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2011 Small Grain and Grain Legume Report

Northern Idaho Small Grain and Grain Legume Research and Extension Program

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College of Agricultural and Life Sciences

Cover photo: Spring lentil plots at the University of Idaho's Kambitsch Farm near Genesee, Idaho.

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Jack Miller – Tensed
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Introduction

This report summarizes the performance of winter wheat, spring wheat, spring barley, spring pea, lentil and chickpea cultivars tested in extension variety trials conducted in northern Idaho during the 2010-2011 crop season. The variety trials were located in cooperators' fields at 8 test sites in Lewis, Nez Perce, Latah, Benewah and Boundary counties.

Plant breeding and extension testing programs strive to increase yield potential through enhanced disease and insect resistance, winter hardiness, straw strength and other agronomic factors. In addition, varieties are developed for improved end-use quality and new markets. A more detailed description of variety development, cooperative extension testing and evaluation, and seed production programs is given in the University of Idaho publication CIS 976 titled, "Small Grain Variety Development and Adaptation in Idaho". Additional information about the varieties can be found in the 2005 Idaho Certified Seed Selection Guide for Some Varieties of Winter Wheat (PR 311), 2006 Spring Wheat (PR 327), 2006 Spring Barley (PR 328), and 2004 Peas, Lentils and Chickpeas (PR 318). Additional variety performance data for northern Idaho and the rest of the state can be viewed at the website http://www.extension.uidaho.edu/cereals/. In Idaho, public varieties are evaluated for general adaptation in regional testing programs. The northern Idaho Extension variety-testing program evaluates the relative performance of cereal and legume varieties grown in various northern Idaho environments under a range of commercial production conditions. Breeding lines that have shown promise through regional, public and private testing programs are evaluated along with leading commercially released varieties.

Increases in field crop yield are the result of a combination of improved agronomic practices and advances in variety development. Trials reported in this publication help producers compare new cultivars with widely grown cultivars using field production practices common for their area. The information provided represents crop performance results from specific locations, production practices, and environmental conditions. Relative performance of varieties can change when tested under other environments and production practices. Evaluation of any variety included in these trials should not be construed as recommending any variety over varieties not included in the trials.

Cereal Test Procedures

Six winter cereal trials were planted in northern Idaho during the fall of 2010 and seven spring cereal trials were planted in the spring of 2011. For each crop, the seeding rate for all entries was a common number of seeds planted per square foot (spsf). These rates were determined by weighing 200 seeds of each cereal cultivar. Winter wheat and spring barley were planted at 24 (spsf), and spring wheat at 28 spsf. Winter wheat, spring wheat, and barley seed were treated with Dividend Extreme at 1 ounce/100 pounds. Plots in conventional tillage systems were planted 15 feet long on 5-foot centers with 7 rows, 7-inches apart. Direct-seeded trials had five paired rows with 3-inch spacing and 10-inch from center to center of pairs. Typical cereal seeding depth varied from 1 to 1.5 inches depending on soil texture and moisture conditions. All trials were replicated four times in a lattice design. After plants were well established, the beds were cut back to a plot size of approximately 11.5 feet in length with an application of glyphosate using a tractor-mounted, shielded sprayer between plots. All trials were established and maintained primarily under "grower management" conditions. Fertilizers and pesticides used in the trials are listed in Table 1 for the

sites where the information was reported. Planting and harvesting operations by University of Idaho personnel were timed to approximately coincide with the cooperator's operations.

Each small grain entry at each location was evaluated for grain yield, test weight, plant height, and lodging. Plot length was measured to determine each individual plot area. Cereal yields were reported in bushels per acre, using the standard 60 pounds per bushel conversion for wheat and 48 pounds per bushel for barley. Protein and kernel hardness were determined from a composite sample of four replications from each site for both winter and spring wheat. Wheat whole grain protein at 12% moisture was measured at the University of Idaho Wheat Quality Laboratory at Aberdeen using Near Infrared Spectrometry (NIRS) technology. Kernel hardness was also determined by NIRS. Values under 35 indicate soft wheat, and values above 35 indicate hard wheat. Cereal test weight is reported in pounds per standard bushel. Cereal plant height is the length of the plant from the soil surface to the tip of the head (awns excluded).

Lodging was determined for all cereals. Area affected was scored from 0% to 100%, with 0% equal to no lodging and 100% being completely lodged. Percentage grain plumps and thins were measured for barley only. Plumpness is the percent of the sample that stayed on top of a 6/64-inch slotted screen after shaking. Thin percentage is the portion of the sample that went through a 5.5/64-inch slotted screen.

Legume Test Procedures

In the spring of 2011, spring pea and lentil trials were seeded near Nez Perce, Genesee and Moscow. A chickpea trial was conducted at the University of Idaho's Parker farm in Moscow. For each legume cultivar, 100 seeds were weighed and seeding rates calculated to give a planting density of pea at 8 spsf, lentil at 9 spsf, and chickpea at 6 spsf. Spring pea and lentil seed were treated with an Apron, Cruiser, and Maxim mix at 2 ounces/100 pounds; and chickpea seed was treated with Garb mix (Apron, Cruiser, Maxim and LSP) at 2.5 ounces/100 pounds. Legume plots were established in beds similar to the cereal trials except they were planted on 20-ft beds that were cut back to 15-ft plots. Planting depths used were between 1 and 2 inches for lentils and between 2 and 2.5 inches for pea and chickpea. Sites were hand weeded to supplement chemical control. Legumes were evaluated for seed yield, plant height, and 100-seed weight. Seed yields were expressed as pounds per acre. Lentil or chickpea plant heights or pea vine lengths were measured from soil surface to end of growing point on the main tiller. Pea canopy heights were measured from the soil surface to the average tall point in the canopy approximately three weeks prior to harvest.

Statistical Interpretation

Crop class averages are shown within the body of the data tables and overall trial average is shown at the bottom of the table. The least significant difference (LSD) and the coefficient of variation (CV) are listed. The LSD is given at the 5 percent error level and is an aid in comparing varieties. If the measured values of any two varieties within a column differ by the LSD value or greater, they may be considered different with a confidence level of 95%. If the measured values are less than the LSD value, the differences may be due to random error rather than real differences. If no significant statistical differences were found among cultivars, NS is shown for the LSD. Where data represent cultivar means across locations, an approximation of combined LSD was calculated.

Coefficient of variation (CV) is also included in the tables. This is given as a general measurement of the precision of each experiment. Lower CV percentage values indicate less experimental variation and greater precision. CV values were not averaged across trials or years. Wheat protein and hardness data are from composited samples, therefore no LSD or CV values are presented. Cultivar choice should take into consideration as much performance data as possible with comparisons across years and locations. In addition to yield, end use quality, disease and insect resistance, lodging tendency, maturity, plant height, winter hardiness, test weight, and any observations from grower experience can be used in deciding on which cultivars to plant. The Idaho Wheat Commission website also provides a list of recommended varieties: www.idahowheat.org under "Preferred Varieties".

Growing Conditions and Factors Affecting Trials

Fall cereal trials were planted in October 2010. Winter wheat trials stands were well established at all locations. A cool, wet spring preceded by a cool, wet winter surpassed annual precipitation records at most locations in terms of total snowfall and rainfall. Melting snow and spring rain saturated soils leaving standing water negatively affected low lying fields. Erosion on steep slopes was common. However, ample snow cover protected most northern Idaho winter cereal crops from cold damage and water stress later in the season was negligible. Heavy stripe-rust occurred across the Palouse in the late summer/fall of 2010, which carried over to early-planted winter cereals in the region. With fall-infected fields and a prolonged cool wet-spring, stripe-rust became an early and persistent issue throughout the northern Idaho growing region. Temperatures needed to engage High Temperature Adult Plant Resistance (HTAP) genes to stripe-rust did not occur until late June in most areas. Compounding the effects of the stripe-rust pressure was a new stripe rust race that overcame many previously resistant lines of wheat. Multiple fungicide applications became necessary to protect cereals, but were largely effective. The average winter wheat yield over all locations in 2010-2011 was 26 bushels/acre higher than the average yield over the previous three crop years.

Spring trials were seeded between April 27 and May 19 (see Table 1). Planting was delayed due to wet soil conditions. Frequent weather systems brought cool temperatures and precipitation throughout the planting season. Where fungicide applications were timed correctly, spring wheat yields were generally well above average. Spring wheat yields in 2011 were 18 bushels/acre higher than the previous 3-year average. Spring barley yields were 25 bushels/acre higher than the previous 3-year average. Specific management practices for individual trials are listed in Table 1.

Trial Locations, Management and Varieties Tested

Table 1. 2010-2011 Northern Idaho Extension variety trial site management information.

