



**2011**

***Test Plot Results***  
***Central Washington Grain***  
***Growers, Inc.***



# **2011 Test Plot Results**

## **Central Washington Grain Growers, Inc.**

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## ***Introduction***

Welcome to the seventh annual Central Washington Grain Growers test plot report. This year was an exceptional year for growers in our area and the test plot results listed in this report mirror those of the growers. While crop season rainfall was only slightly above average, the cool spring and summer let the crops develop without the stress of high temperatures. At Wilbur we received 11.8 inches of precipitation for the crop season which was slightly below the long term average of 12.4 inches and Waterville received 13.4 inches of precipitation during the crop year which was above their long term average of 10.8 inches. The area around Waterville had moderately high snow mold pressure this year. The variety trial at Waterville illustrated the tolerances of different wheat varieties to snow mold and how some can recover better than others.

This years set of trials had the best overall results that I've had to date. Both the Waterville and Wilbur winter wheat trials had wheat yields over 100 bu/acre. There were new developments in 2-gene Clearfield soft white wheat varieties and potential new varieties in winter triticale, winter green peas, spring triticale and spring barley. After three years of chickpea trials, we are investigating the start of a chickpea production program. It is exciting to see these results and the benefits our growers will receive from these programs.

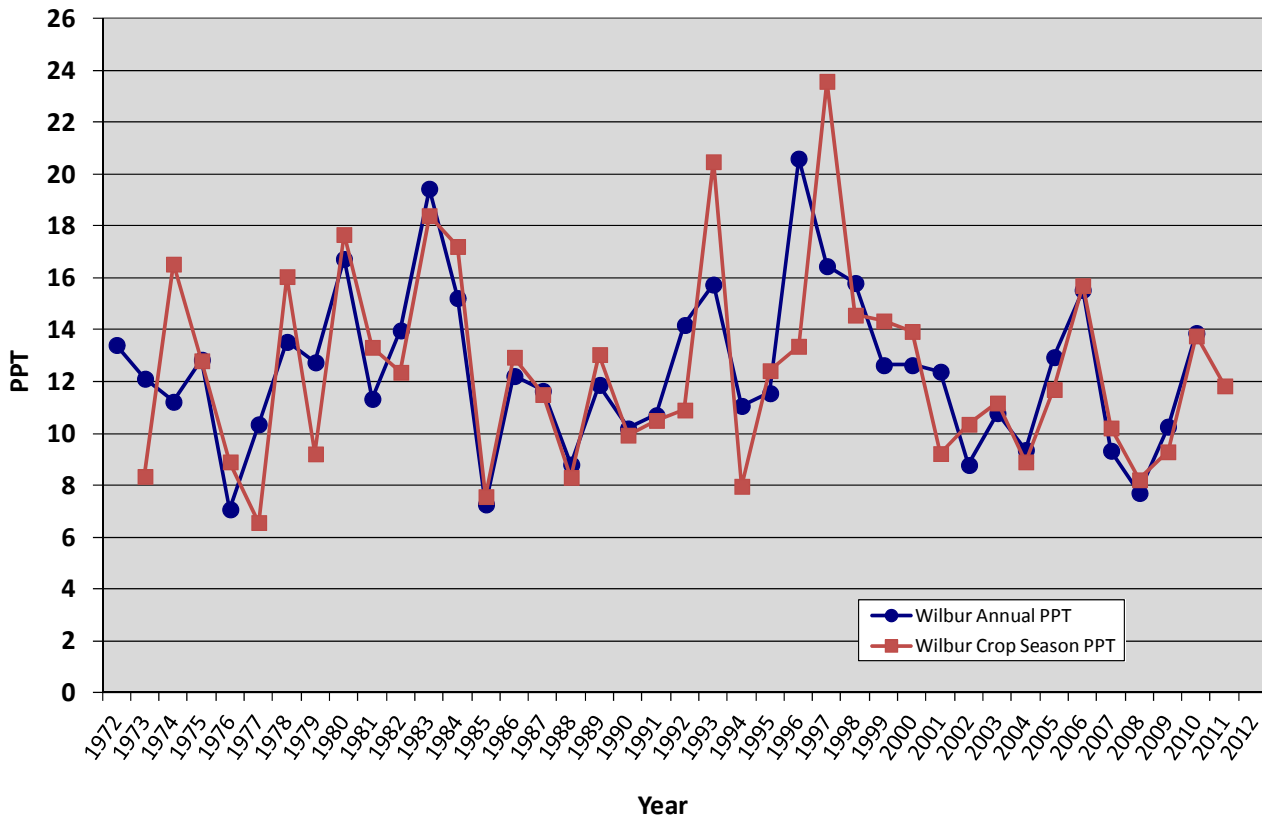
The number of wheat varieties included in the variety trials have grown as more private companies establish breeding programs in the PNW. We now have varieties from AgriPro, World Wide Wheat, ProSementi and Lima Grain as well as public varieties from WSU. The number of varieties submitted for testing has been the greatest in spring wheat.

We will continue testing in our priority areas: winter wheat varieties, 2-gene Clearfield winter wheat varieties, winter triticale, winter peas, spring wheat, spring barley, spring triticale, spring chickpeas and weed control in winter peas. We are investigating the new crops of winter lentils and have added a new crop this year, winter faba beans. We will discontinue testing spring planted winter peas for yield, different seed treatments on winter peas and different inoculant products on winter peas. We will expand the trials on chickpeas to include some agronomic studies with fertilizer rates and fungicide products.

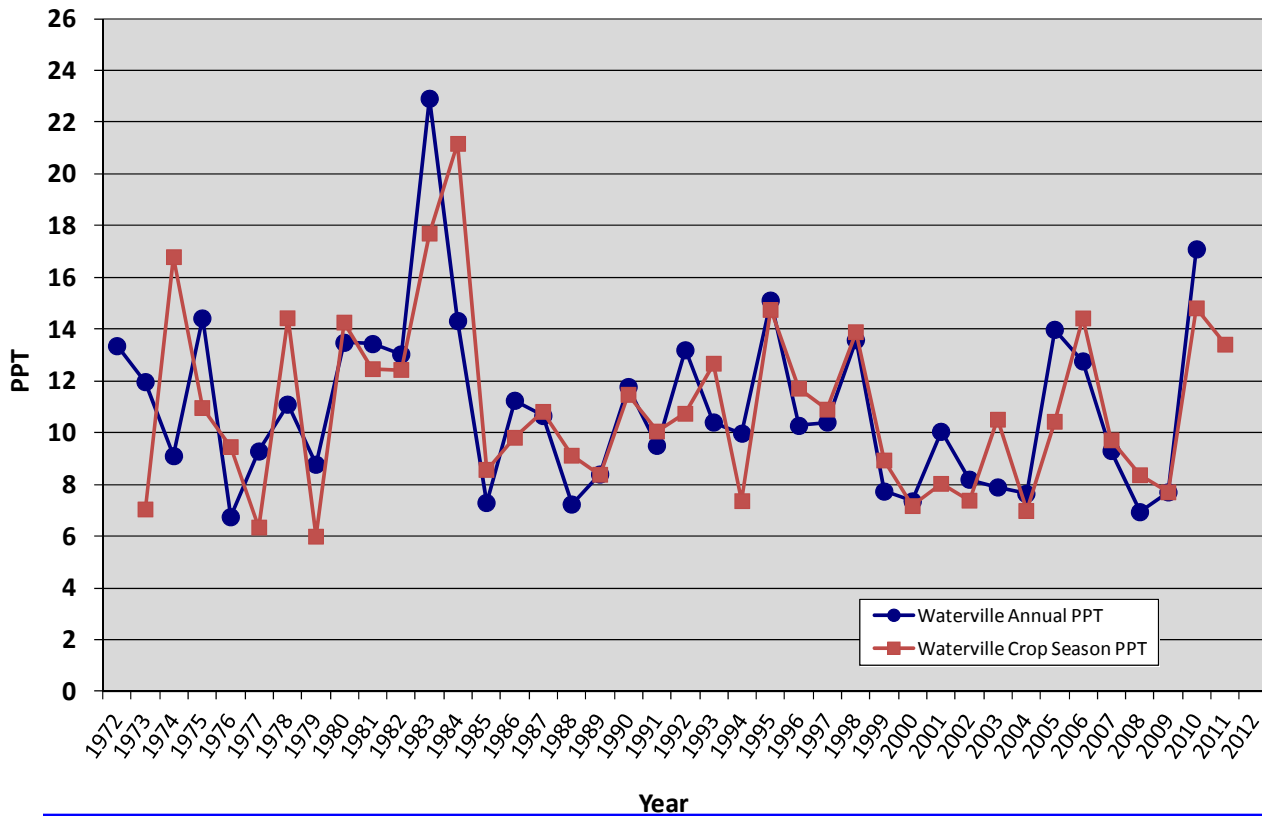
I would again like to thank the many people that have contributed to our testing program. The first and most important are the farmer/cooperators that allow me to plant test plots in their fields: Bob and Bobby Bandy, Mark Sheffels, Randy and David Brandt, Mark Thomsen and Lynn and Gary Polson. Also, thanks to Ag Link Co. who donated the dry fertilizer used on these trials and the many companies that contributed seed to plant the trials. I look forward to next years testing program, and hope that you will find this data useful to you on your farm.

***Howard Nelson***

## Wilbur Precipitation, 1972-2010



## Waterville Precipitation, 1972-2010



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## *Winter Wheat Variety Yield Trials*



The winter wheat yields this year at both sites were very high. The winter wheat varieties averaged 94.8 bu/acre at Waterville and 110.4 bu/acre at Wilbur.

Stripe rust was a major problem in winter wheat production this year. This created a dilemma for our testing program because we normally do not treat our plots for disease so we can determine which varieties are resistant to

that disease. Many of the varieties in the trial have adult high temperature plant resistance to stripe rust but are susceptible when temperatures are low and when plants are in the early stages of growth. Because inoculum levels of stripe rust were present at high levels early in the growing season, a fungicide was included with the broadleaf herbicide application. The Waterville site was also sprayed a second time when the wheat head started to emerge from the flag leaf with an application of Tilt<sup>®</sup>, but the Wilbur trial did not receive a second fungicide application. The benefit of a fungicide application for stripe rust to susceptible varieties is illustrated by comparing the yield of Xerpha in the Wilbur trial that wasn't sprayed to the Waterville site that was sprayed. This year under stripe rust pressure, Xerpha ranked 16th for yield, which was below the average yield for the trial. In 2010, Xerpha was the top yielding variety at Wilbur. At Waterville, Xerpha's yield was only slightly below that of Eltan which was the highest yielding variety.

The Waterville site also had moderately high snow mold pressure and Eltan continues to be the best variety for tolerance of snow mold. A new variety, WA-8155 (KCF 9004), which also happens to be a two-gene Clearfield<sup>™</sup> type, had snow mold tolerance equal to Eltan and its yield was only slightly below that of Eltan. This variety and three more two-gene Clearfield<sup>™</sup> soft white winter wheat varieties are in the 2012 winter wheat variety trial. The snow mold ratings by variety and their corresponding yields are discussed on page 15.

## Waterville Winter Wheat Comparative Yield

Variety	Class	3-Year Ave	2-Year Ave	2011			2010 Yield	2009 Yield
				Yield	TW	Pro		
George	SWH	78.7 (1)	86.1 (1)	105.3 (4)	58.8	7.6	66.9 (1)	64.0 (9)
Xerpha	SWH	78.1 (2)	86.1 (2)	105.6 (3)	60.4	7.8	66.6 (2)	62.0 (12)
Bruehl	Club	74.7 (3)	81.1 (3)	106.3 (2)	60.6	8.3	55.9 (9)	61.8 (14)
Imi Bruehl*	Club	72.9 (4)	80.6 (4)	99.9 (6)	59.7	8.4	61.3 (5)	57.4 (18)
Eltan	SWH	72.8 (5)	79.4 (5)	107.7 (1)	61.4	7.3	51.1 (13)	59.7 (16)
ORCF 102*	SWH	70.5 (6)	72.1 (6)	86.5 (17)	59.9	7.8	57.6 (8)	67.3 (2)
BZ 1020*	SWH	70.1 (7)	73.9 (7)	94.7 (9)	61.3	8.2	53.0 (11)	62.7 (10)
Chucker	Club	68.9 (8)	72.2 (8)	92.8 (12)	58.1	7.3	51.5 (12)	62.4 (11)
Eddy	HRW	68.0 (9)	72.4 (9)	82.5 (18)	62.8	9.2	62.2 (3)	59.2 (17)
Legion	SWH	66.6 (10)	66.1 (10)	89.5 (14)	62.3	8.3	42.7 (17)	67.6 (1)
Whetstone	HRW	63.2 (11)	62.6 (11)	78.9 (21)	64.6	8.5	46.2 (14)	64.6 (5)
Farnum	HRW	63.0 (12)	67.1 (12)	89.0 (15)	62.5	7.6	45.2 (15)	54.7 (22)
Tubbs	SWH	62.2 (13)	64.7 (13)	87.8 (16)	59.7	7.6	41.5 (18)	57.4 (20)
Salute	SWH		77.2 (14)	96.4 (8)	60.3	8.4	58.0 (7)	
ORCF 103*	SWH		76.3 (15)	94.2 (11)	61.9	7.9	58.4 (6)	
503 CL2**	HRW		68.1 (16)	91.1 (13)	63.6	9.1	45.0 (16)	
AP Legacy	SWH			103.3 (5)	57.8	8.0		
WA 8155**	SWH			99.7 (7)	60.0	7.1		
Cara	Club			94.5 (10)	59.4	7.1		

\* Denotes Clearfield Wheat Variety

\*\* Denotes 2 Gene Clearfield Wheat Variety

2011 WATERVILLE WINTER WHEAT VARIETY TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
 Seeding Date: August 23, 2010  
 Seeding Rate: 60 lbs/acre  
 Fertility: Pre-Plant, 50-0-0-8, July 2010  
           Top-Dress, 37-0-0-7, March 31, 2011  
 Herbicide: Buctril 1 pt, Ally Extra 0.4 oz, Tilt 4 oz/acre, April 27, 2011  
 Harvest: August 24, 2011

ANOVA

2011-09-06 10:43:58

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WWheat.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) WA Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 54

Source	df	Type III SS	MS	F	P
Blocks	2	2678.147778	1339.0739	36.737709	.0000 ***
Main Effects					
Variety	17	3677.14	216.30235	5.9342901	.0000 ***
Error	34	1239.285556	36.449575<-		
Total	53	7594.573333			
Model	19	6355.287778	334.48883	9.1767553	.0000 ***

R^2 = SSmodel/SStotal = 0.83681959458

Root MSerror = sqrt(MSerror) = 6.03734835531

Mean Y = 94.7777777778

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 6.3700041%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 36.4495751634

Degrees of Freedom: 34

Keep If:

n Means = 18

LSD 0.1 = 8.33536764225

MSD 0.1 = 17.0797570208

Rank	Mean	Name	Mean	n	Non-significant ranges
1	107.7	Eltan	107.7	3	a
2	106.3	Bruehl	106.3	3	ab
3	105.6	Xerpha	105.6	3	abc
4	105.3	George	105.3	3	abc
5	103.3	AP Legacy	103.3	3	abcd
6	99.9	Imi Bruehl	99.9	3	abcd
7	96.4	Salute	96.4	3	abcde
8	94.7	BZ1020	94.7	3	abcdef
9	94.5	Cara	94.5	3	abcdef
10	94.2	ORCF 103	94.2	3	abcdef
11	92.8	Chucker	92.8	3	abcdef
12	91.1	AP 503CL2	91.1	3	abcdef
13	89.5	Legion	89.5	3	bcdef
14	89.0	Farnum	89.0	3	cdef
15	87.8	Tubbs	87.8	3	def
16	86.5	ORCF 102	86.5	3	def
17	82.5	Eddy	82.5	3	ef
18	78.9	Whetstone	78.9	3	f

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 36.4495751634

Degrees of Freedom: 34

Keep If:

n Means = 3

LSD 0.1 = 3.40289959034

MSD 0.1 = 4.27331901239

Rank	Mean	Name	Mean	n	Non-significant ranges
1	102.5	1	102.5	18	a
2	96.4	2	96.4	18	b
3	85.5	3	85.5	18	c

