUL	.NULL	54.00	102.0	1	40.00	24.00	0.60	42.50	29.80	0.70	53.70	1516.	83.78
CA11900125W	.NUL	.NULL	56.00	104.0	1	42.50	24.30	0.57	49.50	27.30	0.55	51.80	1510.	83.49
CA11900093C	.NUL	.NULL	53.00	104.0	1	44.00	26.30	0.60	60.80	26.80	0.44	63.10	1491.	82.43
CA11900111W	.NUL	.NULL	53.00	104.0	1	42.50	22.30	0.52	49.00	32.30	0.66	55.80	1463.	80.89
CA11900145W	.NUL	.NULL	57.00	106.0	1	45.80	29.00	0.63	51.00	27.00	0.53	41.10	1460.	80.71
CA11900009W	.NUL	.NULL	55.00	109.0	1	47.80	26.30	0.55	52.30	21.00	0.40	60.30	1390.	76.85
CA11900074C	.NUL	.NULL	55.00	111.0	1	44.80	29.50	0.66	45.80	30.00	0.66	53.30	1367.	75.57
CA11900128W	.NUL	.NULL	56.00	111.0	1	35.80	20.30	0.57	47.00	22.80	0.49	58.10	1347.	74.48
CA11900086C	.NUL	.NULL	53.00	99.00	1	39.00	21.30	0.55	46.30	24.00	0.52	51.50	1331.	73.60
CA11900020W	.NUL	.NULL	54.00	109.0	1	42.00	28.50	0.68	47.80	25.80	0.54	57.10	1321.	73.01
CA11900112C	.NUL	.NULL	57.00	115.0	1	39.50	26.80	0.68	45.00	22.00	0.49	56.50	1314.	72.64
CA11900060W	.NUL	.NULL	54.00	115.0	1	40.80	21.50	0.53	42.50	28.00	0.66	57.60	1307.	72.28
CA11900008W	.NUL	.NULL	55.00	111.0	1	42.30	29.30	0.69	46.80	22.00	0.47	63.50	1306.	72.21
CA11900063W	.NUL	.NULL	55.00	109.0	1	40.00	29.00	0.73	49.00	28.00	0.57	56.90	1295.	71.59
CA11900018W	.NUL	.NULL	53.00	109.0	1	43.30	30.00	0.69	44.50	26.80	0.60	66.00	1288.	71.18
CA11900004W	.NUL	.NULL	57.00	109.0	1	43.30	26.30	0.61	44.30	22.80	0.51	56.40	1285.	71.04
CA11900006W	.NUL	.NULL	55.00	109.0	1	38.50	27.50	0.71	46.50	24.50	0.53	55.90	1236.	68.35
CA11900102W	.NUL	.NULL	55.00	115.0	1	37.50	27.30	0.73	46.00	26.00	0.57	53.50	1220.	67.43
CA11900024W	.NUL	.NULL	53.00	115.0	1	47.50	29.50	0.62	51.00	25.50	0.50	64.80	1170.	64.70
CA11900098C	.NUL	.NULL	53.00	115.0	1	42.30	24.00	0.57	51.00	29.50	0.58	68.20	1155.	63.83
CA11900075W	.NUL	.NULL	55.00	113.0	1	55.30	30.50	0.55	58.30	41.00	0.70	49.90	1129.	62.41

Pod height was measured at the green pod stage and at harvest maturity. Pod height index was determined by dividing pod height at harvest maturity by the green pod height.
Plant height was measured at the green plant stage and at harvest maturity. Plant height index was determined by dividing plant height at harvest maturity by the green plant height at the green plant stag
Agronomic data are means of three replications at Pullman, WA. Planting Date 05/10/2012. Harvest Date: 09/07/2012

Agronomic and Yield Data for the Large Kabuli Chickpea Observation Nursery (1285)

Name	Leaf Type	Seed Type	Days to Flower	Days to Maturity	Pods/ Peduncle	Pod Height	Pod Ht Maturity	Pod Ht Index	Vine Length	Canopy Height	Plant Ht Index	100 Seed Weight	Seed Yield	% of Troy
						..cm..	..cm..		..cm..	..cm..		..g..	kg/ha	
CA11900152W	.NUL	.NULL	57.00	106.0	1	54.80	35.80	0.65	56.30	35.00	0.62	50.00	1113.	61.53
CA11900033W	.NUL	.NULL	55.00	102.0	1	53.00	29.30	0.55	49.00	31.00	0.63	50.00	1097.	60.63
CA11900076C	.NUL	.NULL	55.00	111.0	1	45.80	26.30	0.57	57.30	34.00	0.59	52.30	1094.	60.46
CA11900079C	.NUL	.NULL	55.00	109.0	1	38.30	22.80	0.60	54.00	27.30	0.51	57.30	1088.	60.16
CA11900070W	.NUL	.NULL	53.00	102.0	1	44.80	30.00	0.67	48.00	30.30	0.63	46.80	1002.	55.40
CA11900118W	.NUL	.NULL	54.00	104.0	1	33.80	23.50	0.70	49.30	21.00	0.43	58.00	996.9	55.09
CA11900115W	.NUL	.NULL	56.00	111.0	1	41.30	28.30	0.69	48.30	30.50	0.63	50.90	933.4	51.58
CA11900032W	.NUL	.NULL	54.00	104.0	1	63.50	28.80	0.45	53.50	29.50	0.55	52.30	888.8	49.12
CA11900016C	.NUL	.NULL	0.00	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
GRAND MEAN			54.57	106.2	1	44.41	27.27	0.62	50.12	27.78	0.55	54.13	1525.	
CV			2.66	4.77	1	15.88	15.53	9.94	10.29	18.61	14.65	10.43	21.64	
LSD			0.00	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Pod height was measured at the green pod stage and at harvest maturity. Pod height index was determined by dividing pod height at harvest maturity by the green pod height.
Plant height was measured at the green plant stage and at harvest maturity. Plant height index was determined by dividing plant height at harvest maturity by the green plant height at the green plant stag
Agronomic data are means of three replications at Pullman, WA. Planting Date 05/10/2012. Harvest Date: 09/07/2012