Crop	County	Nursery Location	Planting Date	Harvest Date	Previous Crop	Fertilizer N-P-K-S(lb/A)	----Chemical---- Name(s)	Rates(s)
Winter Cereals								
Winter Wheat	Lewis	Craigmont	10/13/2010	9/14/2011	W. Wheat	120-10-0-15	BMP[2]	
Winter Wheat	Nez Perce	Tammany	9/29/2010	8/5/2011	S. Fallow	120-20-0-5	Powerflex	3.5 oz./A
							Uran	1 gal/A
							Ally	0.5 oz./A
							M-90	1 qt/A
							Tilt (two apps)	8 oz.
Winter Wheat	Nez Perce	Genesee	10/14/2010	8/16/2011	W.Wheat	160-10-0-15	BMP[2]	
Winter Wheat	Latah	Moscow Parker Farm	10/13/2010	8/25/2011	S. Pea	100-10-0-15	Roundup RT	20 oz/A Pre
							Huskey	12 oz/A
							Affinity Broad	0.8 oz/A
							Puma	11 oz/A
							Quilt	7oz/A
Winter Wheat	Boundary	B. Ferry	10/12/2010	8/29/2011	S. Canola	100-10-0-15	BMP[2]	
Winter Wheat	Benewa	Tenesed	10/1/2010	8/26/2011	Lentils	BMP[2]	BMP[2]	
Winter Barley	Boundary	B.Ferry	10/12/2010	8/29/2011	S. Canola	100-10-0-15	BMP[2]	
Spring Cereals								
Soft Wheat	Lewis	Craigmont	5/11/2011	9/8/2011	W. Wheat	100-10-0-15	Orion	17 oz./A
							Ally	0.10 oz./A
Soft Wheat	Nez Perce	Genesee	4/27/2011	9/1/2011	W. Wheat	100-28-0-29	Huskie	13 oz./A
							Axial XL	16.4 oz./A
							PROPI-STAR	4 oz./A
							ALTO	4 oz./A
							Dimethoate	3/4 pt.
							Uran	1 gal/A
Soft Wheat	Boundary	B. Ferry	5/2/2011	9/6/2011	S. Canola	80-10-0-15	BMP[2]	
Hard Wheat	Lewis	Craigmont	5/11/2011	9/8/2011	W. Wheat	160-10-0-15	Orion	17 oz./A
							Ally	0.10 oz./A
Hard Wheat	Nez Perce	Genesee	4/27/2011	9/1/2011	W. Wheat	160-28-0-29	Huskie	13 oz./A
							Axial XL	16.4 oz./A
							PROPI-STAR	4 oz./A
							ALTO	4 oz./A
							Dimethoate	3/4 pt.
							Uran	1 gal./A

2- BMP - Recommended best management practice rates of chemical application.

Table 1 (continued). 2010-2011 Northern Idaho Extension variety trial site management informatio

Crops	County	Nursery Location	Planting Date	Harvest Date	Previous Crop	Fertilizer N-P-K-S(lb/A)	----Chemical---- Name(s)	Rates(s)
Spring Cereals								
Hard Wheat	Boundary	B. Ferry	5/2/2011	9/8/2011	Canola	140-10-0-15	BMP[2]	
Spring Barley	Lewis	Craigmont	5/11/2011	9/8/2011	W. Wheat	100-10-0-15	Orion	17 oz./A
							Ally	0.10 oz./A
Spring Barley	Nez Perce	Genesee	4/27/2011	9/1/2011	W. Wheat	100-28-0-29	Huskie	13 oz./A
							Axial XL	16.4 oz./A
							PROPI-STAR	4 oz./A
							ALTO	4 oz./A
							Dimethoate	3/4 pt.
							Uran	1 gal/A
Spring Barley	Latah	Moscow Parker Farm	5/19/2011	9/9/2011	W. Wheat	80-10-0-15	Roundup	20 oz/A Pre
							Huskie	13 oz./A
Spring Barley	Boundary	B. Ferry	5/2/2011	9/8/2011	S. Canola	80-10-0-15	BMP[2]	
Spring Legumes								
Peas	Latah	Moscow Parker Farm	5/5/2011	8/17/2011	S. Barley	None	Roundup	32 oz/A Pre
							Warrior	3.0 oz./A
Peas	Nez Perce	Genesee	5/11/2011	9/2/2011	S. Barley	None	Roundup	16 oz/A Pre
							Dimethoate	16 0z/A
							Select	10 oz./A
Peas	Latah	Genesee Kambitsch Farm	5/5/2011	8/22/2011	S. Barley	None	Roundup	20 oz/A Pre
							Tricor	1/4 lb. A
							Prowl	2 pt./A
							Warrior	2.6 oz./A
Lentils	Latah	Moscow Parker Farm	5/5/2011	8/23/2011	S. Barley	None	Roundup	32 oz/A Pre
							Tricor	1/4 lb./A
Lentils	Latah	Genesee Kambitsch Farm	5/5/2011	8/22/2011	S. Barley	None	Roundup	20 oz/A Pre
							Tricor	1/4 lb. A
							Prowl	2 pt./A
							Warrior	2.6 oz./A
Lentils	Nez Perce	Genesee	5/11/2011	9/2/2011	Barley	None	Roundup	16 oz/A Pre
							Dimethoate	16 0z/A
							Select	10 oz./A
Chick Peas	Latah	Genesee Kambitsch Farm	5/5/2011	9/8/2011	S. Barley	None	Roundup	20 oz/A Pre
							Tricor	1/4 lb. A
							Prowl	2 pt./A
							Warrior	2.6 oz./A
							Quadris	7 oz./A

2- BMP - Recommended best management practice rates of chemical application.

Table 2. Released varieties tested in Northern Idaho Extension variety trials in 2010-2011

Variety	Experimental No.	Released	Developer(s) of variety
Soft white winter wheat			
Bitterroot	ID 92-22407A	2007	University of Idaho, USDA/ARS
Bruneau	ID 93-64901A	2009	University of Idaho, USDA/ARS
Brundage 96	ID-B-96	2001	University of Idaho, USDA/ARS
Idaho 587	IDO 587	2002	University of Idaho, USDA/ARS
IDO 655	IDO 655	2009	University of Idaho, USDA/ARS
Lambert	ID 85-153	1993	University of Idaho, USDA/ARS
Madsen	WA 7163	1988	Washington State University, USDA/ARS
ORCF-102	OR2010007	2004	Oregon State University, USDA/ARS
Simon	ID 91-34302A	2002	University of Idaho, USDA/ARS
Stephens	OR 65-116	1977	Oregon State University, USDA/ARS
Tubbs 06	OR 939526 - re-select	2006	Oregon State University, USDA/ARS
Xerpha	WA7973	2008	Washington State University, USDA/ARS
Skiles	ORH010085	2007	Oregon State University, USDA/ARS
UICF-Brundage	ID 02-859	2009	University of Idaho, USDA/ARS
UICF-Lambert	ID 99-435	2008	University of Idaho, USDA/ARS
WestBred 528	BZ 6W98-528	2004	WestBred, LLC, Bozeman, MT
AP Legacy			AgriPro
AP Badger			AgriPro
Winter club wheat			
Cara	ARS97135-9	2007	Washington State University, USDA/ARS
Chukar	WA 7855	2001	Washington State University, USDA/ARS
Hard winter wheat			
Boundary (HR)	IDO 467	1997	University of Idaho, USDA/ARS
Esparia (HR)			AllStar
Norwest 553 (HR)	ORN00B553	2007	OSU, USDA/ARS with Nickerson, UK
UI-SRG (HR)	IDO 656	2011	University of Idaho, USDA/ARS
UI-Silver	IDO658	2011	University of Idaho, USDA/ARS
UICF-Grace	IDO651	2011	University of Idaho, USDA/ARS
Winter barley			
Charles (malt)	ARS92Ab1274	2005	University of Idaho, USDA/ARS
Endeavor (malt)	ARS95Ab2299	2007	University of Idaho, USDA/ARS
Sprinter		1987	WestBred, LLC, Bozeman, MT
Sunstar Pride		1995	Sunderman Breeding
Strider		1998	Oregon State University, USDA/ARS
Soft white spring wheat			
Alturas	IDO 526	2002	University of Idaho, USDA/ARS
Babe	WA 8039	2009	Washington State University, USDA/ARS
Cataldo	IDO 642	2007	University of Idaho, USDA/ARS
Diva	WA 8090	2009	Washington State University, USDA/ARS
Eden	WA 7902	2002	Washington State University, USDA/ARS
JD	WA 8047	2009	Washington State University, USDA/ARS
Nick	BZ 698-31	2000	WestBred, LLC, Bozeman, MT
Penawawa		1985	Washington State University, USDA/ARS
Whit	WA 8008	2008	Washington State University, USDA/ARS
WB-1035CL2			WestBred, LLC, Bozeman, MT

Table 2 (cont.) Released varieties tested in Northern Idaho Extension variety trials in 2010-2011.