## Wilbur Winter Wheat Comparative Yield

Variety	Class	3-Year Ave		2-Year Ave		2011			2010		2009		
		Ave	(#)	Ave	(#)	Yield	TW	Pro	Yield	(#)	Yield	(#)	
Chucker	Club	86.9	(1)	106.9	(2)	121.6	(6)	58.2	10.6	92.2	(2)	46.8	(6)
Legion	SWH	85.5	(2)	109.3	(1)	129.3	(2)	57.1	11.4	89.2	(6)	38.1	(15)
Bruehl	Club	84.0	(3)	104.8	(3)	119.9	(8)	58.0	10.9	89.6	(4)	42.4	(12)
George	SWH	81.9	(4)	102.4	(6)	114.2	(9)	54.8	11.2	90.5	(3)	41.1	(13)
BZ 1020*	SWH	81.0	(5)	104.1	(4)	120.7	(7)	61.1	10.1	87.5	(7)	34.8	(20)
Imi Bruehl*	Club	80.9	(6)	103.1	(5)	122.7	(5)	56.8	10.7	83.4	(10)	36.6	(19)
Xerpha	SWH	80.7	(7)	97.3	(8)	99.4	(16)	62.2	11.7	95.2	(1)	47.5	(4)
ORCF 103*	SWH	79.8	(8)	95.2	(10)	107.1	(12)	61.3	9.8	83.3	(12)	48.9	(2)
ORCF 102*	SWH	78.2	(9)	101.2	(7)	112.8	(10)	60.2	11.6	89.6	(5)	32.1	(23)
Eltan	SWH	77.0	(10)	96.6	(9)	108.1	(11)	61.0	11.0	85.1	(8)	37.9	(16)
Tubbs	SWH	72.7	(11)	90.7	(11)	104.0	(14)	58.6	10.2	77.3	(13)	36.7	(18)
Whetstone	HRW	70.9	(12)	84.1	(14)	103.6	(15)	61.2	12.4	64.6	(18)	44.4	(9)
Farnum	HRW	70.1	(13)	89.1	(13)	94.7	(17)	61.3	13.2	83.4	(11)	32.3	(22)
Eddy	HRW	65.7	(14)	77.0	(15)	87.2	(18)	63.5	10.5	66.7	(17)	43.2	(11)
503 CL2**	HRW			89.7	(12)	104.4	(13)	64.1	10.3	74.9	(15)		
WA 8155**	SWH					137.1	(1)	59.3	11.0				
O3PN107#3	SWH					125.6	(3)	56.4	9.8				
Cara	Club					124.8	(4)	60.2	10.4				
AP Legacy	SWH					86.1	(19)	58.3	7.9				

\* Denotes Clearfield Wheat Variety

\*\* Denotes 2 Gene Clearfield Wheat Variety

2011 WILBUR WINTER WHEAT VARIETY TRIAL

Previous Crop: 2010 Chemical Fallow, 2009 Winter Peas  
 Seeding Date: September 2, 2010  
 Seeding Rate: 60 lbs/acre  
 Fertility: Pre-Plant, 75-0-0-15, September 2, 2010  
           Top-Dress, 36-0-0-7, March 23, 2011  
 Herbicide: Buctril 1 pt, Ally Extra 0.4 oz, Tilt 4 oz/acre, April 27, 2011  
 Harvest: August 16, 2011

ANOVA

2011-09-06 10:48:24

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WWheat.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) WB Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 54

Source	df	Type III SS	MS	F	P
Blocks	2	9.884814815	4.9424074	0.1205815	.8868 ns
Main Effects					
Variety	17	8785.974815	516.82205	12.609077	.0000 ***
Error	34	1393.595185	40.988094<-		
Total	53	10189.45481			
Model	19	8795.85963	462.93998	11.294499	.0000 ***

R^2 = SSmodel/SStotal = 0.86323162421

Root MSerror = sqrt(MSerror) = 6.40219444268

Mean Y = 110.348148148

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 5.8018141%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 40.9880936819

Degrees of Freedom: 34

Keep If:

n Means = 18

LSD 0.1 = 8.83908650889

MSD 0.1 = 18.1119125559

Rank	Mean	Name	n	Non-significant ranges
1	129.3	Legion	3	a
2	125.6	03PN107#3	3	ab
3	124.8	Cara	3	abc
4	122.7	Imi Bruehl	3	abc
5	121.6	Chucker	3	abcd
6	120.7	BZ1020	3	abcd
7	119.9	Bruehl	3	abcd
8	114.2	George	3	abcde
9	112.8	ORCF 102	3	abcde
10	108.1	Eltan	3	bcdef
11	107.1	ORCF 103	3	cdef
12	104.4	AP 503CL2	3	defg
13	104.0	Tubbs	3	defgh
14	103.6	Whetstone	3	defgh
15	99.4	Xerpha	3	efgh
16	94.7	Farnum	3	fgh
17	87.2	Eddy	3	gh
18	86.1	AP Legacy	3	h

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 40.9880936819

Degrees of Freedom: 34

Keep If:

n Means = 3

LSD 0.1 = 3.60854195652

MSD 0.1 = 4.53156214

Rank	Mean	Name	n	Non-significant ranges
1	110.9	1	18	a
2	110.1	2	18	a
3	110.0	3	18	a

## Winter Triticale Variety Yield Trials

### Waterville Winter Triticale Comparative Yield

Variety	3-Year Ave		2-Year Ave		2011			2010	2009			
	Yield		Yield		Yield	TW	Pro	Yield	Yield			
TriMark 099	5,304	(1)	5,161	(1)	6,187	(2)	51.0	6.2	4,135	(1)	5,590	(1)
O5TF-119			5,043	(2)	5,925	(3)	53.6	8.1	4,160	(3)		
O5TF-125			4,803	(3)	5,351	(4)	53.6	7.3	4,255	(2)		
TriMark 336	4,365	(2)	4,248	(4)	4,870	(5)	57.4	8.0	3,625	(5)	4,600	(3)
BOH504					6,913	(1)	55.9	7.6				
O8GX28					4,574	(6)	53.5	7.6				
L154E					4,413	(7)	52.0	7.4				
XB0062					4,040	(8)	56.1	7.6				

The winter triticale trials had some interesting results this year. The trial included our 2 standard varieties, TriMark 336 and TriMark 099, and the top 2 yielding varieties from our 2010 trial. We also added 4 new lines from the 2010 ProGene trial at St. John that had high yields and resistance to strip rust. One of those varieties, BOH504, recovered from snow mold at our Waterville trial site and yielded 6,913 lbs/acre. That same variety was the top yielding variety at Wilbur without any snow mold pressure yielding 8,615 lbs/acre, 1,266 lbs/acre more than our current variety TriMark 099. The statistical analysis indicated that this variety's yield was significantly better than TriMark 099. Because of this variety's strong performance this year, we have started a seed increase program and will take another look at its performance in 2012.

In addition to yield, we started looking at the protein levels of the triticale varieties to see if there was a varietal difference. Those protein levels are shown in the tables above and below. Our comparisons this year show that our current variety, TriMark 099, was the lowest of the triticale varieties. These protein tests will be repeated again in 2012 to see if this trend continues. In addition, next year we will initiate a triticale fertility trial to determine how to fertilize triticale properly and maximize yield and grain protein.

### Wilbur Winter Triticale Comparative Yield

Variety	3-Year Ave		2-Year Ave		2011			2010	2009			
	Yield		Yield		Yield	TW	Pro	Yield	Yield			
TriMark 099	6,029	(1)	6,608	(1)	7,349	(4)	57.4	10.0	5,866	(2)	4,871	(1)
O5TF-125			6,470	(4)	6,648	(8)	51.1	11.1	6,292	(1)		
O5TF-119			6,193	(3)	6,725	(7)	54.7	10.3	5,661	(3)		
TriMark 336	5,190	(2)	5,818	(2)	7,069	(6)	57.0	11.0	4,566	(6)	3,934	(3)
BOH504					8,615	(1)	50.7	10.5				
L154E					8,437	(2)	55.9	10.7				
XB0062					8,011	(3)	53.2	10.4				
O8GX28					7,294	(5)	55.3	10.8				

2011 WATERVILLE WINTER TRITICALE VARIETY TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
 Seeding Date: August 23, 2010  
 Seeding Rate: 70 lbs/acre  
 Fertility: Pre-Plant, 50-0-0-8, July 2010  
           Top-Dress, 34-0-0-6, March 31, 2011  
 Herbicide: Buctril 1 pt, Ally Extra 0.4 oz, Tilt 4 oz/acre, April 27, 2011  
 Harvest: August 24, 2011

ANOVA

2011-09-06 10:34:01

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WTrit.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) WA Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 24

Source	df	Type III SS	MS	F	P
Blocks	2	10698311.58	5349155.8	14.278875	.0004 ***
Main Effects					
Variety	7	20596398.5	2942342.6	7.8542004	.0006 ***
Error	14	5244683.75	374620.27<-		
Total	23	36539393.83			
Model	9	31294710.08	3477190	9.2819057	.0002 ***

R^2 = SSmodel/SStotal = 0.8564649492

Root MSerror = sqrt(MSerror) = 612.062307169

Mean Y = 5283.91666667

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 11.583497%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 374620.267857

Degrees of Freedom: 14

Keep If:

n Means = 8

LSD 0.1 = 880.209070905

MSD 0.1 = 1563.32807045

Rank	Mean Name	Mean	n	Non-significant ranges
1	BOH504	6913	3	a
2	TriMark 099	6187	3	ab
3	05TF-119	5925	3	abc
4	05TF-125	5351	3	abcd
5	TriMark 336	4870	3	bcd
6	08GX28	4574	3	cd
7	L154E	4413	3	cd
8	XB0062	4040	3	d

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 374620.267857

Degrees of Freedom: 14

Keep If:

n Means = 3

LSD 0.1 = 539.015772671

MSD 0.1 = 683.380791087

Rank	Mean Name	Mean	n	Non-significant ranges
1	1	6066	8	a
2	2	5351	8	b
3	3	4435	8	c

2011 WILBUR WINTER TRITICALE VARIETY TRIAL

Previous Crop: 2010 Chemical Fallow, 2009 Winter Peas  
 Seeding Date: September 2, 2010  
 Seeding Rate: 70 lbs/acre  
 Fertility: Pre-Plant, 75-0-0-15, September 2, 2010  
           Top-Dress, 36-0-0-7, March 23, 2011  
 Herbicide: Buctril 1 pt, Ally Extra 0.4 oz, Tilt 4 oz/acre, April 27, 2011  
 Harvest: August 16, 2011

ANOVA

2011-09-06 10:38:42

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WTrit.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) WB Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 24

Source	df	Type III SS	MS	F	P
Blocks	2	297887.25	148943.62	0.8776767	.4374 ns
Main Effects					
Variety	7	11868670.67	1695524.4	9.991178	.0002 ***
Error	14	2375830.083	169702.15<-		
Total	23	14542388			
Model	9	12166557.92	1351839.8	7.9659555	.0004 ***

R^2 = SSmodel/SStotal = 0.83662723871

Root MSerror = sqrt(MSerror) = 411.949206589

Mean Y = 7518.5

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 5.4791409%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 169702.14881

Degrees of Freedom: 14

Keep If:

n Means = 8

LSD 0.1 = 592.425679779

MSD 0.1 = 1052.19967104

Rank	Mean Name	Mean	n	Non-significant ranges
1	BOH504	8615	3	a
2	L154E	8437	3	a
3	XB0062	8011	3	ab
4	TriMark 099	7349	3	bc
5	08GX28	7294	3	bc
6	TriMark 336	7069	3	bc
7	05TF-119	6725	3	c
8	05TF-125	6648	3	c

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 169702.14881

Degrees of Freedom: 14

Keep If:

n Means = 3

LSD 0.1 = 362.785156495

MSD 0.1 = 459.950190347

Rank	Mean Name	Mean	n	Non-significant ranges
1	2	7675	8	a
2	3	7455	8	a
3	1	7425	8	a

## ***Snow Mold Ratings of Winter Wheat and Triticale at Waterville***

The winter wheat and winter triticale trial at Waterville experienced moderately high snow mold disease pressure this year. The snow mold pressure was the highest since 2006 but was not as severe as that year. The snow mold ratings are shown in the table at the right. The first rating was done on March 31st which was when the snow first melted off of the trial. A top dress application of dry fertilizer was applied on March 31st which equaled 37-0-0-7. Adequate rainfall was received following the application of fertilizer to move the fertilizer into the root zone. The plots were then rated again 2 weeks later. There was quite a difference among the varieties in their recovery during that time. Eltan, our best variety for snow mold tolerance started in good condition and improved slightly in the second rating. It also finished with the highest yield of all of the varieties in the trial. The variety Bruehl didn't start as well as Eltan, but did recover nicely and finished with a yield almost equal to Eltan. Other varieties such as George and Xerpha were damaged by the snow mold pressure and also recovered nicely to yield just slightly below Eltan. A pleasant surprise was a 2-gene Clearfield wheat from WSU, WA-8155, had excellent tolerance to snow mold. (see picture on page 16) The correlation between the snow mold rating and the winter wheat yield was very high at 83.9%.

Winter triticale varieties also showed some interesting responses to pressure from snow mold. The initial ratings showed that they didn't fare as well as winter wheat, but by the second rating one variety stood out from the rest. BOH504 recovered nicely and finished with a yield of almost 3.5 tons/acre. The correlation between snow mold tolerance and yield was not as strong as winter wheat but was positive at 68.9%.

<b>Winter Wheat</b>			
<b>Snowmold Rating and Yield</b>			
Variety	31-Mar	Apr-11	Yield
WA-8155**	7.0	8.0	99.7
Eltan	7.0	7.7	107.7
George	4.7	7.0	105.3
KCF 9001**	6.0	7.0	94.1
Imi Bruehl*	6.0	6.7	99.9
BZ 1020*	5.0	6.7	94.7
Chucker	3.3	6.3	92.8
Bruehl	5.0	6.3	106.3
AP 503 CL2**	4.0	6.3	91.1
Farnum	2.7	6.0	89.0
Xerpha	3.7	6.0	105.6
Legion	6.0	6.0	89.5
Salute	3.3	5.7	96.4
ORCF 103*	5.0	5.7	94.2
Cara	4.0	5.3	94.5
Whetstone	3.0	5.0	78.9
Tubbs	3.3	5.0	87.8
ORCF 102*	3.7	5.0	86.5
AP 503 CL2**	4.0	5.0	89.7
AP Legacy	3.0	4.7	103.3
Eddy	4.0	4.3	82.5
KCF 9002**	3.0	4.0	82.2
VCF 0925**	1.0	1.0	37.6
<b>Correlation</b>	<b>63.1%</b>	<b>83.9%</b>	
* Clearfield Winter Wheat Variety			
** 2-Gene Clearfield Winter Wheat Variety			
<b>Winter Triticale</b>			
<b>Snowmold Rating and Yield</b>			
Variety	31-Mar	Apr-11	Yield
TriMark 336	6.7	7.3	4,870
TriMark 099	6.0	7.0	6,187
BOH504	4.7	6.7	6,913
O5TF-125	4.0	5.0	5,351
O5tf-119	4.7	4.7	5,925
L154E	3.3	3.7	4,413
O8GX28	4.3	3.7	4,574
XB0062	2.7	3.0	4,040
<b>Correlation</b>	<b>47.0%</b>	<b>68.9%</b>	

---

## ***2-Gene Clearfield™ Winter Wheat Variety Tolerance to Beyond® Herbicide***



One of our new priority areas for variety testing is screening for 2-gene Clearfield™ wheat varieties. We were able to obtain four different lines for testing from WSU. Two of these lines were developed from Eltan and two from Madsen by Dr Kulvinder Gill. This trial was planted in strips adjacent to the variety trial at Waterville and Wilbur. The strips were then divided into plots and the varieties were tested for tolerance to Beyond® herbicide by spraying them with high rates of Beyond and two different types of surfactant. In addition, the “normal” rate of Beyond® was applied with crop oil concentrate as the surfactant.



The pictures to the left show two of the varieties at Waterville. VCF 0924 is on the left and KCF 9004 is on the right. The top picture shows the trial on March 31st and the bottom picture

shows the trial on April 11th. These pictures show the good tolerance this variety has to snow mold.

In addition, the variety KCF 9004 was the top yielding 2-gene variety in both of our trials. This variety has now been designated as WA-8155 and entered into the WSU regional nursery trials. The data for this variety at Waterville and Wilbur is given on the following pages.

2011 WATERVILLE CLEARFIELD WINTER WHEAT TOLERANCE TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
 Seeding Date: August 23, 2010  
 Seeding Rate: 60 lbs/acre  
 Fertility: Pre-Plant, 50-0-0-8, July 2010  
           Top-Dress, 37-0-0-7, March 31, 2011  
 Herbicide: Bucril 1 pt, Ally Extra 0.4 oz, Tilt 4 oz/acre, April 27, 2011  
           Beyond 12 oz/acre, October 6, 2010  
           Beyond 5 oz/acre, May 4, 2011  
 Harvest: August 24, 2011

ANOVA

2011-09-06 10:55:21

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\ImiWheat.dt

.AOV Filename: 2WCR.AOV - 2 Way Completely Randomized

Y Column: 4) WA Yield

1st Factor: 1) Variety

2nd Factor: 2) Treatment

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 60

Source	df	Type III SS	MS	F	P
-----					
Main Effects					
Variety	4	28494.02667	7123.5067	92.472042	.0000 ***
Treatment	3	126.9233333	42.307778	0.549208	.6516 ns
Interaction					
Variety * Treatment	12	268.1666667	22.347222	0.2900949	.9877 ns
Error	40	3081.3666667	77.034167<-		
-----					
Total	59	31970.48333			
Model	19	28889.11667	1520.4798	19.737733	.0000 ***

R^2 = SSmodel/SStotal = 0.90361838967

Root MSerror = sqrt(MSerror) = 8.77691099799

Mean Y = 80.4833333333

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 10.905253%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 77.0341666667

Degrees of Freedom: 40

Keep If:

n Means = 5

LSD 0.1 = 6.03350576236

MSD 0.1 = 9.13390184904

Rank	Mean	Name	Mean	n	Non-significant ranges
1	KCF	9004	101.3	12	a
2	KCF	9001	94.1	12	ab
3	503	CL2	88.6	12	b
4	KCF	9002	79.0	12	c
5	VCF	0925	39.4	12	d

Compare Means

Factor: 2) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 77.0341666667

Degrees of Freedom: 40

Keep If:

n Means = 4

LSD 0.1 = 5.39653161091

MSD 0.1 = 7.58946587288

Rank	Mean	Name	Mean	n	Non-significant ranges
1	NIS		82.4	15	a
2	Control		80.7	15	a
3	5 0z + COC		80.6	15	a
4	MSO		78.3	15	a

2011 WILBUR CLEARFIELD WINTER WHEAT TOLERANCE TRIAL

Previous Crop: 2010 Chemical Fallow, 2009 Winter Peas  
 Seeding Date: September 2, 2010  
 Seeding Rate: 60 lbs/acre  
 Fertility: Pre-Plant, 75-0-0-15, September 2, 2010  
           Top-Dress, 36-0-0-7, March 23, 2011  
 Herbicide: Buctril 1 pt, Ally Extra 0.4 oz, Tilt 4 oz/acre, April 27, 2011  
           Beyond 12 oz/acre, October 6, 2010  
           Beyond 5 oz/acre, May 4, 2011  
 Harvest: August 16, 2011

ANOVA

2011-09-06 11:04:30

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\ImiWheat.dt

.AOV Filename: 2WCR.AOV - 2 Way Completely Randomized

Y Column: 5) WB Yield

1st Factor: 1) Variety

2nd Factor: 2) Treatment

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 60

Source	df	Type III SS	MS	F	P
-----					
Main Effects					
Variety	4	5988.659333	1497.1648	27.216973	.0000 ***
Treatment	3	213.3605	71.120167	1.2928941	.2901 ns
Interaction					
Variety * Treatment	12	753.4486667	62.787389	1.1414125	.3563 ns
Error	40	2200.34	55.0085<-		
-----					
Total	59	9155.8085			
Model	19	6955.4685	366.07729	6.6549222	.0000 ***

R^2 = SSmodel/SStotal = 0.75967824141

Root MSError = sqrt(MSError) = 7.41677153484

Mean Y = 108.555

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 6.8322708%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 55.0085

Degrees of Freedom: 40

Keep If:

n Means = 5

LSD 0.1 = 5.09850604658

MSD 0.1 = 7.71844026349

Rank	Mean	Name	Mean	n	Non-significant ranges
1	KCF	9004	127.0	12	a
2	VCF	0925	111.2	12	b
3	KCF	9002	103.4	12	c
4	503	CL2	100.9	12	c
5	KCF	9001	100.3	12	c

Compare Means

Factor: 2) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 55.0085

Degrees of Freedom: 40

Keep If:

n Means = 4

LSD 0.1 = 4.56024244154

MSD 0.1 = 6.41334228677

Rank	Mean	Name	Mean	n	Non-significant ranges
1	Control		111.0	15	a
2	NIS		109.3	15	a
3	5 Oz + COC		108.0	15	a
4	MSO		105.9	15	a

---

## Winter Pea Yield Trials



The 2011 weather conditions favored the yields of winter peas as well as winter wheat. Production fields of Windham in the Douglas area yielded 2,990 lbs/acre, the Govan area yielded 3,620 lbs/ac and in the Creston area 3,450 lbs/acre. Windham continues to be the top performing yellow pea variety, but we continue to look for a variety with food

quality traits that would make winter pea types equal to the spring peas types.

The three locations of winter pea trials experienced different exposures to the cold temperatures we had last fall and winter. At Waterville, snow covered the trial in late November which protected it from the  $-5^{\circ}\text{F}$  low on December 5th. The Wilbur and Wilke trials did not have the snow cover and the Wilke trial had a low temperature of  $-18^{\circ}\text{F}$  on November 24th. These cold temperatures reduced the plant stands or killed the plants of the less cold hardy varieties. You can see the effect of cold temperatures by looking at the yield of Whistler at the three locations. At Waterville with protection from cold temperatures, Whistler yielded 2,717 lbs/acre but at Davenport it only yielded 273 lbs/acre. One variety, PS805300180, continues to move to the top for yield and winter survival. This variety is a green pea and had extremely high yields at Wilbur, 4,914 lbs/acre. While it has yielded very well, it has a weak vine and only has a harvest index of 55% which means that it is relatively flat at harvest time. It also has a seed size similar to Windham which is small when compared spring green spring pea varieties. We are growing a small acreage of this variety to evaluate it for splitting qualities and its use in the cover crop/plot mix markets. A new variety PRO 112-7127, was identified in the Wilbur trial by ProGene LLC as a green pea type with good winter hardiness, good standing ability and good food quality traits. The variety was included in the CWGG variety testing program and we will report its performance in next years trial report.

## Wilbur Winter Pea Agronomic Notes

Variety	Class	Co	Vine Type <sup>1</sup>	Winter Survival	Start Bloom	Finish Bloom	Days in Bloom	Relative Maturity <sup>2</sup>	Max Plant Height (in)	Mat Plant Height (in)	Harvest Index	Yield	Weight Per 100 Seeds (g)
Whistler	Yellow	ProGene	AF-Short	2.7	x	x	x	x	x	x	x	x	x
PRO 072-6035	Green	ProGene	AF-Short	4.7	13-Jun	5-Jul	22	3	22.0	15.0	0.68	2,746	15.0
PRO 072-6034	Green	ProGene	AF-Short	4.7	13-Jun	5-Jul	22	4	18.0	17.0	0.94	2,530	15.0
PS03101269	Green	WSU	AF-Tall	6.3	3-Jun	8-Jul	35	5	50.0	18.0	0.36	3,518	12.7
Specter	Yellow	WSU	AF-Tall	7.7	1-Jun	8-Jul	37	3	52.0	15.0	0.29	2,995	10.0
Windham	Yellow	WSU	AF-Short	6.3	1-Jun	5-Jul	34	3	28.0	24.0	0.86	3,997	11.7
PS03101146	Green	WSU	AF-Short	6.7	1-Jun	5-Jul	34	4	28.0	18.0	0.64	3,035	11.7
PS805300180	Green	WSU	AF-Short	7.0	1-Jun	8-Jul	37	5	33.0	18.0	0.55	4,914	11.0
Dove	Green	???	AF-Short	1.0	x	x	x	x	x	x	x	x	x
Isard	Yellow	???	AF-Short	1.0	x	x	x	x	x	x	x	x	x
PS07300050	Green	WSU	AF-Short	3.3	8-Jun	8-Jul	30	4	20.0	19.0	1.0	1,743	

1 - AF = Afilia Type (Leafless) Vine

2 - 1 = Earlier Maturity, 5 = Later Maturity

3 - Plant Height Index = Mature Plant Height / Maximum Plant Height

## Waterville Winter Pea Comparative Yield

Variety	Class	3-Year Ave	2-Year Ave	2011 Yield	2010 Yield	2009 Yield
PS805300180	Green	2,512 (1)	2,891 (1)	2,861 (1)	2,921 (1)	1,754 (1)
Specter	Yellow	2,142 (2)	2,373 (4)	1,977 (8)	2,769 (2)	1,681 (2)
Windham	Yellow	2,042 (3)	2,536 (2)	2,810 (2)	2,261 (4)	1,055 (8)
PS03101146	Green	1,855 (4)	2,236 (6)	2,246 (6)	2,225 (5)	1,093 (7)
Whistler	Yellow	1,697 (5)	2,252 (5)	2,717 (4)	1,787 (6)	587 (16)
PRO 072-6034	Green		2,526 (3)	2,718 (3)	2,334 (3)	
PRO 072-6035	Green			2,700 (5)		
PS03101269	Green			2,198 (7)		

**Wilbur Winter Pea Comparative Yield**

Variety	Class	3-Year Ave	2-Year Ave	2011 Yield	2010 Yield	2009 Yield
PS805300180	Green	3,471 (1)	3,951 (1)	4,914 (1)	2,987 (2)	2,512 (5)
Windham	Yellow	3,402 (2)	3,697 (2)	3,997 (2)	3,396 (1)	2,813 (1)
PS03101146	Green	2,740 (3)	2,764 (3)	3,035 (6)	2,493 (4)	2,691 (3)
Specter	Yellow	2,560 (4)	2,622 (4)	2,995 (7)	2,248 (5)	2,436 (6)
Whistler	Yellow	2,006 (5)	1,797 (6)	1,870 (10)	1,724 (7)	2,423 (7)
PRO 072-6034	Green		2,621 (5)	2,530 (9)	2,712 (3)	
PRO 112-7127	Green			3,818 (3)		
PS03101269	Green			3,518 (4)		
6034	Green			3,370 (5)		
PRO 072-6035	Green			2,746 (8)		
PS07300050	Green			1,743 (11)		

**Wilke Winter Pea Comparative Yield**

Variety	Class	3-Year Ave	2-Year Ave	2011 Yield	2010 Yield	2009 Yield
PS805300180	Green	2,224 (1)	1,653 (1)	2,253 (1)	1,053 (3)	3,366 (1)
Windham	Yellow	2,094 (2)	1,519 (2)	1,965 (3)	1,073 (2)	3,245 (2)
Specter	Yellow	1,979 (3)	1,406 (4)	2,214 (2)	598 (6)	3,124 (3)
PS03101146	Green	1,958 (4)	1,464 (3)	1,685 (4)	1,242 (1)	2,947 (4)
Whistler	Yellow	1,312 (5)	550 (6)	273 (8)	827 (5)	2,835 (5)
PRO 072-6034	Green		783 (5)	518 (7)	1,048 (4)	
PS03101269	Green			1,606 (5)		2,148 (6)
PRO 072-6035	Green			742 (6)		

2011 WATERVILLE WINTER PEA VARIETY TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
 Seeding Date: August 23, 2010  
 Seeding Rate: Variable to achieve 6 plants/ft2  
 Herbicide: Assure II 12 oz/acre, April 27, 2011  
           Chiptox 1 pt, Sencor 1/3 lb/acre, April 27, 2011  
 Harvest: August 4, 2011

ANOVA

2011-09-06 11:17:56

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPWAVar.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) WA Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 30

Source	df	Type III SS	MS	F	P
Blocks	2	236108.6	118054.3	0.7639055	.4804 ns
Main Effects					
Variety	9	33040568.13	3671174.2	23.755426	.0000 ***
Error	18	2781728.067	154540.45<-		
Total	29	36058404.8			
Model	11	33276676.73	3025152.4	19.57515	.0000 ***

R^2 = SSmodel/SStotal = 0.92285493265

Root MSerror = sqrt(MSerror) = 393.116329028

Mean Y = 2022.8

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 19.434266%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 154540.448148

Degrees of Freedom: 18

Keep If:

n Means = 10

LSD 0.1 = 556.596508593

MSD 0.1 = 1033.60233693

Rank	Mean	Name	Mean	n	Non-significant ranges
1	2861	PS805300180	2861	3	a
2	2810	Windham	2810	3	a
3	2718	PRO 072-6034	2718	3	a
4	2717	Whistler	2717	3	a
5	2700	PRO 072-6035	2700	3	a
6	2246	PS03101146	2246	3	a
7	2198	PS03101269	2198	3	a
8	1977	Specter	1977	3	a
9	0	Dove	0	3	b
10	0	Isard	0	3	b

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 154540.448148

Degrees of Freedom: 18

Keep If:

n Means = 3

LSD 0.1 = 304.860463185

MSD 0.1 = 385.125696794

Rank	Mean	Name	Mean	n	Non-significant ranges
1	2100	2	2100	10	a
2	2070	3	2070	10	a
3	1898	1	1898	10	a

2011 WILBUR WINTER PEA VARIETY TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
Seeding Date: September 1, 2010  
Seeding Rate: Variable to achieve 6 plants/ft2  
Fertility: Starter, 5-10-0-0, September 1, 2010  
Herbicide: Assure II 12 oz/acre, April 8, 2011  
          Chiptox 1pt, Sencor 1/3 lb/acre, April 27, 2011  
Harvest: August 11, 2011

ANOVA

2011-09-06 11:12:40

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPWBVar.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) WB Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 36

Source	df	Type III SS	MS	F	P
Blocks	2	1097341.556	548670.78	1.0094983	.3807 ns
Main Effects					
Variety	11	71643333.56	6513030.3	11.983312	.0000 ***
Error	22	11957184.44	543508.38<-		
Total	35	84697859.56			
Model	13	72740675.11	5595436.5	10.295033	.0000 ***

R^2 = SSmodel/SStotal = 0.8588254236

Root MSerror = sqrt(MSerror) = 737.230210883

Mean Y = 2559.88888889

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 28.799305%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 543508.383838

Degrees of Freedom: 22

Keep If:

n Means = 12

LSD 0.1 = 1033.62809579

MSD 0.1 = 1983.4826829

Rank	Mean	Name	Mean	n	Non-significant ranges
1	PS805300180	4914	3	a	
2	Windham	3997	3	ab	
3	PS03101269	3518	3	abc	
4	6034	3370	3	abc	
5	PS03101146	3035	3	abc	
6	Specter	2995	3	abc	
7	PRO 072-6035	2746	3	bc	
8	PRO 072-6034	2530	3	bc	
9	Whistler	1870	3	cd	
10	PS07300050	1743	3	cd	
11	Dove	0	3	d	
12	Isard	0	3	d	

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 543508.383838

Degrees of Freedom: 22

Keep If:

n Means = 3

LSD 0.1 = 516.814047893

MSD 0.1 = 651.442112914

Rank	Mean	Name	Mean	n	Non-significant ranges
1	2	2701	12	a	
2	3	2665	12	a	
3	1	2314	12	a	

2011 WILKE WINTER PEA VARIETY TRIAL

Previous Crop: 2010 Chemical Fallow, 2009 Winter Wheat  
 Seeding Date: September 2, 2010  
 Seeding Rate: Variable to achieve 6 plants/ft2  
 Fertility: None  
 Herbicide: Assure II 12 oz/acre, April 8, 2011  
           Chiptox 1 pt, Sencor 1/3 lb/acre, April 28, 2011  
 Harvest: August 14, 2011

ANOVA

2011-09-06 11:20:34

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPWAVar.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) DA Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 30

Source	df	Type III SS	MS	F	P
Blocks	2	660304.4667	330152.23	3.7575682	.0433 *
Main Effects					
Variety	9	22448912.13	2494323.6	28.388695	.0000 ***
Error	18	1581538.867	87863.27<-		
Total	29	24690755.47			
Model	11	23109216.6	2100837.9	23.910308	.0000 ***

R^2 = SSmodel/SStotal = 0.93594611275

Root MSerror = sqrt(MSerror) = 296.417392152

Mean Y = 1125.53333333

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 26.335728%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 87863.2703704