Variety	Experimental No.	Released	Developer(s) of variety
Hard white spring wheat			
Lolo	IDO 533	1999	University of Idaho, USDA/ARS
WB-Hartline			WestBred, LLC, Bozeman, MT
Hard red spring wheat			
Albany		2009	Limagrain Cereal Seed, LLC
Buck Pronto		2001	Limagrain Cereal Seed, LLC
Cerere			Richard Cooley
AP-Bullseye	BO2-0081	2009	AgriPro
Cabernet			Resource Seeds
Hank	BZ 992-322	1999	WestBred, LLC, Bozeman, MT
Jedd		2002	WestBred, LLC, Bozeman, MT
Jefferson	IDO 462	1998	University of Idaho, USDA/ARS
Jerome	IDO 566	2004	University of Idaho, USDA/ARS
Kelse	WA 7954	2009	Washington State University, USDA/ARS
WB Fuzion	BZ901-717	2008	WestBred, LLC, Bozeman, MT
UI-Winchester		2009	University of Idaho, USDA/ARS
Expresso		2007	WestBred, LLC, Bozeman, MT
Two-row spring barley			
Baronesse (feed)	NS 078054	1992	WestBred, LLC, Bozeman, MT
Bob (feed)		2002	WSU/UI/OSU-USDA/ARS
Camas (feed)	ND 9147	1998	University of Idaho, USDA/ARS
Champion (feed)	YU-501-385D		WestBred, LLC, Bozeman, MT
Conrad (feed)	B5057	2005	Busch Ag. Resources, Inc.
Spaulding (feed)	PB1-95-2R-522	2005	Plant Breeders 1, Moscow, ID
Harrington (malt)	TR-441	1981	University of Saskatchewan, Canada
Lenetah (feed)	01Ab11107	2007	University of Idaho, USDA/ARS
Merit (malt)		2000	Busch Ag. Resources, Inc.
AC Metcalfe (malt)	TR-232	1994	Ag. Canada
Radiant (malt)	98NZ223		Washington State University, USDA/ARS
CDC-Copeland (malt)		1999	University of Saskatchewan, Canada
Salute (food)		2007	WestBred, LLC, Bozeman, MT
Six-row spring barley			
Tradition (malt)	6B95-2482	2003	Busch Ag. Resources, Inc.
Aquila (feed)		2003	Utah State University, USDA/ARS
Lentils			
Brewer		1984	Washington State University, USDA/ARS
Cedar	LC00600917RZ		Washington State University, USDA/ARS
Crimson		1990	Washington State University, USDA/ARS
Eston		1980	University of Saskatchewan, Canada
Essex		2010	Washington State University, USDA/ARS
Merrit	LC 460266B	2001	Washington State University, USDA/ARS
Pardina			Spain
Morena	LC02601144P	2011	Washington State University, USDA/ARS
Richlea			Ag. Canada
Riveland			Washington State University, USDA/ARS
Shasta	LC7601114YZ	2008	Washington State University, USDA/ARS

Table 2 (cont.) Released varieties tested in Northern Idaho Extension variety trials in 2010-2011.

Variety	Experimental No.	Released	Developer(s) of variety
Yellow peas			
Carousel	SW 995848	2004	ProGene
Universal		2000	Svalof Weibull
Green peas			
Aragorn		2007	ProGene
Ariel	NZ 4L25	2001	Crop and Food Research, New Zealand
Banner	Pro 031-7053	2007	ProGene
Columbian			Campbell Soup Co.
Medora	PS 99102238	2006	Washington State University, USDA/ARS
Pacifica	Pro 011-7107	2003	ProGene
Stirling	PS 610152	2002	Washington State University, USDA/ARS
Kabuli chickpeas			
Dwelley		1994	Washington State University, USDA/ARS
Dylan	CA 9990I604C	2005	Washington State University, USDA/ARS
Sierra	CA 9783152C	2001	Washington State University, USDA/ARS
Spanish White			Spain
Troy	CA 99901875W	2007	Washington State University, USDA/ARS
Billy Beans		2010	PNW COOP
Saywer	CA0090B347C	2010	Washington State University, USDA/ARS

Table 3. Winter wheat variety performance results at Craigmont, 2010-2011.

Variety or Selection	Seed Yield bu/A	Seed Protien %	Hardness Score 0-100	Test Weight lb./bu	Plant Height inches	Lodging Score %
Soft White						
Bitterroot	96	9.9	23	61.5	36	0
Brundage 96	92	9.6	26	61.1	33	0
UICF-Brundage	91	9.5	20	60.3	33	0
Bruneau	91	9.5	23	61.3	34	0
Lambert	81	9.1	29	61.2	36	0
UICF-Lambert	93	9.6	32	61.0	38	0
ID 00-475-2DH	88	10.6	26	63.0	35	0
ID 96-16702A	88	9.8	25	62.5	36	0
Skiles	81	10.7	27	62.0	32	0
Madsen	89	10.0	30	61.2	33	0
Simon	91	10.0	28	60.1	35	0
Tubbs 06	87	9.0	29	60.7	35	0
ORCF-102	98	10.8	34	61.8	36	0
AP Legacy	90	8.9	29	60.8	36	0
AP Badger	90	9.0	24	59.6	32	0
Xerpha	88	10.8	34	63.3	38	0
WB 523	87	10.5	24	61.9	33	0
BZ-6W02-616	96	9.6	20	62.4	34	0
WB 1066CL	83	9.2	35	63.5	35	0
WB 528	96	10.9	25	62.1	34	0
IDO 663	91	9.1	25	61.6	34	0
Mary	88	8.8	21	61.4	33	0
Cara (club)	87	9.2	25	59.9	33	0
Chuckar (club)	90	9.5	31	60.1	34	0
Average	90	9.7	27	61.4	34	0
Hard Wheat*						
IDO 835 (HW)	88	10.1	59	62.2	36	0
IDO 660 (HW)	81	10.2	70	62.8	34	0
UI-Silver (HW)	81	10.5	62	62.6	36	0
UICF-Grace (HW)	85	11.3	75	62.4	49	0
Boundary (HR)	89	9.2	64	61.7	36	0
Norwest 553 (HR)	78	10.0	59	62.1	29	0
WB Rimrock (HR)	95	9.7	68	62.6	35	0
Esperia (HR)	73	10.9	60	62.3	29	0
UI-SRG (HR)	89	10.1	73	62.1	41	0
Average	84	10.2	66	62.3	36	0
Trial Average	88	9.9	37	61.7	35	0
LSD (0.05)	14	--	--	0.6	2	--
CV (%)	11	--	--	0.7	4	--

* HW-hard white; HR-hard red

Table 4. Winter wheat variety performance results at Lewiston, 2010-2011.

Variety or Selection	Seed Yield bu/A	Seed Protien %	Hardness Score 0-100	Test Weight lb./bu	Plant Height inches	Lodging Score %
Soft White						
Bitterroot	131	11.3	28	62.0	36	0
Brundage 96	121	10.5	28	61.4	33	0
UICF-Brundage	125	10.4	22	61.4	33	3
Bruneau	139	10.5	28	62.2	34	33
Lambert	108	11.0	36	60.9	36	10
UICF-Lambert	116	10.4	34	60.8	38	10
ID 00-475-2DH	120	10.5	31	62.2	35	13
ID 96-16702A	136	10.4	27	62.8	36	18
Skiles	130	11.4	30	62.7	32	0
Madsen	138	11.4	35	61.8	33	0
Simon	123	11.2	34	60.9	35	0
Tubbs 06	122	10.3	34	60.3	35	0
ORCF-102	132	10.3	34	61.4	36	0
AP Legacy	78	10.0	25	56.8	36	8
AP Badger	119	10.3	29	59.4	32	3
Xerpha	121	10.9	35	62.9	38	63
WB 523	141	10.6	30	63.0	33	13
BZ-6W02-616	139	10.3	25	62.3	34	3
WB 1066CL	119	11.7	48	64.3	35	3
WB 528	137	10.6	34	62.3	34	0
IDO 663	135	11.0	34	61.9	34	0
Mary	135	10.9	31	61.5	33	0
Cara (club)	146	10.6	34	61.4	33	8
Chuckar (club)	139	10.4	35	61.1	34	23
Average	127	10.7	32	61.6	34	9
Hard Wheat*						
IDO 835 (HW)	102	10.3	68	63.2	36	33
IDO 660 (HW)	107	12.1	74	62.4	34	8
UI-Silver (HW)	111	10.4	77	63.3	36	80
UICF-Grace (HW)	61	12.6	84	61.6	49	90
Boundary (HR)	109	11.1	74	62.8	36	38
Norwest 553 (HR)	137	10.7	69	62.8	29	0
WB Rimrock (HR)	105	10.4	69	60.8	35	40
Esperia (HR)	118	11.6	67	62.5	29	3
UI-SRG (HR)	122	11.7	82	62.6	41	55
Average	108	11.2	74	62.4	36	38
Trial Average	122	10.8	43	61.8	35	17
LSD (0.05)	10	--	--	0.8	2	17
CV (%)	6	--	--	0.9	4	74

* HW-hard white; HR-hard red

Table 5. Winter wheat variety performance results at Genesee, 2010-2011.

Variety or Selection	Seed Yield bu/A	Seed Protien %	Hardness Score 0-100	Test Weight lb./bu	Plant Height inches	Lodging Score %
Soft White						
Bitterroot	132	11.7	25	60.6	44	0
Brundage 96	137	12.0	30	60.7	38	0
UICF-Brundage	132	12.4	23	59.7	37	0
Bruneau	144	11.5	22	60.5	42	0
Lambert	143	11.4	35	61.1	43	0
UICF-Lambert	136	11.7	33	60.1	44	0
ID 00-475-2DH	138	12.1	26	61.0	39	0
ID 96-16702A	139	12.0	24	61.3	43	0
Skiles	136	12.7	28	61.0	37	0
Madsen	131	12.9	31	59.6	39	0
Simon	142	12.0	30	60.6	40	0
Tubbs 06	131	12.0	35	58.5	43	0
ORCF-102	139	12.2	35	60.7	41	0
AP Legacy	138	11.8	29	59.5	43	0
AP Badger	133	11.9	29	58.5	36	0
Xerpha	127	12.1	35	61.2	46	0
WB 523	135	12.4	30	61.7	40	0
BZ-6W02-616	143	11.9	29	62.1	38	0
WB 1066CL	143	11.9	43	63.6	42	0
WB 528	145	11.9	36	62.6	41	0
IDO 663	137	12.2	34	60.4	39	0
Mary	143	11.6	33	61.6	39	0
Cara (club)	151	11.9	35	60.4	38	0
Chuckar (club)	138	11.4	32	59.6	40	0
Average	138	12.0	31	60.7	40	0
Hard Wheat*						
IDO 835 (HW)	136	11.2	37	62.0	42	0
IDO 660 (HW)	127	11.7	72	62.1	41	0
UI-Silver (HW)	131	11.4	74	62.7	45	0
UICF-Grace (HW)	105	12.3	74	60.7	56	0
Boundary (HR)	140	11.6	70	61.3	40	0
Norwest 553 (HR)	135	11.8	65	62.3	34	0
WB Rimrock (HR)	161	11.8	78	62.6	41	0
Esperia (HR)	134	12.3	71	63.3	35	0
UI-SRG (HR)	125	12.5	81	61.2	49	0
Average	133	11.8	69	62.0	42	0
Trial Average	137	11.9	41	61.0	41	0
LSD (0.05)	17	--	--	1.4	1	--
CV (%)	9	--	--	1.7	2	--

* HW-hard white; HR-hard red

Table 6. Winter wheat variety performance results at Moscow, 2010-2011.