Degrees of Freedom: 18

Keep If:

n Means = 10

LSD 0.1 = 419.684641354

MSD 0.1 = 779.356354884

Rank	Mean Name	Mean	n Non-significant ranges
1	PS805300180	2253	3 a
2	Specter	2214	3 a
3	Windham	1965	3 a
4	PS03101146	1685	3 a
5	PS03101269	1606	3 a
6	PRO 072-6035	742	3 b
7	PRO 072-6034	518	3 b
8	Whistler	273	3 b
9	Dove	0	3 b
10	Isard	0	3 b

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 87863.2703704

Degrees of Freedom: 18

Keep If:

n Means = 3

LSD 0.1 = 229.870745108

MSD 0.1 = 290.39229934

Rank	Mean Name	Mean	n Non-significant ranges
1	1	1291	10 a
2	3	1155	10 ab
3	2	931	10 b

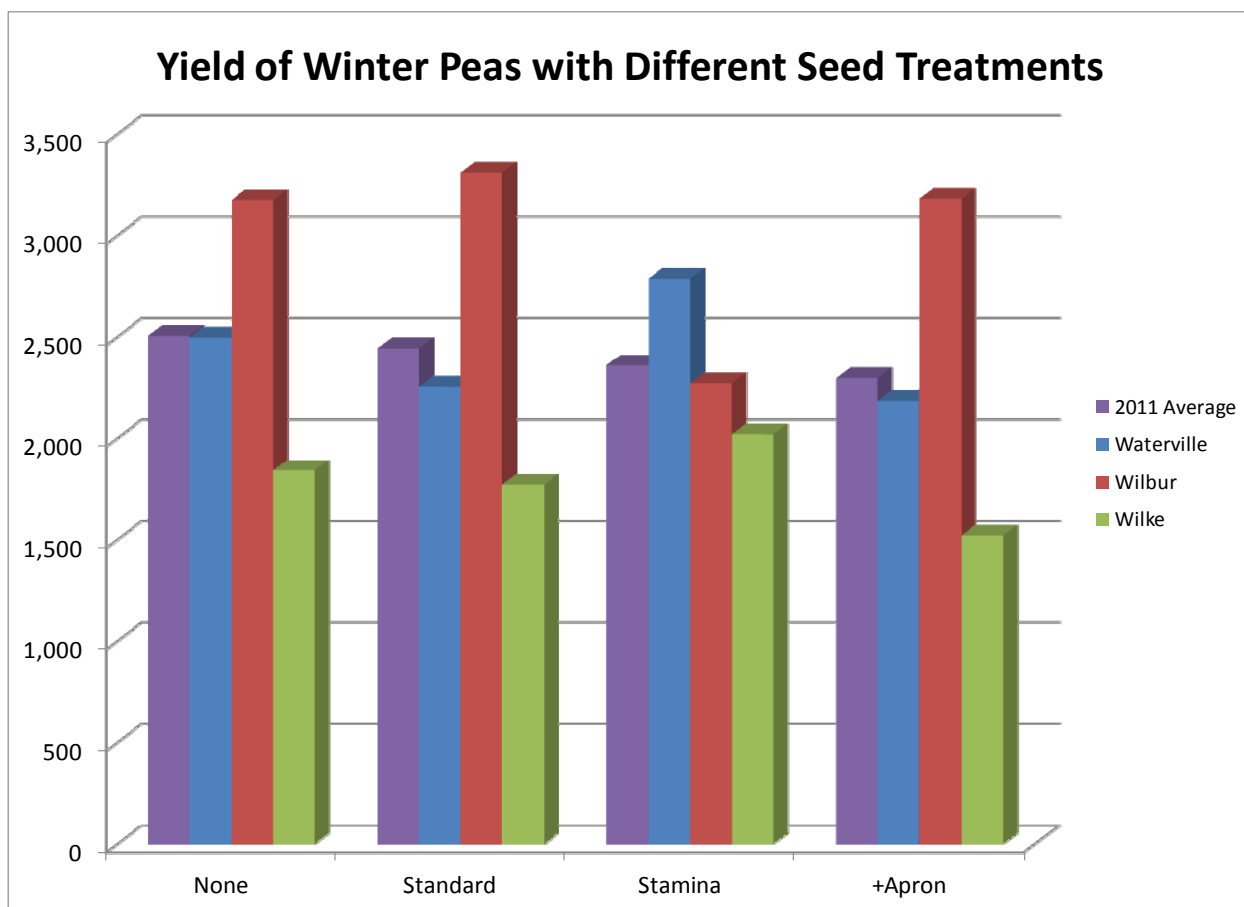
## Winter Pea Seed Treatment Trials

We were approached by BASF to test a new seed treatment for pulse and small grains crops called Stamina<sup>®</sup>. Stamina<sup>®</sup> contains a fungicide called pyraclostrobin with a mode of action different from other seed treatments. It inhibits fungal respiration, depriving the pathogens of energy for growth and development. This was added to the standard seed treatment of Maxim<sup>®</sup>/Apron<sup>®</sup>. In addition, an additional 0.5 oz of Apron<sup>®</sup> was added to the standard treatment to see if this would be a benefit.

There was no significant differences between the different seed treatments. The average

yield of the untreated check was actually the highest of the averages of the 4 treatments with no significant difference in yield.

This trial will not be repeated due to the lack of any differences in yield. We have tested seed treatments in winter peas over the years and have yet to find any significant differences in seed treatments. We will discontinue testing seed treatments on winter peas unless there is a major development in seed treatment chemistries.



2011 WATERVILLE WINTER PEA SEED TREATMENT TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
 Seeding Date: August 23, 2010  
 Seeding Rate: Variable to achieve 6 plants/ft2  
 Herbicide: Assure II 12 oz/acre, April 27, 2011  
             Chiptox 1 pt, Sencor 1/3 lb/acre, April 27, 2011  
 Harvest: August 4, 2011

ANOVA

2011-09-06 11:29:05

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPSdTreat.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) WA Yield

1st Factor: 1) Treatment

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 12

Source	df	Type III SS	MS	F	P
Blocks	2	365098.5	182549.25	0.833004	.4795 ns
Main Effects					
Treatment	3	664094.3333	221364.78	1.0101261	.4510 ns
Error	6	1314874.167	219145.69<-		
Total	11	2344067			
Model	5	1029192.833	205838.57	0.9392773	.5173 ns

R^2 = SSmodel/SStotal = 0.43906289084

Root MSerror = sqrt(MSerror) = 468.129997377

Mean Y = 2430.5

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 19.260646%

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 219145.694444

Degrees of Freedom: 6

Keep If:

n Means = 4

LSD 0.1 = 742.735079664

MSD 0.1 = 1098.66779371

Rank	Mean	Name	n	Non-significant ranges
1	2786	Stamina	3	a
2	2496	None	3	a
3	2254	Standard	3	a
4	2186	+Apron	3	a

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 219145.694444

Degrees of Freedom: 6

Keep If:

n Means = 3

LSD 0.1 = 643.227447271

MSD 0.1 = 833.037330333

Rank	Mean	Name	n	Non-significant ranges
1	2674	1	4	a
2	2346	2	4	a
3	2272	3	4	a

2011 WILBUR WINTER PEA SEED TREATMENT TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
 Seeding Date: September 1, 2010  
 Seeding Rate: Variable to achieve 6 plants/ft2  
 Fertility: Starter, 5-10-0-0, September 1, 2010  
 Herbicide: Assure II 12 oz/acre, April 8, 2011  
           Chiptox 1pt, Sencor 1/3 lb/acre, April 27, 2011  
 Harvest: August 11, 2011

ANOVA

2011-09-06 11:32:12

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPSdTreat.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) WB Yield

1st Factor: 1) Treatment

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 12

Source	df	Type III SS	MS	F	P
Blocks	2	1471990.167	735995.08	3.0979705	.1191 ns
Main Effects					
Treatment	3	2067076.667	689025.56	2.9002651	.1237 ns
Error	6	1425439.833	237573.31<-		
Total	11	4964506.667			
Model	5	3539066.833	707813.37	2.9793472	.1082 ns

R^2 = SSmodel/SStotal = 0.71287382029

Root MSError = sqrt(MSError) = 487.414921351

Mean Y = 2984.33333333

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 16.332456%

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 237573.305556

Degrees of Freedom: 6

Keep If:

n Means = 4

LSD 0.1 = 773.332541105

MSD 0.1 = 1143.92813804

Rank	Mean	Name	n	Non-significant ranges
1	3308	Standard	3	a
2	3182	+Apron	3	a
3	3176	None	3	a
4	2271	Stamina	3	a

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 237573.305556

Degrees of Freedom: 6

Keep If:

n Means = 3

LSD 0.1 = 669.72562617

MSD 0.1 = 867.354852544

Rank	Mean	Name	n	Non-significant ranges
1	3272	2	4	a
2	3190	3	4	a
3	2491	1	4	a

2011 WILKE WINTER PEA SEED TREATMENT TRIAL

Previous Crop: 2010 Chemical Fallow, 2009 Winter Wheat  
 Seeding Date: September 2, 2010  
 Seeding Rate: Variable to achieve 6 plants/ft2  
 Fertility: None  
 Herbicide: Assure II 12 oz/acre, April 8, 2011  
           Chiptox 1 pt, Sencor 1/3 lb/acre, April 28, 2011  
 Harvest: August 14, 2011

ANOVA

2011-09-06 11:34:15

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPSdTreat.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 5) DA Yield

1st Factor: 1) Treatment

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 12

Source	df	Type III SS	MS	F	P
Blocks	2	542980.6667	271490.33	4.6995671	.0592 ns
Main Effects					
Treatment	3	384809.6667	128269.89	2.2203846	.1865 ns
Error	6	346615.3333	57769.222<-		
Total	11	1274405.667			
Model	5	927790.3333	185558.07	3.2120576	.0939 ns

R^2 = SSmodel/SStotal = 0.72801805391

Root MSerror = sqrt(MSerror) = 240.352287741

Mean Y = 1787.83333333

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 13.443775%

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 57769.2222222

Degrees of Freedom: 6

Keep If:

n Means = 4

LSD 0.1 = 381.342952989

MSD 0.1 = 564.089716882

Rank	Mean	Name	n	Non-significant ranges
1	2019	Stamina	3	a
2	1841	None	3	a
3	1771	Standard	3	a
4	1520	+Apron	3	a

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 57769.2222222

Degrees of Freedom: 6

Keep If:

n Means = 3

LSD 0.1 = 330.252684843

MSD 0.1 = 427.706896035

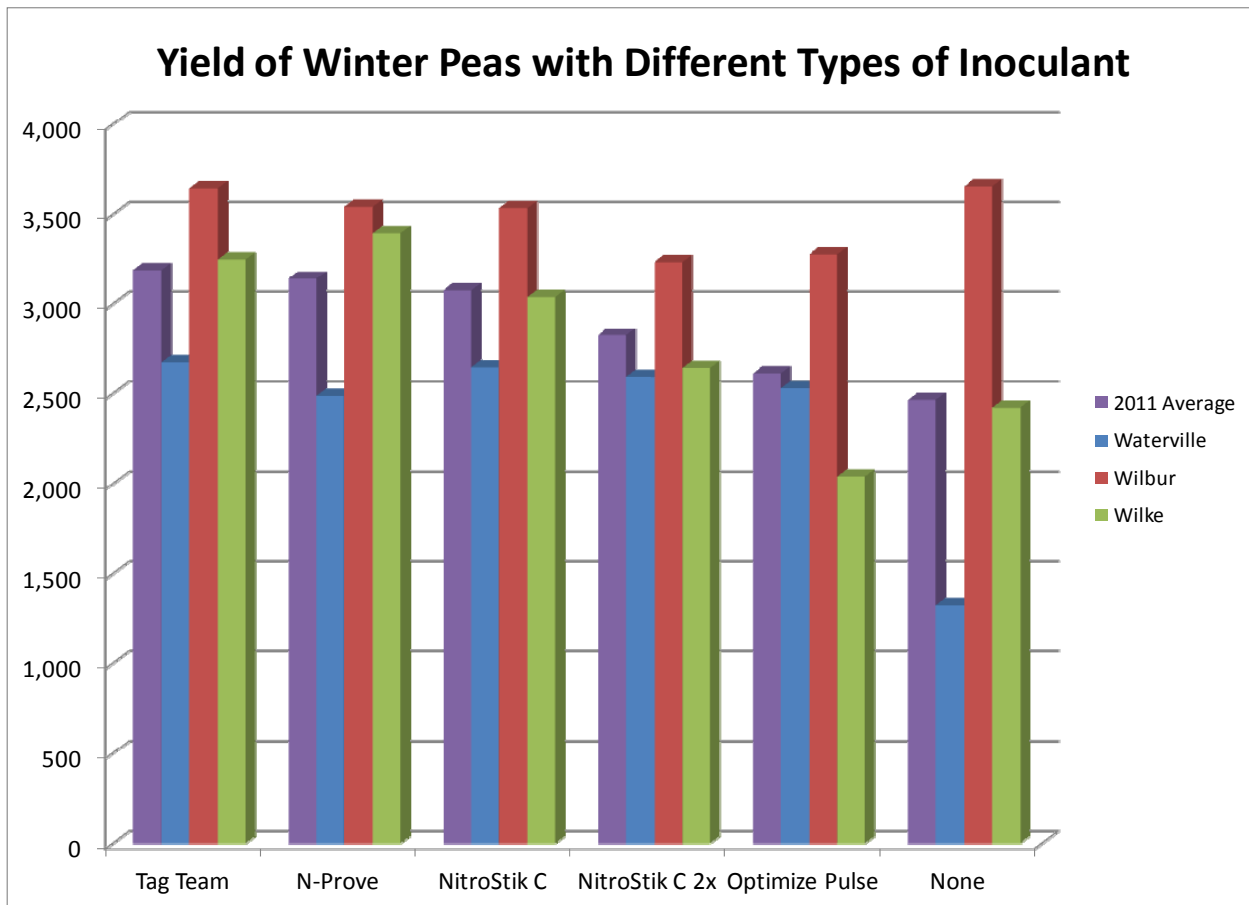
Rank	Mean	Name	n	Non-significant ranges
1	2036	2	4	a
2	1811	1	4	ab
3	1516.5	3	4	b

## Winter Pea Seed Inoculant Trials

We tested four different pea inoculants this year and compared the yields of those trials to an untreated check. (see chart below). Although there wasn't any significant differences between treatments, Tag Team® a combination of Rhizobium for nitrogen fixation and penicillin, a phosphate solubilizing fungi, had the highest yield. It was also a granular form of inoculant. The Waterville trial was the only trial to show a significant reduction in yield in the untreated check compared to the other treatments. The Tag Team® treatment average yield of 2,676 lbs/acre was two times the yield of the untreated check at 1,322 lbs/acre. The yield of

the untreated check at Wilbur was equal to the yield of the Tag Team® treatment.

We will discontinue testing different pea inoculants. There has not been a significant yield difference between the products and most growers are only able to use a seed box application of inoculant.



2011 WATERVILLE WINTER PEA INOCULANT TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
Seeding Date: August 23, 2010  
Seeding Rate: Variable to achieve 6 plants/ft2  
Herbicide: Assure II 12 oz/acre, April 27, 2011  
          Chiptox 1 pt, Sencor 1/3 lb/acre, April 27, 2011  
Harvest: August 4, 2011

ANOVA

2011-09-06 11:46:37

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPInoc.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) WA Yield

1st Factor: 1) Treatment

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 18

Source	df	Type III SS	MS	F	P
Blocks	2	14378.77778	7189.3889	0.0210568	.9792 ns
Main Effects					
Treatment	5	4075603.111	815120.62	2.387389	.1132 ns
Error	10	3414276.556	341427.66<-		
Total	17	7504258.444			
Model	7	4089981.889	584283.13	1.7112941	.2126 ns

R^2 = SSmodel/SStotal = 0.54502145937

Root MSerror = sqrt(MSerror) = 584.31811161

Mean Y = 2376.44444444

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 24.587914%

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 341427.655556

Degrees of Freedom: 10

Keep If:

n Means = 6

LSD 0.1 = 864.713856237

MSD 0.1 = 1438.48691795

Rank	Mean	Name	n	Non-significant ranges
1	2676	Tag Team	3	a
2	2649	NitroStik	3	a
3	2596	NitroStik	3	a
4	2529	Optimize	3	a
5	2487	N-Prove	3	a
6	1322	None	3	a

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 341427.655556

Degrees of Freedom: 10

Keep If:

n Means = 3

LSD 0.1 = 611.445031531

MSD 0.1 = 780.048265397

Rank	Mean	Name	n	Non-significant ranges
1	2410	3	6	a
2	2378	2	6	a
3	2341	1	6	a

2011 WILBUR WINTER PEA INOCULANT TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
 Seeding Date: September 1, 2010  
 Seeding Rate: Variable to achieve 6 plants/ft2  
 Fertility: Starter, 5-10-0-0, September 1, 2010  
 Herbicide: Assure II 12 oz/acre, April 8, 2011  
           Chiptox 1pt, Sencor 1/3 lb/acre, April 27, 2011  
 Harvest: August 11, 2011

ANOVA

2011-09-06 11:50:04

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPInoc.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) WB Yield

1st Factor: 1) Treatment

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 18

Source	df	Type III SS	MS	F	P
Blocks	2	9721625.333	4860812.7	10.826232	.0031 **
Main Effects					
Treatment	5	495571.3333	99114.267	0.220752	.9454 ns
Error	10	4489847.333	448984.73<-		
Total	17	14707044			
Model	7	10217196.67	1459599.5	3.250889	.0451 *

R^2 = SSmodel/SStotal = 0.69471449645

Root MSError = sqrt(MSError) = 670.063230847

Mean Y = 3479.66666667

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 19.256535%

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 448984.733333

Degrees of Freedom: 10

Keep If:

n Means = 6

LSD 0.1 = 991.60534092

MSD 0.1 = 1649.5761001

Rank	Mean	Name	Mean	n	Non-significant ranges
1		None	3652	3	a
2		Tag Team	3642	3	a
3		N-Prove	3541	3	a
4		NitroStik	3534	3	a
5		Optimize	3276	3	a
6		NitroStik	3233	3	a

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 448984.733333

Degrees of Freedom: 10

Keep If:

n Means = 3

LSD 0.1 = 701.170860825

MSD 0.1 = 894.515590982

Rank	Mean	Name	Mean	n	Non-significant ranges
1	3		4494	6	a
2	2		3169	6	b
3	1		2776	6	b

2011 WILKE WINTER PEA INOCULANT TRIAL

Previous Crop: 2010 Chemical Fallow, 2009 Winter Wheat  
 Seeding Date: September 2, 2010  
 Seeding Rate: Variable to achieve 6 plants/ft2  
 Fertility: None  
 Herbicide: Assure II 12 oz/acre, April 8, 2011  
           Chiptox 1 pt, Sencor 1/3 lb/acre, April 28, 2011  
 Harvest: August 14, 2011

ANOVA

2011-09-06 11:52:20

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPInoc.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 5) DA Yield

1st Factor: 1) Treatment

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 18

Source	df	Type III SS	MS	F	P
Blocks	2	1115847.111	557923.56	1.4071874	.2894 ns
Main Effects					
Treatment	5	4052065.611	810413.12	2.0440132	.1572 ns
Error	10	3964813.556	396481.36<-		
Total	17	9132726.278			
Model	7	5167912.722	738273.25	1.862063	.1797 ns

R^2 = SSmodel/SStotal = 0.56586747101

Root MSerror = sqrt(MSerror) = 629.667654843

Mean Y = 2797.61111111

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 22.507333%

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 396481.355556

Degrees of Freedom: 10

Keep If:

n Means = 6

LSD 0.1 = 931.825208134

MSD 0.1 = 1550.12940066

Rank	Mean	Name	n	Non-significant ranges
1	3391	N-Prove	3	a
2	3248	Tag Team	3	a
3	3038	NitroStik	3	a
4	2645	NitroStik	3	a
5	2422	None	3	a
6	2041	Optimize	3	a

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 396481.355556

Degrees of Freedom: 10

Keep If:

n Means = 3

LSD 0.1 = 658.899923552

MSD 0.1 = 840.588631736

Rank	Mean	Name	n	Non-significant ranges
1	3129	3	6	a
2	2734	1	6	a
3	2529	2	6	a

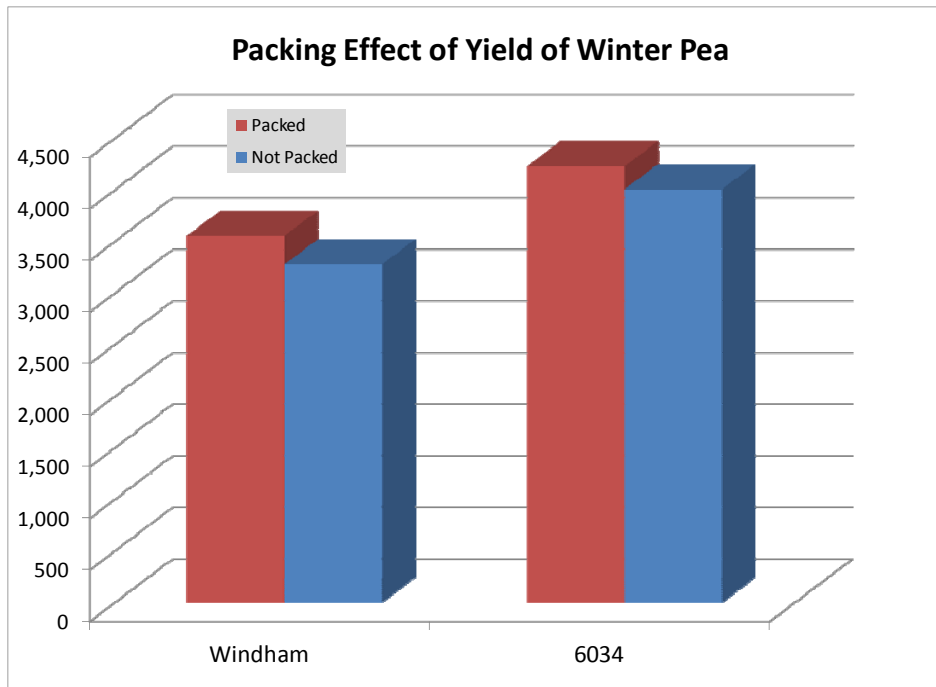
## Winter Pea Packing Trial

In spring pea production, packing after planting is a standard practice, but hasn't been used after planting winter peas in our area. We started packing our trials after planting last year to improve seed to soil contact and provide a smooth surface. This smooth surface would allow harvesting either across or at an angle to the furrow if the peas were hard to cut. The picture at the left shows the packer that



was used. We attached a spike tooth harrow ahead of the coil packer to help smooth the ground and it was also used to incorporate the herbicides in the winter pea herbicide trials.

We conducted a trial at Wilbur to compare packing and not packing the ground on the yield of winter peas. We included two different varieties in this test and the results are illustrated in the graph below. The results



show a slight but not significant yield increase by packing the ground after planting on both varieties. We are going to encourage growers to adopt this practice in future winter pea plantings.

2011 WILBUR WINTER PEA PACKING TRIAL

Previous Crop: 2010 Summer Fallow, 2009 Winter Wheat  
 Seeding Date: September 1, 2010  
 Seeding Rate: Variable to achieve 6 plants/ft2  
 Fertility: Starter, 5-10-0-0, September 1, 2010  
 Herbicide: Assure II 12 oz/acre, April 8, 2011  
           Chiptox 1pt, Sencor 1/3 lb/acre, April 27, 2011  
 Harvest: August 11, 2011

ANOVA

2011-09-06 11:42:03

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPPack.dt

.AOV Filename: 2WRB.AOV - 2 Way Randomized Blocks

Y Column: 4) WB Yield

1st Factor: 1) Treatment

2nd Factor: 2) Prep

Blocks: 3) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 12

Source	df	Type III SS	MS	F	P
Blocks	2	1542990.5	771495.25	0.7608335	.5076 ns
Main Effects					
Treatment	1	1466502.083	1466502.1	1.4462356	.2744 ns
Prep	1	187250.0833	187250.08	0.1846624	.6824 ns
Interaction					
Treatment x Prep	1	2160.083333	2160.0833	0.0021302	.9647 ns
Error	6	6084079.5	1014013.3<-		
Total	11	9282982.25			
Model	5	3198902.75	639780.55	0.630939	.6851 ns

R^2 = SSmodel/SStotal = 0.34459860677

Root MSError = sqrt(MSError) = 1006.9822491

Mean Y = 3767.25

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 26.729902%

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 1014013.25

Degrees of Freedom: 6

Keep If:

n Means = 2

LSD 0.1 = 1129.72901299

MSD 0.1 = 1129.69945217

Rank	Mean Name	Mean	n Non-significant ranges
1	6034	4117	6 a
2	Windham	3418	6 a

Compare Means

Factor: 2) Prep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 1014013.25

Degrees of Freedom: 6

Keep If:

n Means = 2

LSD 0.1 = 1129.72901299

MSD 0.1 = 1129.69945217

Rank	Mean Name	Mean	n Non-significant ranges
1	Packed	3892	6 a
2	Not Packed	3642	6 a

Compare Means

Factor: 3) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 1014013.25

Degrees of Freedom: 6

Keep If:

n Means = 3

LSD 0.1 = 1383.62981472

MSD 0.1 = 1791.92491227

Rank	Mean Name	Mean	n Non-significant ranges
1	3	4266	4 a
2	1	3596	4 a
3	2	3440	4 a

---

## *Winter Lentil Yield Trials*



A winter lentil variety trial was planted last year at the Wilke farm in Davenport. The only released winter lentil variety, Morton, has had erratic yields in past years.

Two varieties of winter lentils had better winter survival than Morton, as shown in the picture above. One on the lines, LC03600232T, has a seed shape more true to a Turkish red type than Morton whose seed tends to be more flat. The variety, LC06600789T, had the best winter survival and early growth than the other varieties. These two varieties are shown in the picture above.

Unfortunately, several deer found this trial late in the summer and decimated the trial by eating and bedding down in the lentils. At harvest time, the plots were flat on the ground making harvest very difficult.

This trial was repeated this fall at two locations, Wilbur and the Wilke farm and we hope that we will be able to get more accurate data next year.

2011 WILKE WINTER LENTIL VARIETY TRIAL

Previous Crop: 2010 Chemical Fallow, 2009 Winter Wheat  
 Seeding Date: September 2, 2010  
 Seeding Rate: 45 lbs/acre  
 Fertility: None  
 Herbicide: Assure II 12 oz/acre, April 8, 2011  
           Sencor 1/3 lb/acre, April 28, 2011  
 Harvest: August 14, 2011

ANOVA

2011-09-06 12:02:37

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\CoStat11.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) DA Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 12

Source	df	Type III SS	MS	F	P
Blocks	2	94178	47089	10.796652	.0103 *
Main Effects					
Variety	3	24809.58333	8269.8611	1.896129	.2313 ns
Error	6	26168.66667	4361.4444<-		
Total	11	145156.25			
Model	5	118987.5833	23797.517	5.4563384	.0309 *

R^2 = SSmodel/SStotal = 0.81972070327

Root MSError = sqrt(MSError) = 66.0412329113

Mean Y = 227.75

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 28.997248%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 4361.44444444

Degrees of Freedom: 6

Keep If:

n Means = 4

LSD 0.1 = 104.78102378

MSD 0.1 = 154.99407443

Rank	Mean Name	Mean	n	Non-significant ranges
1	LC06600789T	302	3	a
2	Morton	225	3	a
3	LC03600230T	204	3	a
4	LC03600232T	180	3	a

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 4361.44444444

Degrees of Freedom: 6

Keep If:

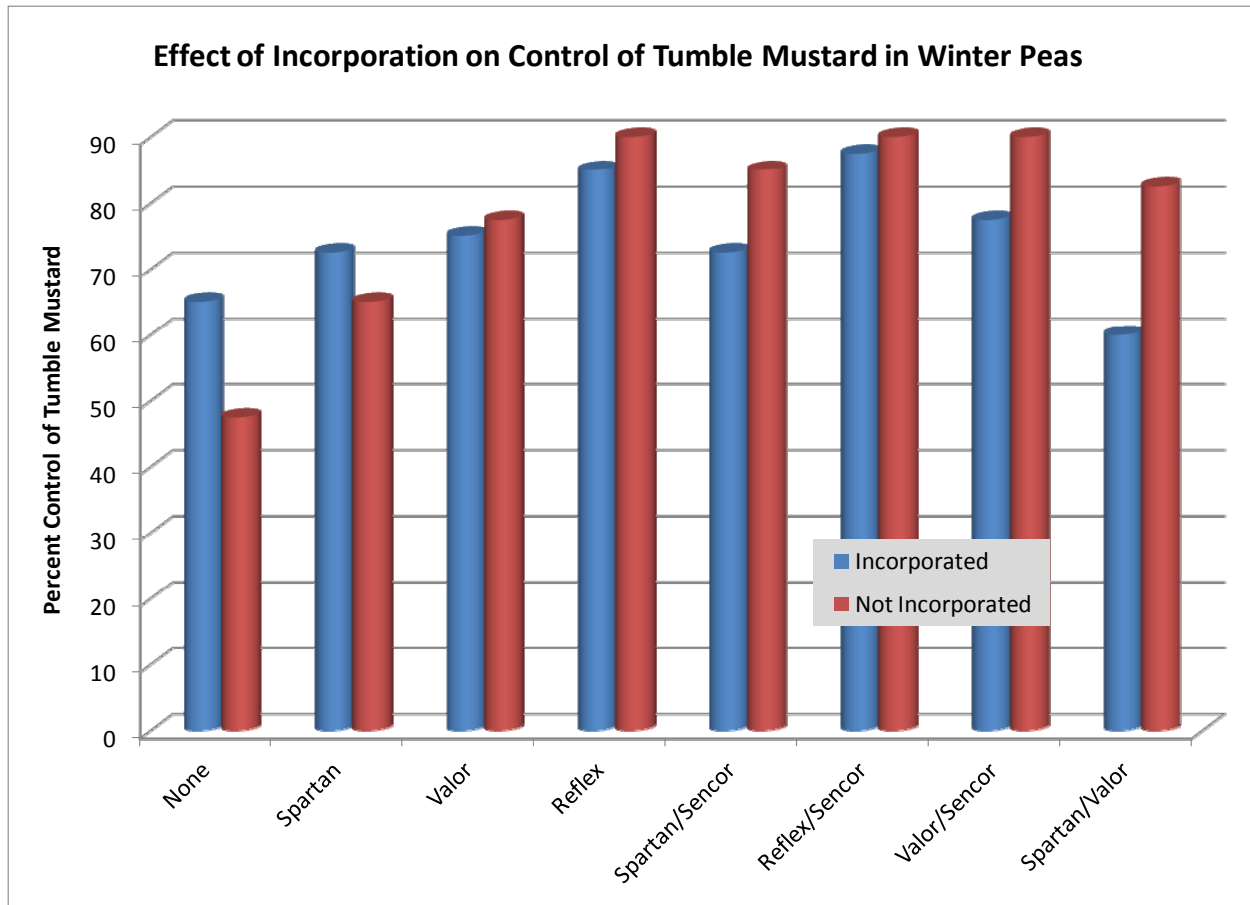
n Means = 3

LSD 0.1 = 90.7430284283

MSD 0.1 = 117.520373966

Rank	Mean Name	Mean	n	Non-significant ranges
1	3	308	4	a
2	2	271	4	a
3	1	104	4	b

## Winter Pea Broadleaf Weed Control Trial



Broadleaf weed control continues to be an issue for winter pea production, but we are making progress to control problem weeds. This year we had a large trial in the Wilbur area where we looked at 35 different herbicide treatments and timing of those herbicide applications. This trial included per-emergent/incorporated and pre-emergent/not incorporated applications as well as fall and spring applications of herbicides. This trial didn't have the high levels of infestation of weeds this year as we had last year. The only weed that was present in sufficient quantity to rate was tumble mustard. This weed is not one of the weeds that is hard to

control and an application of Chiptox® will give you adequate control of tumble mustard.