Variety or Selection	Seed Yield bu/A	Seed Protien %	Hardness Score 0-100	Test Weight lb./bu	Plant Height inches	Lodging Score %
Soft White						
Bitterroot	111	9.5	23	60.7	39	0
Brundage 96	91	9.0	24	59.8	34	0
UICF-Brundage	103	9.0	19	59.6	35	0
Bruneau	121	9.0	23	61.1	39	0
Lambert	87	9.1	28	59.8	40	0
UICF-Lambert	87	8.5	25	59.1	40	0
ID 00-475-2DH	101	9.1	22	61.8	36	0
ID 96-16702A	107	8.8	21	61.7	41	0
Skiles	106	9.2	25	61.9	36	0
Madsen	112	9.1	25	60.3	37	0
Simon	94	9.2	27	59.8	36	0
Tubbs 06	87	8.5	25	58.5	40	0
ORCF-102	93	8.7	24	59.9	37	0
AP Legacy	55	9.0	23	54.5	38	0
AP Badger	96	8.7	19	58.5	34	0
Xerpha	107	9.1	29	61.8	43	0
WB 523	113	9.2	22	61.7	38	0
BZ-6W02-616	102	9.3	21	61.8	36	0
WB 1066CL	102	9.9	42	62.8	40	0
WB 528	107	9.2	28	61.4	38	0
IDO 663	98	8.6	17	60.6	36	0
Mary	106	7.8	14	60.5	35	0
Cara (club)	106	8.9	24	59.4	37	0
Chuckar (club)	110	7.8	17	59.8	38	0
Average	100	8.9	24	60.3	38	0
Hard Wheat*						
IDO 835 (HW)	81	8.5	55	61.2	37	0
IDO 660 (HW)	88	9.0	63	62.5	39	0
UI-Silver (HW)	110	8.7	55	61.8	42	0
UICF-Grace (HW)	89	8.7	64	61.9	53	0
Boundary (HR)	89	8.9	57	61.4	35	0
Norwest 553 (HR)	102	9.4	52	61.5	32	0
WB Rimrock (HR)	79	8.8	54	59.9	38	0
Esperia (HR)	77	9.9	61	61.9	33	0
UI-SRG (HR)	116	9.7	70	62.1	47	0
Average	92	9.1	59	61.6	40	0
Trial Average	98	9.0	33	60.6	38	0
LSD (0.05)	8	--	--	0.7	2	--
CV (%)	6	--	--	0.8	4	--

* HW-hard white; HR-hard red

Table 7. Winter wheat variety performance results at Tensed, 2010-2011.

Variety or Selection	Seed Yield bu/A	Seed Protien %	Hardness Score 0-100	Test Weight lb./bu	Plant Height inches	Lodging Score %
Soft White						
Bitterroot	120	9.2	14	61.8	43	0
Brundage 96	125	9.3	19	60.9	38	0
UICF-Brundage	126	9.2	14	61.0	37	0
Bruneau	139	9.1	19	62.4	42	0
UICF-Lambert	116	9.6	26	60.3	45	0
ID 00-475-2DH	125	9.1	16	63.4	40	0
ID96-16702A	125	8.8	18	62.7	44	0
Skiles	131	10.2	20	62.6	37	0
Madsen	137	10.2	24	61.7	39	0
Simon	122	9.2	23	60.8	40	0
Tubbs 06	112	9.4	25	59.8	44	0
ORCF-102	127	10.0	25	60.9	42	0
AP Legacy	83	9.5	21	56.8	41	0
AP Badger	131	9.9	28	59.8	37	0
Xerpha	116	9.2	29	62.4	44	0
WB 523	129	9.1	20	63.4	39	0
BZ-6W02-616	135	9.3	18	62.7	40	0
WB 1066CL	117	11.5	29	63.4	43	0
WB 528	132	9.5	24	63.0	42	0
IDO 663	117	9.3	20	61.8	39	0
Cara (club)	138	10.4	35	62.1	40	0
Chuckar (club)	135	9.5	23	61.9	42	0
Average	124	9.6	22	61.6	41	0
Hard Wheat*						
IDO 660 (HW)	122	12.3	74	62.8	42	0
UICF-Grace (HW)	99	11.1	75	62.7	59	0
UI-Silver (HW)	121	9.6	69	63.4	43	0
Esperia (HR)	97	12.2	69	62.4	34	0
Boundary (HR)	116	10.5	55	62.3	40	0
UI-SRG (HR)	132	11.7	79	62.6	51	0
WB Rimrock (HR)	112	9.8	64	60.6	41	0
Norwest 553 (HR)	122	11.2	58	62.7	36	0
Average	115	11.1	68	62.4	43	0
Trial Average	122	10.0	34	61.8	41	0
LSD (0.05)	15	--	--	1.0	2	--
CV (%)	9	--	--	0.1	3	--

* HW-hard white; HR-hard red

Table 8. Winter wheat variety performance results at Bonners Ferry, 2010-2011.

Variety or Selection	Seed Yield bu/A	Seed Protien %	Hardness Score 0-100	Test Weight (lb./bu)	Lodging Score %
Soft White					
Bitterroot	128	11.6	30	61.4	0
Brundage 96	99	11.3	29	58.8	0
UICF-Brundage	104	11.4	23	58.8	0
Bruneau	117	11.0	27	61.1	0
Lambert	90	11.4	36	59.3	0
UICF-Lambert	93	11.5	37	59.6	0
ID 00-475-2DH	101	11.1	28	59.9	0
ID 96-16702A	117	11.1	30	62.4	0
Skiles	115	12.5	25	61.4	0
Madsen	114	11.9	37	61.1	0
Simon	97	11.8	35	59.9	0
Tubbs 06	74	11.8	32	55.9	0
ORCF-102	87	11.7	35	59.0	0
AP Legacy	59	11.2	26	52.9	0
AP Badger	94	11.3	33	58.6	0
Xerpha	102	11.7	34	62.7	0
WB 523	110	11.4	31	61.9	0
BZ-6W02-616	114	11.8	32	63.0	0
WB 1066CL	105	12.8	43	62.8	0
WB 528	116	12.0	33	62.1	0
IDO 663	94	11.4	33	61.5	0
Mary	96	11.4	28	59.5	0
Cara (club)	122	12.5	37	60.9	0
Chuckar (club)	107	11.8	34	60.2	0
Average	102	11.6	32	60.2	0
Hard Wheat*					
IDO 835 (HW)	81	11.3	63	60.3	0
IDO 660 (HW)	90	12.4	73	61.0	0
UI-Silver (HW)	95	11.4	77	63.6	0
UICF-Grace (HW)	97	13.2	87	62.3	0
Boundary (HR)	90	11.3	65	59.7	0
Norwest 553 (HR)	107	12.9	73	63.2	0
WB Rimrock (HR)	88	11.7	68	60.6	0
Esperia (HR)	77	13.3	65	60.9	0
UI-SRG (HR)	109	12.6	82	62.6	0
Average	93	12.2	73	61.6	0
Trial Average	100	11.8	43	60.6	0
LSD (0.05)	14	--	--	0.6	0
CV (%)	10	--	--	0.1	0

* HW-hard white; HR-hard red

Table 9. Winter wheat performance comparison in northern Idaho, 2010-2011.

Variety or	Seed Yield							Test Weight
Selection	Lewiston	Genesee	Moscow	B. Ferry	Craigmont	Tensed	Average	Average
	---bu/acre---							lb./bu
Soft White								
Bitterroot	131	132	111	128	96	120	120	61.3
Brundage 96	121	137	91	99	92	125	111	60.3
UICF-Brundage	125	132	103	104	91	126	114	60.1
Bruneau	139	144	121	117	91	139	125	61.5
Lambert	108	143	87	90	81		102	60.3
UICF-Lambert	116	136	87	93	93	116	107	60.0
ID 00-475-2DH	120	138	101	101	88	125	112	61.7
98-16702A	136	139	107	117	88	125	119	62.2
Skiles	130	136	106	115	81	131	117	61.9
Madsen	138	131	112	114	89	137	120	60.9
Simon	123	142	94	97	91	122	112	60.4
Tubbs 06	122	131	87	74	87	112	102	58.6
ORCF-102	132	139	93	87	98	127	113	60.4
AP Legacy	78	138	55	59	90	83	84	56.1
AP Badger	119	133	96	94	90	131	110	59.0
Xerpha	121	127	107	102	88	116	110	62.2
WB 523	141	135	113	110	87	129	119	62.3
BZ-6W02-616	139	143	102	114	96	135	122	62.4
WB 1066CL	119	143	102	105	83	117	112	63.4
WB 528	137	145	107	116	96	132	122	62.3
IDO 663	135	137	98	94	91	117	112	61.2
Mary	135	143	106	96	88		114	60.8
Cara (club)	146	151	106	122	87	138	125	60.9
Chuckar (club)	139	138	110	107	90	135	120	60.5
Average	126	138	101	102	89	124	113	60.9
Hard Wheat*								
IDO 835 (HW)	102	136	81	81	88		97	61.8
IDO 660 (HW)	107	127	88	90	81	122	102	62.3
UICF-Grace (HW)	61	105	89	97	85	99	89	61.9
UI-Silver (HW)	111	131	110	95	81	121	108	63.0
Boundary (HR	109	140	89	90	89	116	105	61.5
Norwest 533 (HR)	137	135	102	107	78	122	113	62.4
WB Rimrock (HR)	105	161	79	88	95	112	107	61.2
Esperia (HR)	118	134	77	77	73	97	96	62.2
UI-SRG (HR)	122	125	116	109	89	132	115	62.2
Average	108	133	90	92	85	114	104	61.9
Overall Average	122	137	98	100	88	122	111	61.4
LSD (0.05)	10	17	8	14	14	15	5	0.3
CV (%)	6	9	6	10	11	9	--	--

* HR-hard red; HW-hard white

Table 10. Grain yield averages of winter-wheat varieties tested for multiple years in northern Idaho.