The herbicide that was giving us excellent control of tansy mustard, Reflex®, was withdrawn from the IR-4 program this spring by Syngenta. Syngenta made this decision on the fact that Reflex® still had high residue levels 6 months after application. These residue levels were high enough to hurt wheat yields planted in the fall. This decision was based on an application to spring peas with winter wheat planted in the fall. Unfortunately, we were not able to make a case to

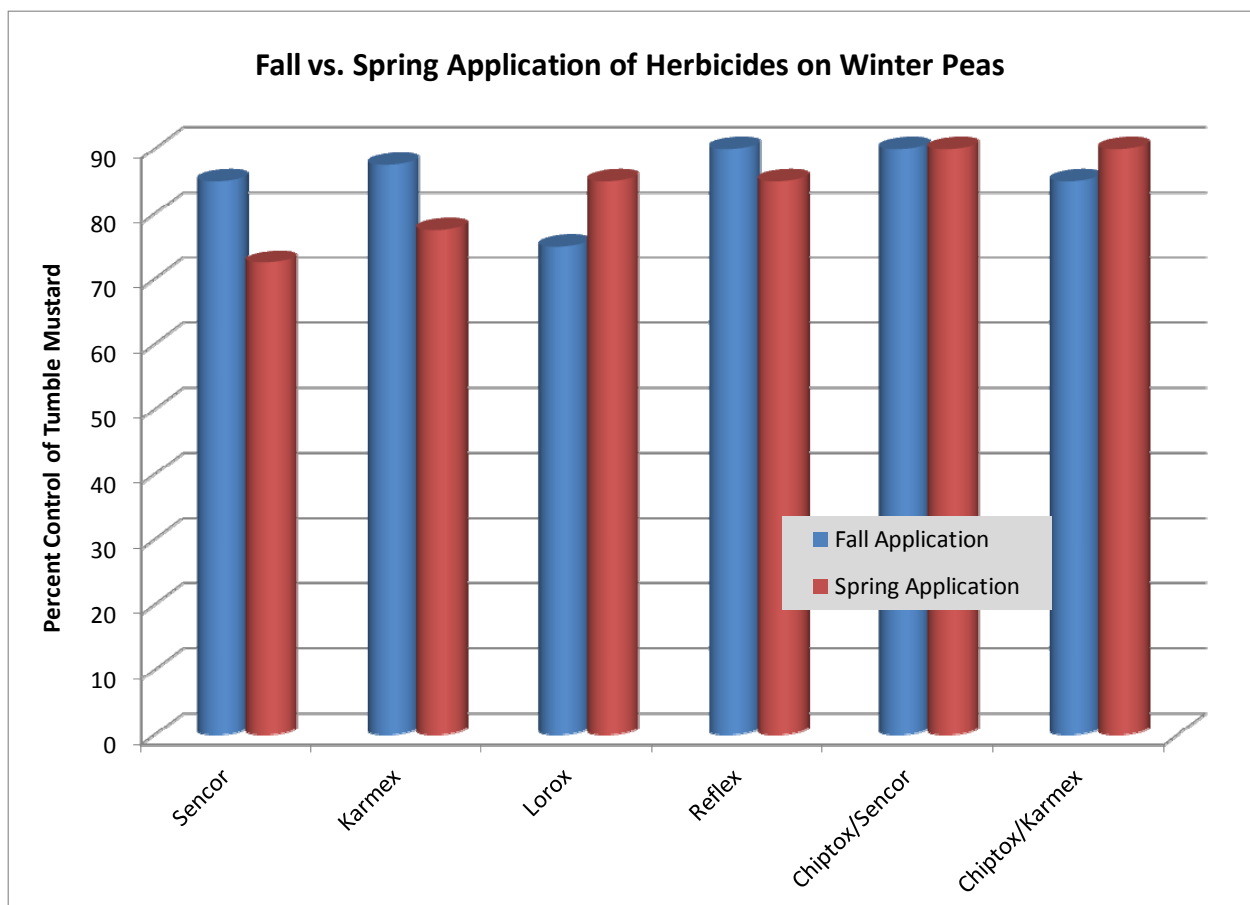
license this herbicide for winter peas as the acreage devoted to that crop is too small to cover the costs involved. We will continue to screen herbicides for weed control in winter peas.

The chart on page 50 shows the differences in tumble mustard control when a pre-emergent herbicide application was incorporated with a spike tooth harrow and coil packer as compared to no incorporation. The herbicide application had a rain of 0.15 inches the day after the herbicides were applied and then another 0.15 inches the following week. There were no significant differences between the incorporated herbicides and the not incorporated herbicides.

The chart below illustrates the differences between the fall and spring application of

several different herbicides. The basis of the trial was to determine if weed control would be better with a fall herbicide application because the weeds are easier to kill when they are small. There was not a significant difference between the fall and spring herbicide treatments. The fall herbicide treatments showed a trend have equal or better weed control than the spring herbicide treatments.

The broadleaf weed control study will be repeated in two locations next year without the post plant/pre-emergent herbicide treatments. These herbicide applications would need to be applied at a very busy time for growers and need to be followed by rainfall to activate the herbicides.



TUMBLE MUSTARD WEED CONTROL IN WINTER PEAS

Cooperator: Mark Sheffels  
 Pea Variety: Windham  
 Pre-Emergent Application: 8-31-2010  
 Fall Application: 10-6-2010  
 Spring Application: 5-4-2011

ANOVA

2011-10-05 08:32:22

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WP Herb.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) Tumble Mus

1st Factor: 1) Treatment

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 140

Source	df	Type III SS	MS	F	P
Blocks	3	453.5714286	151.19048	1.2465358	.2969 ns
Main Effects					
Treatment	34	17017.14286	500.5042	4.1265589	.0000 ***
Error	102	12371.42857	121.28852<-		
Total	139	29842.14286			
Model	37	17470.71429	472.18147	3.8930435	.0000 ***

$R^2 = SS_{model} / SS_{total} = 0.58543766007$

Root MSerror =  $\sqrt{MS_{error}} = 11.0131065284$

Mean Y = 79.3571428571

Coefficient of Variation =  $(\text{Root MSerror}) / \text{abs}(\text{Mean Y}) * 100\% = 13.877902\%$

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 121.288515406

Degrees of Freedom: 102

Keep If:

n Means = 35

LSD 0.1 = 12.9266089235

MSD 0.1 = 28.8102866783

Rank	Mean	Name	n	Non-significant ranges
1	90.0	Reflex, Pre-emergent	4	a
2	90.0	Reflex/Sencor, Pre-emergent	4	a
3	90.0	Valor/Sencor, Pre-emergent	4	a
4	90.0	Reflex, Fall	4	a
5	90.0	Sencor/Karmex, Fall	4	a
6	90.0	Chiptox/Sencor, Spring	4	a
7	90.0	Chiptox/Sencor, Fall	4	a
8	90.0	Chiptox/Karmex, Spring	4	a
9	90.0	Raptor/Basagran, Spring	4	a
10	90.0	Chiptox/Sencor/NIS, Spring	4	a
11	87.5	Karmex, Fall	4	ab
12	87.5	Reflex/Sencor, Pre/Incorporated	4	ab
13	85.0	Reflex, Pre/Incorporated	4	ab
14	85.0	Reflex, Spring	4	ab
15	85.0	Lorox, Spring	4	ab
16	85.0	Sencor, Fall	4	ab
17	85.0	Spartan/Sencor, Pre-emergent	4	ab
18	85.0	Chiptox/Karmex, Fall	4	ab
19	82.5	Spartan/Valor, Pre-emergent	4	ab
20	80.0	Basagran/Sencor, Spring	4	ab
21	77.5	Valor, Pre-emergent	4	ab
22	77.5	Karmex, Spring	4	ab
23	77.5	Valor/Sencor, Pre/Incorporated	4	ab
24	75.0	Lorox, Fall	4	abc
25	75.0	Valor, Pre/Incorporated	4	abc
26	72.5	Spartan, Pre/Incorporated	4	abc
27	72.5	Reflex/Sencor, Spring	4	abc
28	72.5	Sencor, Spring	4	abc
29	72.5	Spartan/Sencor, Pre/Incorporated	4	abc
30	65.0	Spartan, Pre-emergent	4	abc
31	65.0	None, Packed	4	abc
32	60.0	Butyrac, Spring	4	bc
33	60.0	Sonalan, Pre/Incorporated	4	bc
34	60.0	Spartan/Valor, Pre/Incorporated	4	bc
35	47.5	None, Unpacked	4	c

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 121.288515406

Degrees of Freedom: 102

Keep If:

n Means = 4

LSD 0.1 = 4.36999141235

MSD 0.1 = 6.10962274875

Rank	Mean	Name	Mean	n	Non-significant ranges
1	4		82.3	35	a
2	2		79.1	35	a
3	3		78.6	35	a
4	1		77.4	35	a

EFFECT OF INCORPORATION ON PRE-EMERGENT HERBICIDE APPLICATION ON  
TUMBLE MUSTARD WEED CONTROL IN WINTER PEAS

Cooperator: Mark Sheffels  
Pea Variety: Windham  
Pre-Emergent Application: 8-31-2010  
Incorporation with a Spike Tooth Harrow and Coil Packer

ANOVA

2011-10-05 09:10:36

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPHerbInc.dt

.AOV Filename: 2WRB.AOV - 2 Way Randomized Blocks

Y Column: 4) Tumble Mustard Control

1st Factor: 1) Treatment

2nd Factor: 2) Incorporated

Blocks: 3) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 64

Source	df	Type III SS	MS	F	P
Blocks	3	242.1875	80.729167	0.5691554	.6382 ns
Main Effects					
Treatment	7	6610.9375	944.41964	6.6583319	.0000 ***
Incorporated	1	264.0625	264.0625	1.8616891	.1792 ns
Interaction					
Treatment x Incorporated	7	2173.4375	310.49107	2.1890191	.0532 ns
Error	45	6382.8125	141.84028<-		
Total	63	15673.4375			
Model	18	9290.625	516.14583	3.6389229	.0002 ***

$R^2 = SS_{model} / SS_{total} = 0.59276243645$

Root MSerror =  $\sqrt{MS_{error}} = 11.9096716066$

Mean Y = 76.40625

Coefficient of Variation =  $(\text{Root MSerror}) / \text{abs}(\text{Mean Y}) * 100\% = 15.5873\%$

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 141.840277778

Degrees of Freedom: 45

Keep If:

n Means = 8

LSD 0.1 = 10.0007143668

MSD 0.1 = 17.1796754917

Rank	Mean	Name	n	Non-significant ranges
1	88.75	Reflex/Sencor	8	a
2	87.50	Reflex	8	ab
3	83.75	Valor/Sencor	8	abc
4	78.75	Spartan/Sencor	8	abc
5	76.25	Valor	8	abc
6	71.25	Spartan/Valor	8	bcd
7	68.75	Spartan	8	cd
8	56.25	None	8	d

Compare Means

Factor: 2) Incorporated

Test: Tukey's HSD

Significance Level: 0.1

Variance: 141.840277778

Degrees of Freedom: 45

Keep If:

n Means = 2

LSD 0.1 = 5.00035718342

MSD 0.1 = 5.00021192313

Rank	Mean	Name	n	Non-significant ranges
1	78.44	No	32	a
2	74.38	Yes	32	a

Compare Means

Factor: 3) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 141.840277778

Degrees of Freedom: 45

Keep If:

n Means = 4

LSD 0.1 = 7.0715729455

MSD 0.1 = 9.93564353783

Rank	Mean	Name	n	Non-significant ranges
1	79.38	4	16	a
2	76.88	2	16	a
3	75.00	1	16	a
4	74.38	3	16	a

FALL vs. SPRING APPLICATION OF HERBICIDE ON CONTROL OF TUMBLE MUSTARD IN WINTER PEAS

Cooperator: Mark Sheffels  
 Pea Variety: Windham  
 Fall Application: 10-6-2010  
 Spring Application: 5-4-2011

ANOVA

2011-10-05 09:21:44

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\WPHerbTime.dt

.AOV Filename: 2WRB.AOV - 2 Way Randomized Blocks

Y Column: 4) Tumble Mustard Control

1st Factor: 1) Treatment

2nd Factor: 2) Timing

Blocks: 3) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 48

Source	df	Type III SS	MS	F	P
Blocks	3	22.91666667	7.6388889	0.0932922	.9632 ns
Main Effects					
Treatment	5	843.75	168.75	2.0609098	.0956 ns
Timing	1	52.08333333	52.083333	0.6360833	.4308 ns
Interaction					
Treatment x Timing	5	760.4166667	152.08333	1.8573631	.1288 ns
Error	33	2702.083333	81.881313<-		
Total	47	4381.25			
Model	14	1679.166667	119.94048	1.4648089	.1795 ns

R^2 = SSmodel/SStotal = 0.38326200666

Root MSError = sqrt(MSError) = 9.04882937906

Mean Y = 84.375

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 10.724539%

Compare Means

Factor: 1) Treatment

Test: Tukey's HSD

Significance Level: 0.1

Variance: 81.8813131313

Degrees of Freedom: 33

Keep If:

n Means = 6

LSD 0.1 = 7.65693984215

MSD 0.1 = 12.2659026764

Rank	Mean Name	Mean	n Non-significant ranges
1	Chiptox/Sencor	90.00	8 a
2	Reflex	87.50	8 a
3	Chiptox/Karmex	87.50	8 a
4	Karmex	82.50	8 a
5	Lorox	80.00	8 a
6	Sencor	78.75	8 a

Compare Means

Factor: 2) Timing

Test: Tukey's HSD

Significance Level: 0.1

Variance: 81.8813131313

Degrees of Freedom: 33

Keep If:

n Means = 2

LSD 0.1 = 4.42073627904

MSD 0.1 = 4.4200733577

Rank	Mean Name	Mean	n Non-significant ranges
1	Fall	85.42	24 a
2	Spring	83.33	24 a

Compare Means

Factor: 3) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 81.8813131313

Degrees of Freedom: 33

Keep If:

n Means = 4

LSD 0.1 = 6.25186520149

MSD 0.1 = 8.81085628729

Rank	Mean Name	Mean	n Non-significant ranges
1	1	85.00	12 a
2	4	85.00	12 a
3	2	84.17	12 a
4	3	83.33	12 a

---

## ***Spring Wheat, Barley and Triticale Variety Yield Trials***



The number of varieties entered into our spring wheat trials grew dramatically this year. In 2010 we tested 8 soft white wheat varieties and 8 hard red spring wheat varieties. This year we tested the same number of soft white wheat varieties, but we tested 20 hard red spring wheat varieties. These varieties were submitted by WSU and five different private companies. The private companies have increased their presence in the PNW and have established breeding programs here. These companies are also working with winter wheat varietal development and we are starting to see an increase in winter varieties submitted for testing from them also.

The spring barley/triticale variety trials had very high yields this year. A new barley variety, Lentenah, had good yields especially at the Waterville site where it was the top yielding variety. At Wilbur it yielded slightly below Bob, but higher than Champion and Radiant.

At Wilbur, a spring triticale variety, Logo was the top yielding variety and it was also the top variety in both the two and three year averages. At Waterville, Logo was the top yielding spring triticale but was the number five variety when the spring barley varieties are included in the comparison. This year, triticale prices are below the market price

## **Waterville Barley/Triticale Comparative Yield**

Variety	Co	3-Year Average		2-Year Average		2011			2010	2009	
		Yield	TW	Pro	Yield	Yield					
Champion	Barley	3,028	(1)	4,278	(1)	5,259	(3)	56.1		3,296	528
Bob	Barley	2,870	(2)	4,012	(2)	4,966	(4)	53.3		3,058	586
Trical 118	Triticale	2,732	(3)	3,697	(3)	4,591	(6)	56.9	11.1	2,803	802
Logo	Triticale	2,297	(4)	3,284	(4)	4,773	(5)	47.7	11.3	1,795	322
FL9707-01-H16	Triticale	2,207	(5)	3,090	(5)	4,432	(7)	50.8	12.0	1,748	442
TriMark 054	Triticale	641	(6)	691	(6)	4,128	(8)	52.5	11.6	1,382	542
Lentenah	Barley					5,505	(1)	51.5			
Radient	Barley					5,394	(2)	49.6			

offered for barley. This gives barley an advantage over spring triticale when comparing gross dollar returns per acre.

The spring wheat yields at Waterville were the highest we've ever had for that location and averaged 66.2 bu/acre. The hard white wheat variety, BR 7030, had the highest yield of the trial, 74.2 bu/acre and was also the highest yielding variety in the two and three year averages. Whit has the highest average yield of the soft white spring wheat varieties which was just slightly higher than the average of the number three variety, Louise. Malbec was the highest yielding hard red spring wheat variety this year. The three DNS varieties, Hank, Bullseye and Kelse, have very similar two and three year average yields.

the highest average yield and is followed by BR 7030, a hard white spring wheat. Whit has the highest average for the soft white wheat varieties. There were several "first year" varieties that had high yields. One to watch would be a DNS variety, Powerplay. It had the second highest yield in the Wilbur trial this year and had a grain protein of 14.4%.