Variety or Selection	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2-Year Average	**3-Year Average**	4-Year Average	5-Year Average	6-Year Average
Number of sites	5	5	5	4	5	6	11	15	20	25	30
Soft White	----------bu/acre----------										
Bruneau		75	80	69	91	125	108	**95**	91	88	
Madsen	82	69	70	73	91	120	105	**95**	88	85	84
Xerpha			84	76	89	110	99	**92**	90		
ORCF-102	91	68	79	68	91	113	102	**91**	88	84	85
Chukar (club)	84	65	74	70	82	120	101	**91**	87	82	83
Cara (club)		63	74	62	85	125	105	**91**	87	82	
ID 00-475-2DH			70	72	89	112	101	**91**	86		
Bitterroot	85	68	78	62	88	120	104	**90**	87	83	83
Simon	84	69	77	68	90	112	101	**90**	87	83	83
Brundage 96	82	73	74	79	81	111	96	**90**	86	83	83
UICF-Brundage		70	79	74	83	114	99	**90**	87	84	
Skiles				69	85	117	101	**90**			
Tubbs 06	88	69	78	65	90	102	96	**86**	84	81	82
Lambert	82	68	74	74	82	102	92	**86**	83	80	80
UICF-Lambert	84	71	75	66	82	107	94	**85**	82	80	81
WB-528					88	122	105				
AP Badger					88	110	99				
AP Legacy					84	84	84				
Average	85	69	70	70	87	113	100	**90**	85	82	82
LSD (0.10)	3	3	4	7	6*	5*	--	--	--	--	

*** - LSD (0.05) for 2009-2011, crop years.**

Table 11. Grain yield averages for hard winter wheat varieties tested for multiple years in northern Idaho.

Variety or Selection	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	**2-Year Average**	3-Year Average	4-Year Average	5-Year Average	6-Year Average
Number of sites	5	5	5	4	5	6	11	15	20	25	30
	----------bu/acre----------										
Norwest 553 (red)					80	113	**97**				
Boundary (red)	81	70	74	59	78	105	**91**	80	79	77	78
Esperia (red)					67	96	**82**				
Average	81	70	75	62	75	105	**90**	81	79	77	78
LSD (0.10)	3	3	4	7	6*	5*	**--**	--	--	--	--

*** - LSD (0.05) for 2009-2011, crop years.**

Table 12. Spring wheat variety performance results at Craigmont, 2011.

Variety or Selection	Seed Yield bu/A	Seed Protien %	Hardness Score 0-100	Test Weight lb./bu	Plant Height inches	Lodging Score %
Soft White						
Penawawa	51	11.6	14	56.5	29	0
Alturas	65	10.5	16	58.4	33	0
Cataldo	66	11.0	14	57.9	34	0
Babe	71	10.1	9	59.1	35	0
Diva	82	10.3	16	56.6	38	0
Nick	50	10.9	20	56.9	32	0
Whit	65	10.4	14	58.6	32	0
Eden (club)	76	10.5	19	58.6	34	0
JD (club)	85	10.6	23	59.7	39	0
IDO599	72	10.6	10	57.6	35	0
IDO644	71	9.8	18	58.2	34	0
IDO671	70	10.3	14	58.6	35	0
IDO686	75	10.4	14	59.4	37	0
IDO687	69	10.3	13	59.8	34	0
WB-1035CL2	51	12.0	22	56.7	32	0
Average	68	10.6	16	58.2	34	0
LSD (0.05)	10	--	--	1.6	1	--
CV (%)	10	--	--	1.9	3	--
Hard Wheat*						
Cabernet (HR)	63	12.0	48	57.6	29	0
Jefferson (HR)	64	12.8	65	57.4	34	0
Jerome (HR)	59	12.5	57	56.8	32	0
UI-Winchester (HR)	70	12.8	62	58.2	33	0
Expresso (HR)	74	13.8	75	58.5	32	0
WB-Fuzion (HR)	58	12.9	76	57.1	35	0
Hank (HR)	45	13.6	62	53.7	32	0
Jedd (HR)	40	13.9	87	55.2	30	0
Bullseye (HR)	57	12.9	78	58.5	30	0
Cerere (HR)	47	13.1	57	55.3	30	0
Kelse (HR)	60	13.9	66	57.6	35	0
Buck Pronto (HR)	78	13.4	71	58.8	35	0
Albany (HR)	50	12.7	74	58.1	32	0
IDO702 (HR)	53	13.4	73	55.0	34	0
10FxInc1 (HR)	57	12.9	75	58.1	36	0
WB-Hartline (HW)	73	12.8	48	56.1	36	0
Lolo (HW)	47	13.0	63	56.4	33	0
OR4201261 (HW)	73	12.6	65	55.8	31	0
Average	59	13.1	67	56.9	33	0
LSD (0.05)	7	--	--	1.1	1	--
CV (%)	8	--	--	1.4	3	--

* HW-hard white; HR-hard red

Table 13. Spring wheat variety performance results at Genesee, 2011.

Variety or Selection	Seed Yield bu/A	Seed Protien %	Hardness Score 0-100	Test Weight lb./bu	Plant Height inches	Lodging Score %
Soft White						
Penawawa	69	11.0	24	63.5	33	0
Alturas	80	10.9	23	62.8	33	0
Cataldo	68	11.0	20	62.6	32	0
Babe	73	10.6	23	63.9	33	0
Diva	76	10.9	27	63.2	35	0
Nick	67	11.2	24	63.0	32	0
Whit	75	10.7	21	63.0	32	0
Eden (club)	69	11.3	28	63.5	33	0
JD (club)	76	10.9	30	64.2	35	0
IDO599	65	10.4	17	62.9	33	0
IDO644	75	11.0	27	62.2	30	0
IDO671	71	10.7	25	62.8	34	0
IDO686	68	11.3	24	64.0	36	0
IDO687	74	10.3	20	64.0	33	0
WB-1035CL2	63	12.1	25	63.1	29	0
Average	71	11.0	24	63.3	33	0
LSD (0.05)	10	--	--	0.5	2	--
CV (%)	8	--	--	0.4	4	--
Hard Wheat*						
Cabernet (HR)	65	12.5	48	62.9	25	0
Jefferson (HR)	79	12.8	64	62.1	34	0
Jerome (HR)	74	12.5	57	61.7	32	0
UI-Winchester (HR)	80	12.5	56	62.0	33	0
Expresso (HR)	72	13.9	71	62.3	31	0
WB-Fuzion (HR)	71	13.2	64	62.0	33	0
Hank (HR)	77	12.8	59	61.0	32	0
Jedd (HR)	77	13.1	88	62.8	30	0
Bullseye (HR)	81	12.5	71	64.2	30	0
Cerere (HR)	72	12.8	60	61.5	32	0
Kelse (HR)	78	13.6	63	62.4	35	0
Buck Pronto (HR)	72	13.3	61	62.0	33	0
Albany (HR)	80	13.1	70	61.6	34	0
IDO702 (HR)	74	13.2	61	60.9	35	0
10FxInc1 (HR)	71	12.9	77	63.1	34	0
WB-Hartline (HW)	85	12.6	54	61.0	34	0
Lolo (HW)	80	13.0	68	63.3	35	0
OR4201261 (HW)	84	12.3	72	61.2	31	0
Average	76	12.9	65	62.1	32	0
LSD (0.05)	8	--	--	0.5	1	--
CV (%)	6	--	--	0.6	3	--

* HW-hard white; HR-hard red

Table 14. Spring wheat variety performance results at Bonners Ferry, 2011.

Variety or Selection	Seed Yield bu/A	Seed Protien %	Hardness Score 0-100	Test Weight lb./bu	Plant Height inches	Lodging Score %
Soft White						
Penawawa	48	12.3	17	59.8	27	0
Alturas	63	11.2	18	61.5	31	0
Cataldo	55	12.1	18	59.2	32	0
Babe	56	11.7	15	57.6	34	0
Diva	92	11.9	28	62.2	35	0
Nick	50	11.8	18	59.6	31	0
Whit	76	11.9	27	61.6	33	0
Eden (club)	70	12.1	36	62.2	30	0
JD (club)	93	12.8	35	64.4	35	0
IDO599	65	11.3	24	60.8	32	0
IDO644	65	11.5	29	60.1	31	0
IDO671	72	11.6	28	61.6	33	0
IDO686	78	12.0	26	63.5	33	0
IDO687	82	11.7	29	63.6	32	0
WB-1035CL2	60	12.9	19	59.8	31	0
Average	68	11.9	24	61.2	32	0
LSD (0.05)	12	--	--	0.9	2	--
CV (%)	11	--	--	0.9	4	--
Hard Wheat*						
Cabernet (HR)	45	13.1	49	57.6	25	0
Jefferson (HR)	54	13.1	74	57.4	32	0
Jerome (HR)	47	12.9	67	56.8	30	0
UI-Winchester (HR)	59	13.4	69	58.2	32	0
Expresso (HR)	82	15.2	86	58.5	29	0
WB-Fuzion (HR)	29	13.7	75	57.1	31	0
Hank (HR)	23	14.6	59	53.7	29	0
Jedd (HR)	18	14.7	73	55.2	28	0
Bullseye (HR)	56	13.4	78	58.5	29	0
Cerere (HR)	42	11.8	66	55.3	24	0
Kelse (HR)	55	14.8	68	57.6	32	0
Buck Pronto (HR)	64	13.8	68	58.8	34	0
Albany (HR)	49	12.0	68	58.1	28	0
IDO702 (HR)	34	14.1	69	55.0	31	0
10FxInc1 (HR)	53	12.7	77	58.1	33	0
WB-Hartline (HW)	64	13.5	62	56.1	31	0
Lolo (HW)	31	13.1	68	56.4	29	0
OR4201261 (HW)	72	12.1	76	55.8	26	0
Average	49	13.4	70	56.9	30	0
LSD (0.05)	10	--	--	1.1	2	--
CV (%)	12	--	--	1.4	4	--

* HW-hard white; HR-hard red

Table 15. Spring wheat combined performance data for northern Idaho, 2011.

Variety or	Seed Yield				Test Weight	Height	Protein	Hardness
Selection	Craigmont	Genesee	B. Ferry	Average	Average	Average	Content	Score
	----------bu/acre----------				lb./bu	inches	%	1-100
Soft White								
Penawawa	51	69	48	56	59.9	30	11.6	18
Alturas	65	80	63	69	60.9	32	10.9	19
Cataldo	66	68	55	63	59.9	33	11.4	17
Babe	71	73	56	67	60.2	34	10.8	16
Diva	82	76	92	83	60.7	36	11.0	24
Nick	50	67	50	56	59.8	32	11.3	21
Whit	65	75	76	72	61.1	32	11.0	21
Eden (club)	76	69	70	72	61.4	32	11.3	28
JD (club)	85	76	93	84	62.8	37	11.4	29
IDO599	72	65	65	67	60.4	34	10.8	17
IDO644	71	75	65	71	60.2	32	10.8	25
IDO671	70	71	72	71	61.0	34	10.9	22
IDO686	75	68	78	73	62.3	35	11.2	21
IDO687	69	74	82	75	62.5	33	10.8	21
WB-1035CL2	51	63	60	58	59.9	31	12.3	22
Average	68	71	68	69	60.9	33	11.2	21
LSD (0.05)	10	10	12	6	0.6	1	--	--
CV (%)	10	8	11	--	--	--	--	--
Hard Wheat*								
Cabernet (HR)	63	65	45	58	60.3	27	12.5	48
Jefferson (HR)	64	79	54	65	59.7	33	12.9	68
Jerome (HR)	59	74	47	60	59.4	32	12.6	60
UI-Winchester (HR)	70	80	59	69	60.3	32	12.9	62
Expresso (HR)	74	72	82	76	60.9	30	14.3	77
WB-Fuzion (HR)	58	71	29	53	58.4	33	13.3	72
Hank (HR)	45	77	23	48	54.5	31	13.7	60
Jedd (HR)	40	77	18	45	56.3	29	13.9	83
Bullseye (HR)	57	81	56	64	61.2	29	12.9	76
Cerere (HR)	47	72	42	54	58.1	28	12.6	61
Kelse (HR)	60	78	55	64	60.2	34	14.1	66
Buck Pronto (HR)	78	72	64	71	60.7	34	13.5	67
Albany (HR)	50	80	49	60	59.7	31	12.6	71
IDO702 (HR)	53	74	34	54	57.8	33	13.6	68
10FxInc1 (HR)	57	71	53	60	60.6	34	12.8	76
WB-Hartline (HW)	73	85	64	74	58.7	34	13.0	55
Lolo (HW)	47	80	31	53	58.6	32	13.0	66
OR4201261 (HW)	73	84	72	76	59.7	29	12.3	71
Average	59	76	49	61	61.9	61.9	13.1	67
LSD (0.05)	7	7	10	4	0.6	0.9	--	--
CV (%)	8	6	12	--	--	--	--	--

* HW-hard white; HR-hard red

Table 16. Grain yield averages of spring wheat varieties tested for multiple years in northern Idaho.

Variety or Selection	2008	2009	2010	2011	2-Year Average	**3-Year Average**	4-Year Average
Number of sites	3	3	3	3	6	**9**	12
Soft White							
Diva		51	70	83	77	**68**	
JD (club)		49	70	84	77	**68**	
Whit	36	56	71	72	72	**66**	59
Babe	35	49	75	67	71	**64**	57
Eden (club)	33	44	66	72	69	**61**	54
Alturas	34	46	64	69	67	**60**	53
Cataldo	29	45	58	63	61	**55**	49
Penawawa	32	43	65	56	61	**55**	49
Nick	34	39	64	56	60	**53**	48
Average	33	47	67	69	68	**61**	53
LSD (0.10)[+]	4	4	5[+]	6[+]			
Hard Red							
Jefferson	44	44	68	65	67	**59**	55
UI-Winchester	40	40	64	69	67	**58**	53
Kelse	41	41	60	64	62	**55**	52
Jerome	41	41	61	60	61	**54**	51
Cabernet	36	36	62	58	60	**52**	48
Hank	46	46	57	48	53	**50**	49
Jedd	40	40	52	45	49	**46**	44
WB-Fuzion			61	53	57		
Hard White							
Lolo	47	47	62	53	58	**54**	52
OR4201261	44	44	64	76	70	**61**	57
WB-Hartline			69	74	72		
Average	42	42	62	60.5	61	**54**	51
LSD (0.10)[+]	4	4	5[+]	7[+]			

[+] **LSD calculated at 0.05 in 2010-2011 crop years.**

*** (HW) hard white**

Spring Barley

Table 17. Spring barley performance data for Craigmont, 2011.

Variety or Selection	Seed Yield bu/acre	Test Weight lb./bu	Height inches	Plumps %	Thins %
Feed Barley					
Aquila*	110	51.5	40	87	3
Baronesse	99	51.0	33	80	6
Bob	109	52.4	35	91	2
Camas	113	52.8	35	90	2
Champion	128	54.3	36	93	2
Lenetah	115	52.9	34	92	2
Radiant	104	51.3	33	74	7
Spaulding	108	53.0	35	96	5
Tetonia	98	50.8	33	64	9
Salute+	99	51.5	33	91	2
Clearwater	80	56.0	35	67	7
01WA-13860.5	87	55.6	34	60	10
Malting Barley					
Harrington	97	50.8	36	71	8
AC Metcalfe	98	51.6	35	84	4
Merit	93	51.4	35	76	7
Conrad	107	51.3	35	87	3
Copeland	92	50.5	36	82	4
Tradition*	86	50.4	38	76	7
Average	101	52.2	35	81	5
LSD (0.05)	13	1.0	2	16	4
CV (%)	9	1.31	5	14	53

* 6-row barley

+ food grade barley

Table 18. Spring barley performance data for Genesee, 2011.

Variety or Selection	Seed Yield bu/acre	Test Weight lb./bu	Height inches	Plumps %	Thins %
Feed Barley					
Aquila*	104	54.8	35	88	3
Baronesse	115	54.7	32	90	3
Bob	109	55.7	35	97	1
Camas	117	55.8	33	94	2
Champion	130	56.5	34	93	3
Lenetah	113	55.5	34	95	2
Radiant	116	55.2	34	84	5
Spaulding	122	56.4	34	96	1
Tetonia	126	55.4	31	94	2
Salute+	107	55.9	33	98	1
Clearwater	97	62.1	32	86	3
01WA-13860.5	93	61.9	30	82	4
Malting Barley					
Harrington	97	55.8	32	91	2
AC Metcalfe	110	55.3	33	84	3
Merit	114	54.9	34	89	2
Conrad	114	55.0	32	96	1
Copeland	104	53.8	34	89	4
Tradition*	90	54.3	36	88	2
Average	110	56.1	33	91	2
LSD (0.05)	14	1.0	4	8	3
CV (%)	9	1.3	8	7	85

* 6-row barley

+ food grade barley

Table 19. Spring barley performance data for Moscow, 2011.

Variety or Selection	Seed Yield bu/acre	Test Weight lb./bu	Height inches	Plumps %	Thins %
Feed Barley					
Aquila*	72	51.4	33	94	1
Baronesse	67	52.3	27	94	1
Bob	75	52.9	29	94	1
Camas	86	54.2	31	93	2
Champion	65	53.7	29	89	2
Lenetah	56	53.2	26	79	5
Radiant	77	52.2	28	85	3
Spaulding	64	53.8	28	89	2
Tetonia	70	52.4	28	89	2
Salute**	64	51.1	28	96	1
Clearwater	47	59.0	28	69	7
01WA-13860.5	51	56.8	26	59	9
Malting Barley					
Harrington	74	52.1	31	88	2
AC Metcalfe	62	52.6	30	94	1
Merit	71	51.7	28	83	4
Conrad	66	52.1	29	97	1
Copeland	66	51.7	31	94	1
Tradition*	58	51.0	34	94	1
Average	66	53.0	29	88	3
LSD (0.05)	19	2.0	2	12	3
CV (%)	20	2.7	5	10	75

* 6-row barley
** food grade barley

Table 20. Spring barley performance data for Bonners Ferry, 2011.