We have only one two-gene spring wheat variety in the trials, 605 CL2, which is a DNS variety. It's yield puts it in the middle of the pack at Wilbur, but towards the bottom of the pack at Waterville. We continue to look for a good two-gene spring wheat variety to allow Clearfield® winter wheat growers an option to seed spring wheat into a weak winter wheat plant stand.

At Wilbur, Kelse a hard red spring wheat, has

## **Wilbur Barley/Triticale Comparative Yield**

Variety	Co	3-Year Average		2-Year Average		2011			2010	2009	
		Yield	TW	Pro	Yield	Yield					
Logo	Triticale	2,672	(1)	3,059	(1)	3,326	(1)	49.2	10.9	2,792	1,898
FL9707-01-H16	Triticale	2,207	(2)	2,538	(2)	2,512	(2)	54.6	11.8	2,563	1,545
Champion	Barley	2,169	(3)	2,332	(3)	2,185	(6)	51.6		2,479	1,843
Bob	Barley	2,145	(4)	2,274	(4)	2,411	(3)	55.4		2,137	1,886
Trical 118	Triticale	2,055	(5)	2,244	(5)	2,009	(8)	57.0	11.4	2,478	1,679
TriMark 054	Triticale	1,233	(6)	1,015	(6)	2,234	(5)	52.8	12.8	2,029	1,671
Lentenah	Barley					2,359	(4)	52.4			
Radient	Barley					2,116	(7)	55.2			

2011 WATERVILLE SPRING BARLEY/TRITICALE VARIETY TRIAL

Previous Crop: 2010 Spring Wheat, 2009 Winter Peas  
Seeding Date: April 20, 2011  
Seeding Rate: 70 lbs/acre  
Fertility: Starter + Sol 32 & Thiosol, 50-10-0-12, April 20, 2011  
Herbicide: Buctril 1 pt, Huskie 10 oz/acre, June 3, 2011  
Harvest: August 31, 2011

ANOVA

2011-09-13 04:39:04

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\SBarTrit.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) WA Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 24

Source	df	Type III SS	MS	F	P
Blocks	2	3982532.333	1991266.2	9.1712329	.0028 **
Main Effects					
Variety	7	5000863.167	714409.02	3.2903746	.0276 *
Error	14	3039692.333	217120.88<-		
Total	23	12023087.83			
Model	9	8983395.5	998155.06	4.597232	.0056 **

$R^2 = SS_{\text{model}}/SS_{\text{total}} = 0.74717873017$

Root MSerror =  $\sqrt{MS_{\text{error}}}$  = 465.962317095

Mean Y = 4880.91666667

Coefficient of Variation =  $(\text{Root MSerror}) / \text{abs}(\text{Mean Y}) * 100\% = 9.5466149\%$

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 217120.880952

Degrees of Freedom: 14

Keep If:

n Means = 8

LSD 0.1 = 670.102134052

MSD 0.1 = 1190.15982777

Rank	Mean	Name	n	Non-significant ranges
1	5505	Lenetah	3	a
2	5394	Radiant	3	a
3	5259	Champion	3	ab
4	4966	Bob	3	ab
5	4773	Logo	3	ab
6	4591	Trical 118	3	ab
7	4432	H16	3	ab
8	4128	TriMark 054	3	b

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 217120.880952

Degrees of Freedom: 14

Keep If:

n Means = 3

LSD 0.1 = 410.352075994

MSD 0.1 = 520.256995314

Rank	Mean	Name	n	Non-significant ranges
1	5420	2	8	a
2	4788	1	8	b
3	4435	3	8	b

2011 WILBUR SPRING TRITICALE/BARLEY VARIETY TRIAL

Previous Crop: 2010 Winter Wheat, 2009 Chemical Fallow  
 Seeding Date: April 12, 2011  
 Seeding Rate: 75 lbs/acre  
 Fertility: Starter + Sol 32 & Thiosol, April 12, 2011, 60-10-0-12  
 Herbicide: Buctril 1 pt, Huskie 10 oz/acre, May 27, 2011  
 Harvest: September 7, 2011

ANOVA

2011-09-13 04:44:41

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\SBarTrit.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) WB Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 24

Source	df	Type III SS	MS	F	P
Blocks	2	30681.08333	15340.542	0.1835325	.8343 ns
Main Effects					
Variety	7	3536563.625	505223.37	6.0444354	.0022 **
Error	14	1170188.25	83584.875<-		
Total	23	4737432.958			
Model	9	3567244.708	396360.52	4.7420125	.0049 **

R^2 = SSmodel/SStotal = 0.75299106915

Root MSError = sqrt(MSError) = 289.11048926

Mean Y = 2393.95833333

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 12.076672%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 83584.875

Degrees of Freedom: 14

Keep If:

n Means = 8

LSD 0.1 = 415.770865416

MSD 0.1 = 738.44531517

Rank	Mean	Name	Mean	n	Non-significant ranges
1	Logo	3326	3	a	
2	H16	2512	3	b	
3	Bob	2411	3	b	
4	Lenetah	2359	3	b	
5	TriMark 054	2234	3	b	
6	Champion	2185	3	b	
7	Radient	2116	3	b	
8	Trical 118	2009	3	b	

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 83584.875

Degrees of Freedom: 14

Keep If:

n Means = 3

LSD 0.1 = 254.606617546

MSD 0.1 = 322.798108212

Rank	Mean	Name	Mean	n	Non-significant ranges
1	3	2433	8	a	
2	1	2402	8	a	
3	2	2347	8	a	

## Waterville Spring Wheat Comparative Yield

Variety	Class	3-Year Average	2-Year Average	2011			2010		2009	
				Yield	TW	Protein	Yield	Protein	Yield	Protein
BR 7030	HW	42.0	59.5 (1)	74.2 (1)	61.2	12.2	44.8	13.9	7.1	16.1
Whit	SWH	38.5	52.7 (2)	70.7 (6)	61.0	11.2	34.6	14.1	10.1	13.4
Louise	SWH	38.3	50.2 (9)	68.8 (8)	59.6	10.4	31.6	14.2	14.4	13.1
Babe	SWH	38.1	51.6 (6)	71.9 (4)	61.9	10.2	31.3	13.7	11.2	13.8
Nick	SWH	37.9	52.6 (3)	66.7 (15)	63.8	11.1	38.5	14.2	8.5	14.0
Hank	DNS	37.2	52.3 (4)	68.5 (9)	59.5	12.1	36.0	14.5	7.0	15.6
Bullseye	DNS	36.5	52.2 (5)	70.9 (5)	63.1	11.6	33.5	13.9	5.1	15.6
Kelse	DNS	35.7	50.4 (8)	67.7 (11)	62.0	13.1	33.1	15.8	6.4	16.3
JD	Club	35.3	49.2 (10)	65.8 (17)	61.6	10.9	32.6	13.4	7.4	13.8
Tara 2002	DNS	31.2	43.9 (12)	58.9 (23)	60.4	12.6	28.8	14.2	5.9	15.7
Hollis	DNS	29.6	39.6 (14)	61.7 (22)	60.3	12.3	17.5	16.3	9.6	15.2
Jedd*	DNS		50.6 (7)	65.7 (18)	61.5	12.2	35.4	14.8		
Diva	SWH		47.6 (11)	58.3 (24)	54.3	11.2	36.8	13.3		
605 CL2*	DNS		43.4 (13)	63.9 (21)	61.3	14.1	22.8	15.6		
Otis	HW			73.3 (2)	63.2	11.0				
Malbec	DNS			72.1 (3)	61.5	13.0				
Powerplay	DNS			69.1 (7)	58.5	12.9				
SYB04-1418	DNS			68.2 (10)	63.2	12.8				
Albany	DNS			67.6 (12)	60.6	12.5				
Cerere	DNS			67.1 (13)	60.8	11.3				
Fusion	DNS			66.9 (14)	60.1	13.0				
Buck Pronto	DNS			66.1 (16)	60.7	13.8				
SY97621-05	DNS			65.6 (19)	62.5	14.3				
Alturas	SWH			65.2 (20)	61.9	10.0				

\* - Clearfield™ Wheat Type

2011 WATERVILLE SPRING WHEAT VARIETY TRIAL

Previous Crop: 2010 Spring Wheat, 2009 Winter Peas  
 Seeding Date: April 20, 2011  
 Seeding Rate: 70 lbs/acre  
 Fertility: Starter + Sol 32 & Thiosol, April 20, 2011  
           Soft White Wheat, 50-10-0-12  
           Hard White, 70-10-0-17  
           Hard Red Spring, 70-10-0-17  
 Herbicide: Buctril 1 pt, Huskie 10 oz/acre, June 3, 2011  
 Harvest: August 31, 2011

ANOVA

2011-09-13 04:51:04

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\SWheat.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) WA Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 84

Source	df	Type III SS	MS	F	P
Blocks	2	1455.440238	727.72012	13.375509	.0000 ***
Main Effects					
Variety	27	2046.614762	75.800547	1.3932155	.1487 ns
Error	54	2937.973095	54.406909<-		
Total	83	6440.028095			
Model	29	3502.055	120.76052	2.2195805	.0056 **

R^2 = SSmodel/SStotal = 0.54379498788

Root MSerror = sqrt(MSerror) = 7.37610392898

Mean Y = 66.1880952381

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 11.144155%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 54.4069091711

Degrees of Freedom: 54

Keep If:

n Means = 28

LSD 0.1 = 10.0791511518

MSD 0.1 = 21.9828704302

Rank	Mean	Name	Mean	n	Non-significant ranges
1	BR	7030W	74.2	3	a
2	Otis		73.3	3	a
3	Malbec		72.1	3	a
4	Babe		71.9	3	a
5	Bullseye		70.9	3	a
6	Whit		70.7	3	a
7	10FX Inc 1 (Powerplay)		69.1	3	a
8	Louise		68.8	3	a
9	Hank		68.5	3	a
10	SYB04-1418		68.2	3	a
11	Kelse		67.7	3	a
12	Albany		67.6	3	a
13	Cerere		67.1	3	a
14	Fuzion		66.9	3	a
15	Nick		66.7	3	a
16	Buck Pronto		66.1	3	a
17	JD		65.8	3	a
18	Jedd		65.7	3	a
19	SY97621-05		65.6	3	a
20	Alturas		65.2	3	a
21	W3A3022		65.1	3	a
22	W3A5008		64.5	3	a
23	605 CL2		63.9	3	a
24	Hollis		61.7	3	a
25	Tara 2002		58.9	3	a
26	Diva		58.3	3	a
27	W3A5005		55.0	3	a
28	W3A6044		53.6	3	a

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 54.4069091711

Degrees of Freedom: 54

Keep If:

n Means = 3

LSD 0.1 = 3.29917664957

MSD 0.1 = 4.13306950996

Rank	Mean	Name	Mean	n	Non-significant ranges
1	2		69.8	28	a
2	1		68.4	28	a
3	3		60.4	28	b

## Wilbur Spring Wheat Comparative Yield

Variety	Class	3-Year Average		2-Year Average		2011		2010*		2009			
		Average	(1)	Average	(2)	Yield	TW	Protein	Yield	Protein	Yield	Protein	
Kelse	DNS	37.5	(1)	42.3	(1)	43.5	(3)	63.0	14.9	41.1	15.4	28.0	14.0
BR 7030	HW	35.7	(2)	38.5	(7)	41.2	(6)	62.3	14.2	35.7	15.5	30.3	13.6
Hank	DNS	35.5	(3)	40.2	(3)	38.5	(13)	60.2	14.6	41.9	15.7	26.2	14.3
Bullseye	DNS	35.4	(4)	38.5	(8)	39.6	(11)	61.9	14.3	37.4	15.0	29.1	13.9
Nick	SWH	35.1	(5)	38.8	(6)	36.4	(21)	62.1	13.0	41.2	14.2	27.6	11.7
Tara 2002	DNS	34.9	(6)	40.9	(2)	37.4	(19)	60.2	14.3	44.3	15.6	23.0	14.9
Whit	SWH	34.8	(7)	39.3	(4)	41.2	(7)	61.1	12.5	37.4	15.2	25.9	11.9
JD	Club	34.4	(8)	38.8	(5)	38.3	(16)	64.8	12.0	39.2	14.4	25.8	11.8
Babe	SWH	34.1	(9)	37.0	(11)	38.5	(14)	62.0	12.6	35.4	14.3	28.5	10.9
Hollis	DNS	33.5	(10)	37.9	(10)	40.2	(10)	58.5	14.9	35.6	15.9	24.6	14.6
Louise	SWH	32.4	(11)	36.4	(14)	39.5	(12)	63.0	11.5	33.3	13.6	24.4	11.3
Diva	SWH			38.0	(9)	35.8	(22)	61.4	12.3	40.1	13.4		
Jedd*	DNS			36.8	(12)	32.3	(24)	58.2	14.1	41.3	15.1		
605 CL2*	DNS			36.6	(13)	40.7	(9)	60.8	15.2	32.5	16.0		
Otis	HW					46.3	(1)	61.6	12.9				
Powerplay	DNS					44.5	(2)	57.8	14.4				
SYB04-1418	DNS					41.9	(4)	61.6	14.3				
Cerere	DNS					41.5	(5)	58.9	13.8				
SY97621-05	DNS					41.1	(8)	61.5	15.4				
Albany	DNS					38.5	(15)	62.4	14.3				
Malbec	DNS					37.8	(17)	59.4	15.1				
Alturas	SWH					37.5	(18)	61.3	11.6				
Fusion	DNS					36.9	(20)	60.8	15.2				
Buck Pronto	DNS					35.5	(23)	61.6	15.6				
2010* - Plot had 7% Hail Damage													
* - Clearfield™ Wheat Type													

2011 WILBUR SPRING WHEAT VARIETY TRIAL

Previous Crop: 2010 Winter Peas, 2009 Summer Fallow  
 Seeding Date: April 12, 2011  
 Seeding Rate: 70 lbs/acre  
 Fertility: Starter + Sol 32 & Thiosol, April 12, 2011  
           Soft White Wheat, 60-10-0-12  
           Hard White, 80-10-0-20  
           Hard Red Spring, 80-10-0-20  
 Herbicide: Buctril 1 pt, Huskie 10 oz/acre, May 27, 2011  
 Harvest: September 7, 2011

ANOVA

2011-09-13 05:00:10

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\SWheat.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) WB Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 84

Source	df	Type III SS	MS	F	P
Blocks	2	290.0830952	145.04155	8.1809406	.0008 ***
Main Effects					
Variety	27	3422.389881	126.75518	7.1495142	.0000 ***
Error	54	957.3769048	17.729202<-		
Total	83	4669.849881			
Model	29	3712.472976	128.01631	7.220647	.0000 ***

R^2 = SSmodel/SStotal = 0.7949876486

Root MSError = sqrt(MSError) = 4.21060588752

Mean Y = 37.0488095238

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 11.365023%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 17.72920194

Degrees of Freedom: 54

Keep If:

n Means = 28

LSD 0.1 = 5.75362462211

MSD 0.1 = 12.5487933128

Rank	Mean	Name	Mean	n	Non-significant ranges
1	46.3	Otis	46.3	3	a
2	44.5	10FX Inc 1 (Powerplay)	44.5	3	ab
3	43.5	Kelse	43.5	3	ab
4	41.9	SYB04-1418	41.9	3	ab
5	41.5	Cerere	41.5	3	ab
6	41.2	Whit	41.2	3	ab
7	41.2	BR 7030W	41.2	3	ab
8	41.1	SY97621-05	41.1	3	ab
9	40.7	605 CL2	40.7	3	ab
10	40.2	Hollis	40.2	3	ab
11	39.6	Bullseye	39.6	3	ab
12	39.5	Louise	39.5	3	ab
13	38.5	Hank	38.5	3	ab
14	38.5	Albany	38.5	3	ab
15	38.5	Babe	38.5	3	ab
16	38.3	JD	38.3	3	ab
17	37.8	Malbec	37.8	3	abc
18	37.5	Alturas	37.5	3	abc
19	37.4	Tara 2002	37.4	3	abc
20	36.9	Fuzion	36.9	3	abcd
21	36.4	Nick	36.4	3	abcde
22	35.8	Diva	35.8	3	abcde
23	35.5	Buck Pronto	35.5	3	abcde
24	32.3	Jedd	32.3	3	bcde
25	25.3	W3A5008	25.3	3	cdef
26	24.7	W3A3022	24.7	3	def
27	24.2	W3A6044	24.2	3	ef
28	18.6	W3A5005	18.6	3	f

Compare Means  
Factor: 2) Rep  
Test: Tukey's HSD  
Significance Level: 0.1  
Variance: 17.72920194  
Degrees of Freedom: 54  
Keep If:

n Means = 3  
LSD 0.1 = 1.88331573937  
MSD 0.1 = 2.35933861287

Rank	Mean	Name	Mean	n	Non-significant ranges
1	2		38.6	28	a
2	3		38.1	28	a
3	1		34.4	28	b

## **Fall vs. Spring Planted Winter Pea Yield Trials**

For the past three years we have compared the yield of winter and spring planted winter pea varieties. This test was conducted to determine that if winter peas did not survive the winter should we replant winter peas in the spring or if a different crop such as spring wheat or barley should be planted.

These trials have shown that if an entire field needs to be replanted in the spring, spring wheat or barley would give the grower a higher per acre return than spring planted peas. If small areas of a winter pea field needed to be reseeded in the spring, these areas could be seeded with winter peas to fill

in those areas. The spring planted winter peas will mature slightly later than the winter planted peas. Spring pea varieties should not be planted into a winter pea field because the seeds are larger and the differences in seed size and quality would be quite noticeable.

At Wilbur, the spring planted Windham peas yielded an average of 1,196 lbs/acre which is 35% of the fall planted Windham pea yield of 3,405. The variety, 6034, performed better with spring planting and yielded 1,885 lbs/acre. This was 56% of the winter planted yield of 3,370 lbs/acre.

### **Wilbur Winter vs. Spring Pea Comparative Yield**

Variety	3-Year Average		2-Year Average		2011		2010		2009	
	Yield	Rank	Yield	Rank	Yield	Rank	Yield	Rank	Yield	Rank
Windham-Fall	3,402	(1)	3,697	(2)	3,997	(3)	3,396	(1)	2,813	(1)
Universal	2,263	(2)	3,024	(3)	4,605	(2)	1,442	(4)	743	(3)
Windham-Spring	1,196	(3)	1,419	(5)	1,899	(5)	939	(6)	749	(2)
Cruiser	918	(4)	1,153	(7)	1,143	(9)	1,162	(5)	450	(4)
180-Fall			3,951	(1)	4,914	(1)	2,987	(2)		
180-Spring			1,371	(6)	1,868	(7)	874	(7)		
6034-Fall					3,370	(4)				
6034-Spring					1,885	(6)				
Aragorn					1,340	(8)				

### **Wilke Winter vs. Spring Pea Comparative Yield**

Variety	3-Year Average		2-Year Average		2011		2010		2009	
	Yield	Rank	Yield	Rank	Yield	Rank	Yield	Rank	Yield	Rank
Windham-Fall	2,094	(1)	1,519	(2)	1,965	(2)	1,073	(6)	3,245	(1)
Universal	1,331	(2)	1,501	(3)	1,206	(3)	1,795	(1)	993	(2)
Windham-Spring	1,226	(3)	1,358	(4)	966	(6)	1,750	(2)	963	(3)
Cruiser	1,046	(4)	1,296	(5)	980	(5)	1,612	(3)	545	(4)
180-Fall			1,653	(1)	2,253	(1)	1,053	(8)		
180-Spring			969	(6)	824	(7)	1,114	(5)		
Aragorn					1,072	(4)				
6034-Spring					806	(8)				
6034-Fall					518	(9)				

2011 WILBUR WINTER PEA vs. SPRING PEA VARIETY TRIAL

Previous Crop: Fall, 2010 Summer Fallow, 2009 Winter Wheat  
 Spring, 2010 Winter Pea, 2009 Summer Fallow  
 Seeding Date: Fall, September 1, 2010  
 Spring, April 12, 2011  
 Seeding Rate: Fall, Variable to achieve 6 plants/ft2  
 Spring, Variable to Achieve 8 plants/ft2  
 Fertility: Fall, Starter, 5-10-0-0, September 1, 2010  
 Spring, Starter, 10-20-0-12, April 12, 2011  
 Herbicide: Fall, Assure II 12 oz/acre, April 8, 2011, Chiptox 1pt, Sencor 1/3 lb/ac  
 Spring, Spartan 4oz, Valor 1 oz/acre, April 12, 2011, Assure II 11 oz/ac  
 Harvest: Fall, August 11, 2011  
 Spring, September 7, 2011

ANOVA

2011-09-15 08:43:23

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\SpPeaWPea.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) WB Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 27

Source	df	Type III SS	MS	F	P
Blocks	2	283099.1852	141549.59	1.2075656	.3248 ns
Main Effects					
Variety	8	39011848.07	4876481	41.601467	.0000 ***
Error	16	1875503.481	117218.97<-		
Total	26	41170450.74			
Model	10	39294947.26	3929494.7	33.522687	.0000 ***

R^2 = SSmodel/SStotal = 0.95444539839

Root MSError = sqrt(MSError) = 342.372556716

Mean Y = 2353.51851852

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 14.547264%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 117218.967593

Degrees of Freedom: 16

Keep If:

n Means = 9

LSD 0.1 = 488.054836512

MSD 0.1 = 887.928643923

Rank	Mean	Name	Mean	n	Non-significant ranges
1	4914	180-Winter	4914	3	a
2	3997	Windham-Winter	3997	3	b
3	2530	6034-Winter	2530	3	c
4	1899	Windham-Spring	1899	3	cd
5	1885	6034-Spring	1885	3	cd
6	1868	180-Spring	1868	3	cd
7	1605	Universal	1605	3	d
8	1340	Aragorn	1340	3	d
9	1143	Cruiser	1143	3	d

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 117218.967593

Degrees of Freedom: 16

Keep If:

n Means = 3

LSD 0.1 = 281.77859124

MSD 0.1 = 356.523955727

Rank	Mean	Name	Mean	n	Non-significant ranges
1	2473	2	2473	9	a
2	2365	1	2365	9	a
3	2223	3	2223	9	a

2011 WILKE WINTER PEA vs. SPRING PEA VARIETY TRIAL

Previous Crop: Fall, 2010 Chemical Fallow, 2009 Winter Wheat  
 Spring, 2010 Winter Wheat, 2009 Chemical Fallow  
 Seeding Date: Fall, September 2, 2010  
 Spring, April 21, 2011  
 Seeding Rate: Fall, Variable to achieve 6 plants/ft2  
 Spring, Variable to Achieve 8 plants/ft2  
 Fertility: Fall, None  
 Spring, Starter, 10-20-0-12, April 21, 2011  
 Herbicide: Fall, Assure II 12 oz/acre, April 8, 2011, Chiptox 1 pt, Sencor 1/3 lb/a  
 Spring, Spartan 4oz, Valor 1 oz/acre, April 12, 2011, Assure II 11 oz/ac  
 Harvest: Fall, August 14, 2011  
 Spring, August 14, 2011

ANOVA

2011-09-15 08:47:29

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\SpPeaWPea.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) DA Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 27

Source	df	Type III SS	MS	F	P
Blocks	2	118788.7407	59394.37	0.7657101	.4813 ns
Main Effects					
Variety	8	7712998.519	964124.81	12.429462	.0000 ***
Error	16	1241083.259	77567.704<-		
Total	26	9072870.519			
Model	10	7831787.259	783178.73	10.096711	.0000 ***

R^2 = SSmodel/SStotal = 0.86320941573

Root MSError = sqrt(MSError) = 278.509791037

Mean Y = 1176.59259259

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 23.670877%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 77567.7037037

Degrees of Freedom: 16

Keep If:

n Means = 9

LSD 0.1 = 397.01794979

MSD 0.1 = 722.303281101

Rank	Mean	Name	Mean	n	Non-significant ranges
1	2253	180-Winter	2253	3	a
2	1965	Windham-Winter	1965	3	a
3	1206	Universal	1206	3	b
4	1072	Aragorn	1072	3	b
5	980	Cruiser	980	3	b
6	966	Windham-Spring	966	3	b
7	824	180-Spring	824	3	b
8	806	6034-Spring	806	3	b
9	518	6034-Winter	518	3	b

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 77567.7037037

Degrees of Freedom: 16

Keep If:

n Means = 3

LSD 0.1 = 229.218420184

MSD 0.1 = 290.021529067

Rank	Mean	Name	Mean	n	Non-significant ranges
1	1244	1	1244	9	a
2	1200	3	1200	9	a
3	1086	2	1086	9	a

## **Chickpea Variety Yield Trials**

For the third year in our testing program, chickpeas have yielded well and our trials have shown that chickpeas are a crop that can be grown in our area. Chickpeas have a good tap root and can utilize moisture to a greater depth than spring wheat. As a contrast to pea production, chickpeas are tolerant to heat while they are blooming. Chickpeas are a long season crop and should be planted first in the spring and they will not be ready to harvest until mid to late September. Chickpeas are very susceptible to ascochyta blight and may require applications of fungicide to control this disease. At the current time, market prices for chickpeas are very high due to crop failures in Mexico and Canada this year. We are currently investigating the possibility to offer a chickpea production program in 2012 to our growers.

Of the released varieties, Sierra, has the highest planted acreage. It has good size which is very important in marketing the large kabuli chickpea types. It also has resistance to the current races of ascochyta blight. Several new lines have higher yields than Sierra and one of those two, 843C is much larger. The highest yielding variety 025C is smaller and has a darker tan seed coat than the other varieties. It would be priced at a discount to the lines with the larger seed.

We are going to expand the chickpea trial in 2012 to include some agronomic studies. This will include a fertility trial, a planting rate trial and a fungicide trial.

### **Wilbur Chickpea Comparative Yield**

Variety	3-Year Average		2-Year Average		2011			2010			2009	
					Yield	g/100	Rank	Yield	g/100	Rank	Yield	Rank
CA0469C025C			1,756	(3)	2,377	36	(1)	1,134		(3)		
CA04900851C	1,409	(1)	1,649	(1)	2,295	52	(2)	1,002		(4)	930	(2)
CA04900843C			1,586	(4)	1,775	60	(5)	1,396		(1)		
CA04900421C	1,308	(2)	1,452	(2)	1,909	44	(3)	995		(5)	1,019	(1)
Dylan	1,110	(3)	1,284	(5)	1,685	50	(6)	883		(7)	762	(5)
Dwelley	1,035	(4)	1,128	(6)	1,432	46	(8)	824		(8)	848	(4)
Sierra	975	(5)	1,116	(7)	1,544	50	(7)	687		(9)	694	(6)
Sawyer					1,905	44	(4)					

### **Wilke Chickpea Comparative Yield**

Variety	3-Year Average		2-Year Average		2011			2010			2009	
					Yield	g/100	Rank	Yield	g/100	Rank	Yield	Rank
CA04900421C	1,211	(2)	1,367	(1)	1,616	46	(4)	1,118	54	(1)	899	(4)
CA0469C025C			1,285	(2)	1,564	36	(6)	1,006	40	(2)		
CA04900851C	1,255	(1)	1,242	(3)	1,975	54	(1)	508	60	(5)	1,283	(1)
CA04900843C			1,130	(4)	1,626	58	(3)	633	60	(4)		
Dwelley	952	(3)	953	(5)	1,448	46	(8)	457	48	(7)	952	(2)
Sierra	879	(5)	913	(6)	1,584	50	(5)	242	52	(10)	810	(7)
Dylan	890	(4)	876	(7)	1,487	54	(7)	265	54	(9)	917	(3)
Sawyer					1,710	46	(2)					

2011 WILBUR SPRING CHICKPEA VARIETY TRIAL

Previous Crop: 2010 Winter Pea, 2009 Summer Fallow  
 Seeding Date: April 12, 2011  
 Seeding Rate: Variable to Achieve 4 plants/ft2  
 Fertility: Starter,-10-20-0-12, April 12, 2011  
 Herbicide: Spartan 4oz, Valor 1 oz/acre, April 12, 2011  
           Assure II 11 oz/acre, June 3, 2011  
 Harvest: September 7, 2011

ANOVA

2011-09-13 05:12:26

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\Chickpea.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 3) WB Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 24

Source	df	Type III SS	MS	F	P
Blocks	2	163468.0833	81734.042	1.38336	.2830 ns
Main Effects					
Variety	7	2344973.833	334996.26	5.6698584	.0029 **
Error	14	827171.9167	59083.708<-		
Total	23	3335613.833			
Model	9	2508441.917	278715.77	4.7173032	.0050 **

R^2 = SSmodel/SStotal = 0.75201808183

Root MSError = sqrt(MSError) = 243.071405832

Mean Y = 1865.41666667

Coefficient of Variation = (Root MSError) / abs(Mean Y) \* 100% = 13.030408%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 59083.7083333

Degrees of Freedom: 14

Keep If:

n Means = 8

LSD 0.1 = 349.561889019

MSD 0.1 = 620.852399193

Rank	Mean	Name	Mean	n	Non-significant ranges
1	CA0469C025C	2377	3	a	
2	CA04900851C	2295	3	ab	
3	CA04900421C	1909	3	abc	
4	Sawyer	1905	3	abc	
5	CA04900843C	1775	3	abc	
6	Dylan	1685	3	bc	
7	Sierra	1544	3	c	
8	Dwellely	1432	3	c	

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 59083.7083333

Degrees of Freedom: 14

Keep If:

n Means = 3

LSD 0.1 = 214.062065405

MSD 0.1 = 271.394476776

Rank	Mean	Name	Mean	n	Non-significant ranges
1	3	1982	8	a	
2	2	1818	8	a	
3	1	1797	8	a	

2011 WILKE SPRING CHICKPEA VARIETY TRIAL

Previous Crop: 2010 Winter Wheat, 2009 Chemical Fallow  
 Seeding Date: April 21, 2011  
 Seeding Rate: Variable to Achieve 4 plants/ft2  
 Fertility: Starter, 10-20-0-12, April 21, 2011  
 Herbicide: Spartan 4oz, Valor 1 oz/acre, April 12, 2011  
           Assure II 11 oz/acre, May 31, 2011  
 Harvest: September 7, 2011

ANOVA

2011-09-19 09:44:52

Using: C:\Documents and Settings\user\My Documents\Test Plots\2011\Chickpea.dt

.AOV Filename: 1WRB.AOV - 1 Way Randomized Blocks

Y Column: 4) DA Yield

1st Factor: 1) Variety

Blocks: 2) Rep

Keep If:

Rows of data with missing values removed: 0

Rows which remain: 24

Source	df	Type III SS	MS	F	P
Blocks	2	2649017.583	1324508.8	9.7116969	.0023 **
Main Effects					
Variety	7	566660	80951.429	0.5935602	.7512 ns
Error	14	1909359.75	136382.84<-		
Total	23	5125037.333			
Model	9	3215677.583	357297.51	2.6198128	.0517 ns

R^2 = SSmodel/SStotal = 0.6274447139

Root MSerror = sqrt(MSerror) = 369.300472902

Mean Y = 1626.16666667

Coefficient of Variation = (Root MSerror) / abs(Mean Y) \* 100% = 22.709878%

Compare Means

Factor: 1) Variety

Test: Tukey's HSD

Significance Level: 0.1

Variance: 136382.839286

Degrees of Freedom: 14

Keep If:

n Means = 8

LSD 0.1 = 531.092377901

MSD 0.1 = 943.266378203

Rank	Mean Name	Mean	n Non-significant ranges
1	CA04900851C	1975	3 a
2	Sawyer	1710	3 a
3	CA04900843C	1626	3 a
4	CA04900421C	1616	3 a
5	Dwellely	1595	3 a
6	CA0469C025C	1564	3 a
7	Dylan	1487	3 a
8	Sierra	1436	3 a

Compare Means

Factor: 2) Rep

Test: Tukey's HSD

Significance Level: 0.1

Variance: 136382.839286

Degrees of Freedom: 14

Keep If:

n Means = 3

LSD 0.1 = 325.226333034

MSD 0.1 = 412.331957653

Rank	Mean Name	Mean	n Non-significant ranges
1	2	2054	8 a
2	1	1582	8 b
3	3	1243	8 b