Variety or Selection	Seed Yield bu/acre	Test Weight lb./bu	Height inches	Plumps %	Thins %
Feed Barley					
Aquila*	114	52.7	38	96	0
Baronesse	114	53.2	36	99	0
Bob	112	54.1	38	99	0
Camas	110	51.9	36	96	1
Champion	122	53.5	35	99	0
Lenetah	132	53.6	35	98	1
Radiant	122	53.8	38	97	1
Spaulding	118	53.9	36	95	1
Tetonia	122	53.6	38	97	1
Salute**	94	52.7	36	98	0
Clearwater+	0	0.0	0	0	0
01WA-13860.5	81	59.6	37	92	1
Malting Barley					
Harrington	114	53.0	37	94	1
AC Metcalfe	106	53.6	39	98	0
Merit	122	53.6	36	93	1
Conrad	133	52.6	35	97	0
Copeland	113	51.6	38	97	1
Tradition*	100	51.0	36	95	1
Average	107	50.4	35	91	1
LSD (0.05)	19	0.8	4	6	2
CV (%)	11	1.0	7	4	118

* 6-row barley

** food grade barley

+ The variety Clearwater was selected exclusively among the other varieties for browse by deer.

Table 21. Spring barley variety performance data for northern Idaho, 2011.

Variety or	Seed Yield					Test Weight	Height	Plumps	Thins
Selection	Craigmont	Genesee	Moscow	B. Ferry	Average	Average	Average	Average	Average
	----------bu/acre----------					lb./bu	inches	%	%
Feed Barley									
Aquila*	110	104	72	114	100	52.6	36	91	2
Baronesse	99	115	67	114	99	52.8	32	91	2
Bob	109	109	75	112	101	53.8	34	95	1
Camas	113	117	86	110	106	53.7	34	93	2
Champion	128	130	65	122	111	54.5	33	93	2
Lenetah	115	113	56	132	104	53.8	32	91	2
Radiant	104	116	77	122	105	53.1	33	85	4
Spaulding	108	122	64	118	103	54.3	33	94	2
Tetonia	98	126	70	122	104	53.0	32	86	3
Salute**	99	107	64	94	91	52.8	32	96	1
Clearwater	80	97	47	0+	75	59.0	32	74	6
01WA-13860.5	87	93	51	81	78	58.5	32	73	6
Malting Barley									
Harrington	97	97	74	114	96	52.9	34	86	3
AC Metcalfe	98	110	62	106	94	53.3	34	90	2
Merit	93	114	71	122	100	52.9	33	85	3
Conrad	107	114	66	133	105	52.7	33	94	1
Copeland	92	104	66	113	94	51.9	35	90	3
Tradition*	86	90	58	100	83	51.7	36	88	3
Average	101	110	66	113	97	53.7	33	89	3
LSD (0.05)	13	14	19	19	8	0.6	1	5	1
CV (%)	9	9	20	11	--	--	--	--	--

* 6-row barley

** food grade barley

\+ - The variety Clearwater was selected exclusively among the other varieties for browse by deer.

Table 22. Grain yield averages for spring barley tested for multiple years in northern Idaho.

Variety or Selection	Seed Yield 2009	2010	2011	Two-Year Average	Three-Year Average
	----------bu/acre----------				
Feed Barley					
Champion	72	96	111	104	93
Tetonia	73	97	104	101	91
Lenetah	73	96	104	100	91
Radiant	73	93	105	99	90
Camas	65	93	106	100	88
Spaulding	66	94	103	99	88
Baronesse	67	90	99	95	85
Salute**	67	87	91	89	82
Bob		85	101	93	
Clearwater		79	88	84	
01WA-13860.5		78	78	78	
Malting Barley					
Conrad	69	95	105	100	90
Merit	67	86	100	93	84
AC Metcalfe	66	88	94	91	83
Harrington	63	85	96	91	81
Tradition*	65	91	83	87	80
Average	68	90	107	94	88
LSD (0.05)	6	5	8	--	--

* 6-row barley
** food grade barley

Table 23. Dry pea variety performance southeast of Genesee, Nez Perce Co., 2011.

Class	Variety or Selection	Seed Yield lb./A	Seed Weight g/100	Canopy Height inches	Vine Length inches	Erect Index 0-1
Dry Green	Pacifica	2559	22.8	27	30	0.9
Dry Green	PS07100471	2340	22.4	28	28	1.0
Dry Green	Pro5187	2217	22.2	29	29	1.0
Dry Green	PS07100470	2211	22.6	25	25	1.0
Dry Green	Aragorn	2202	21.1	28	30	0.9
Dry Green	PS07100632	2173	19.1	23	23	1.0
Dry Green	PS05100840	2064	21.7	26	27	0.9
Dry Green	Banner	2014	20.8	24	26	0.9
Dry Green	Stirling	1975	21.3	21	22	0.9
Dry Green	Pro083-8739	1955	23.3	30	30	1.0
Dry Green	PS02101445	1900	23.2	24	25	1.0
Dry Green	Medora	1768	20.9	28	29	0.9
Dry Green	Columbian	1602	20.7	15	33	0.5
Dry Green	Ariel	1586	19.7	25	26	0.9
Dry Green	PS05100736	1303	23.6	21	21	1.0
Dry Green	Pro081-6118	1234	22.0	26	28	0.9
Dry Green	Average	1944	21.7	25	27	0.9
Dry Yellow	Universal	2482	23.8	25	25	1.0
Dry Yellow	PS02101137	2348	23.8	28	29	1.0
Dry Yellow	PS06101119	2148	23.5	21	23	0.9
Dry Yellow	PS03101822	2140	23.0	19	19	1.0
Dry Yellow	PRL415	2021	22.4	26	27	0.9
Dry Yellow	Carousel	1937	24.4	26	28	0.9
Dry Yellow	PS04100710	1041	24.0	22	22	1.0
Dry Yellow	Average	2017	23.5	24	25	1.0
	Trial Average					
	LSD(.05)	512	1.1	3	4	0.1
	CV(%)	18	3.6	10	11	5.5

Table 24. Dry pea variety performance northwest of Genesee, Latah Co., 2011.

Class	Variety or Selection	Seed Yield lb./A	Seed Weight g/100	Canopy Height inches	Vine Length inches	Erect Index 0-1
Dry Green	PS02101445	4128	20.7	26	26	1.0
Dry Green	Banner	4124	20.4	31	31	1.0
Dry Green	Pacifica	4105	22.8	28	34	0.8
Dry Green	PS05100840	3864	20.3	30	30	1.0
Dry Green	PS07100632	3730	20.4	31	31	1.0
Dry Green	Aragorn	3568	21.8	31	31	1.0
Dry Green	Ariel	3371	18.8	29	29	1.0
Dry Green	PS05100736	3358	21.2	26	26	1.0
Dry Green	PS07100470	3357	22.4	30	30	1.0
Dry Green	Stirling	3309	20.4	25	26	0.9
Dry Green	Pro081-6118	3308	20.9	28	29	1.0
Dry Green	PS07100471	3279	21.8	31	32	1.0
Dry Green	Pro083-8739	3241	23.1	34	34	1.0
Dry Green	Pro5187	3153	19.9	33	33	1.0
Dry Green	Columbian	3106	19.2	18	40	0.4
Dry Green	Medora	2479	19.8	34	35	1.0
Dry Green	Average	3467	20.9	29	31	0.9
Dry Yellow	Universal	3982	22.3	30	30	1.0
Dry Yellow	PS06101119	3979	25.2	27	27	1.0
Dry Yellow	PS03101822	3755	24.6	26	26	1.0
Dry Yellow	PS02101137	3514	23.4	31	31	1.0
Dry Yellow	PRL415	3513	21.4	29	31	1.0
Dry Yellow	Carousel	3375	23.0	32	33	1.0
Dry Yellow	PS04100710	2615	25.1	25	25	1.0
Dry Yellow	Average	3533	23.6	29	29	1.0
	Trial Average	3487	21.7	29	30	1.0
	LSD (.05)	424	1.3	3	4	0.5
	CV (%)	9	4.3	7	8	3.8

Table 25. Combined Latah Co. and Nez Perce Co. dry-pea results in northern Idaho, 2011

Class	Variety or Selection	Seed Yield lb./A	Seed Weight g/100	Canopy Height inches	Vine Length inches	Erect Index 0-1
Dry Green	Pacifica	3332	22.8	28	32	0.9
Dry Green	Banner	3069	20.6	27	28	1.0
Dry Green	PS02101445	3014	22.0	25	25	1.0
Dry Green	PS05100840	2964	21.0	28	28	1.0
Dry Green	PS07100632	2952	19.7	27	27	1.0
Dry Green	Aragorn	2885	21.5	29	30	1.0
Dry Green	PS07100471	2809	22.1	30	30	1.0
Dry Green	PS07100470	2784	22.5	27	27	1.0
Dry Green	Stirling	2642	20.9	23	24	0.9
Dry Green	Pro5187	2632	21.8	27	28	1.0
Dry Green	Pro083-8739	2598	23.2	32	32	1.0
Dry Green	Ariel	2479	19.3	27	28	1.0
Dry Green	Columbian	2354	20.0	16	37	0.5
Dry Green	PS05100736	2330	22.4	23	24	1.0
Dry Green	Pro081-6118	2271	21.5	27	28	1.0
Dry Green	Medora	2123	20.4	31	32	1.0
	Average Green	2702	21.3	27	29	0.9
Dry Yellow	Universal	3232	23.1	28	28	1.0
Dry Yellow	PS06101119	3064	24.3	24	25	1.0
Dry Yellow	PS03101822	2947	23.8	22	22	1.0
Dry Yellow	PS02101137	2931	23.6	30	30	1.0
Dry Yellow	PRL415	2767	21.9	27	29	0.9
Dry Yellow	Carousel	2656	23.7	29	30	1.0
Dry Yellow	PS04100710	1828	24.5	24	23	1.0
	Average Yellow	2775	23.6	26	27	1.0
	LSD(.05)	331	0.9	2	3	0.2

Table 26. Seed yields of dry-peas tested for three years in northern Idaho.

Class	Variety or Selection	2009 Seed Yield lb./A	2010 Seed Yield lb./A	2011 Seed Yield lb./A	3-Year Average lb./A
Dry Green	Banner	2059	1301	3069	2143
Dry Green	Pacifica	1775	1078	3332	2062
Dry Green	PS02101445	1794	1097	3014	1968
Dry Green	Aragorn	1579	1229	2885	1898
Dry Green	Ariel	1768	976	2479	1741
Dry Green	Stirling	1396	1158	2642	1732
Dry Green	Medora	1721	1325	2123	1723
Dry Green	Pro081-6118	1646	1014	2271	1644
Dry Green	Columbian	1140	1181	2354	1558
	Average Green	1653	1151	2685	1830
Dry Yellow	Universal	1867	1076	3232	2058
Dry Yellow	PRL415	1743	1211	2767	1907
Dry Yellow	Carousel	1583	1157	2656	1799
	Average Yellow	1731	1148	2885	1921
	LSD(.05)	227	270	331	--

Spring Lentils

Table 27. Lentil variety performance southeast of Genesee, Nez Perce Co., 2011.

Variety or Market Class	Seed Yield lb./A	Seed Weight g/100	Canopy Height inches
Eston Type			
Eston	1862	3.5	14
Essex	2104	4.8	15
LC05600812E	1881	4.5	12
LC08600005E	2095	5.2	14
LC036001590E	1986	4.0	13
LC01602273E	1885	3.8	13
Spanish Brown			
Pardina	2111	4.4	12
Morena	1977	4.0	13
LC08600113P	1709	4.9	13
Turkish Red			
Crimson	1561	3.5	12
LC01602062T	1694	5.1	13
Medium/Large-Seeded			
Brewer	1879	6.3	13
Merrit	1875	6.8	13
Richlea	1900	5.5	14
LC01602300R	2141	5.3	14
Riveland	1845	7.7	14
LC06600839L	1739	8.5	14
LC06601734L	1931	7.7	15
Zero Tannin			
Cedar	1438	4.9	14
Shasta	1449	5.9	15
LC99602585RZ	1228	4.2	12
LC06600939YZ	1632	6.4	14
LSD (0.05)	323	0.2	1
CV (%)	13	3.2	6

Table 28. Lentil variety performance northwest of Genesee, Latah Co., 2011.

Variety or Market Class	Seed Yield lb./A	Seed Weight g/100	Canopy Height inches
Eston Type			
Eston	2723	3.2	15
Essex	3127	4.2	17
LC05600812E	2583	3.9	14
LC08600005E	2767	4.6	18
LC036001590E	2784	3.5	16
LC01602273E	2717	3.5	16
Spanish Brown			
Pardina	2719	3.8	13
Morena	2748	3.8	16
LC08600113P	2581	4.8	16
Turkish Red			
Crimson	2711	3.2	14
LC01602062T	2766	4.6	16
Medium/Large-Seeded			
Brewer	2685	5.7	16
Merrit	2691	6.1	16
Richlea	2821	4.9	17
LC01602300R	3060	4.9	18
Riveland	2510	6.9	17
LC06600839L	2244	7.5	16
LC06601734L	2706	6.9	18
Zero Tannin			
Cedar	2008	4.4	16
Shasta	2173	5.7	18
LC99602585RZ	2109	3.9	15
LC06600939YZ	2158	5.9	18
LSD (0.05)	247	0.3	1
CV (%)	7	3.9	5

Table 29. Lentil variety performance results at Moscow, 2011.

Variety or Market Class	Seed Yield lb./A	Seed Weight g/100	Canopy Height inches
Eston Type			
Eston	1689	3.5	16
Essex	2239	4.3	16
LC05600812E	1897	4.1	16
LC08600005E	1858	4.6	16
LC036001590E	1956	4.6	16
LC01602273E	2161	3.8	15
Spanish Brown			
Pardina	2018	3.9	14
Morena	2364	3.8	18
LC08600113P	1644	4.8	16
Turkish Red			
Crimson	1739	3.1	13
LC01602062T	1360	4.7	16
Medium/Large-Seeded			
Brewer	1946	6.0	16
Merrit	2050	5.9	15
Richlea	1797	5.2	17
LC01602300R	2174	4.9	17
Riveland	1707	7.1	17
LC06600839L	1629	7.9	17
LC06601734L	1754	7.1	17
Zero Tannin			
Cedar	1101	4.9	16
Shasta	1460	5.7	16
LC99602585RZ	947	4.2	12
LC06600939YZ	1372	6.3	16
LSD (0.05)	330	0.7	2
CV (%)	13	9.3	11

Table 30. Combined lentil results in northern Idaho, 2011.

Variety or Market Class	Genesee Nez Perce Co.	Genesee Latah Co.	Moscow Parker Farm	2011 Trial Average Variety Yield	Seed Weight	Plant Height
	Seed Yield					
	lb./A			lb./A	g/100 seeds	inches
Eston Type						
Eston	1862	2723	1689	2092	3.4	15
Essex	2104	3127	2239	2490	4.4	16
LC05600812E	1881	2583	1897	2120	4.2	14
LC08600005E	2095	2767	1858	2240	4.8	16
LC036001590E	1986	2784	1956	2242	4.0	15
LC01602273E	1885	2717	2161	2254	3.7	14
Spanish Brown						
Pardina	2111	2719	2018	2283	4.0	13
Morena	1977	2748	2364	2363	3.8	16
LC08600113P	1709	2581	1644	1978	4.8	15
Turkish Red						
Crimson	1561	2711	1739	2003	3.3	13
LC01602062T	1694	2766	1360	1940	4.8	15
Large-Seeded Yellow						
Brewer	1879	2685	1946	2170	6.0	15
Merrit	1875	2691	2050	2205	6.3	15
Richlea	1900	2821	1797	2172	5.2	16
LC01602300R	2141	3060	2174	2459	5.0	16
Riveland	1845	2510	1707	2021	7.2	16
LC06600839L	1739	2244	1629	1871	8.0	16
LC06601734L	1931	2706	1754	2131	7.2	17
Zero Tannin						
Cedar	1438	2008	1101	1516	4.8	15
Shasta	1449	2173	1460	1694	5.8	16
LC99602585RZ	1228	2109	947	1428	4.1	13
LC06600939YZ	1632	2158	1372	1721	6.2	16
Average	1815	2609	1766	2063	5.0	2
LSD (0.05)	323	247	330	173	0.2	1
CV (%)	13	7	13	--	--	--

Table 31. Performance of lentils tested for three years in northern Idaho.

Variety	Seed Yield				
	2009	2010	2011	Two Year Average	Three Year Average
	pounds/acre				
Pardina	1391	960	2283	1621	1545
Richlea	1270	965	2172	1569	1469
Merrit	1304	888	2205	1547	1466
Riveland	1480	836	2021	1428	1446
Eston	1379	632	2092	1362	1368
Brewer	1030	838	2170	1504	1346
Average	1309	853	2072	1505	1440
LSD (0.1*,0.05)	278*	195	173	--	--

Chickpeas

Table 32. Chickpea variety performance northwest of Genesee, Latah Co., 2011

Variety	Yield pounds/acre	100 sd-wt grams	Height inches
Sierra	2947	55.1	21
Troy	3153	60.4	19
Dwelley	3263	56.4	21
Dylan	3167	63.2	19
Sawyer	3907	45.9	22
Billy Beans	3718	31.5	27
CDC Frontier	3428	38.8	22
CDC Alma	3461	37.0	18
CDC Orion	4098	46.5	20
CA0390B007C	3639	55.5	21
CA07900421C	3714	51.6	19
CA6690B0409C	3563	58.3	21
CA0690B0250C	3674	57.6	25
CA044900843C	4059	68.4	22
LSD (0.05)	364	2.5	1
CV (%)	7	3.4	5

Table 33. Three-year performance results for chickpeas in northern Idaho

Variety	2009	2010	2011	Two Year Average	Three Year Average
	----------	----------	pounds/acre	----------	----------
Sawyer	732	1218	3907	2563	1952
CA0690B0250C	547	1378	3674	2526	1866
Sierra	784	1223	2947	2085	1651
Dwelley	503	1147	3263	2205	1638
Dylan	278	1070	3167	2119	1505
Troy	278	967	3153	2060	1466
Average	520	1167	2072	2260	1680
LSD (0.10*, 0.05)	218*	278	173	--	--