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The Cereal Sentinel

A newsletter for Treasure Valley cereal producers

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Topics: **Page**

Important Dates:

Malheur CountyWheat Grower League Annual Meeting	Nov. 6, 1997
Idaho Grain Producers Annual Convention	Nov. 17-18, 1997

The goal of this newsletter is to serve the best interests of Treasure Valley cereal producers. It will be issued periodically as information warrants. Correspondence and inquiries should be addressed to: **Parma Research and Extension Center, 29603 U of I Lane, Parma, ID 83660 (208-722-6701) (Fax-208-722-6708) (Email bradb@uidaho.edu)**

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Winter Cereal Variety Performance

Irrigated Trials

The 1997 season marked the 13th season of the Southwestern Idaho Cooperative Extension Winter Wheat Performance Trials. The trials, supported by the Idaho Wheat Commission, enable the testing of public and private varieties and advanced lines under the irrigated and dryland conditions of the Treasure Valley.

Four irrigated winter wheat trials were conducted during the 1997 season. Two of the trials were mid October planted and two were planted in mid November for evaluation of varieties under late planted conditions.

The Parma site, planted October 10, was the most productive despite extensive lodging. A Weiser trial was planted October 18 in the Weiser River flood plain, was flooded for a short time in January, was not irrigated, but apparently drew water from a shallow water table.

Another Parma trial was planted November 14 and the Mtn Home trial was planted November 13. The Mtn Home trial apparently suffered from moisture stress during stem extension as plant height was appreciably lower than usual. This site may also have suffered from excessive available N as protein averaged 11.7 %.

Soft White Winter Wheat

The soft white winter wheat results for the 1997 trials are given in Tables 1 and 2. **Stephens,** released in 1978, is still the most commonly grown winter wheat in western Idaho. It's primary weaknesses are straw strength, test weight, and protein levels higher than desirable for some Pacific Rim customers. It has excellent yield potential and is especially competitive in later plantings.

Malcolm has performed at least as well or better than **Stephens** in high yield environments in most of our evaluations, particularly under mid October or earlier plantings. It tends to lose its yield advantage over **Stephens** under later plantings. **Malcolm** tends to lodge less than **Stephens** and has slightly better leaf rust resistance.

MacVicar, the most recent OSU release, has been less consistent in yield relative to **Stephens**. In many trials over the years **MacVicar** has been superior to **Stephens**.

Rod, a WSU release, has not yielded better than Stephens over several years of testing and will probably be dropped from further testing.

Table 1. 1997 Mid October Planted Irrigated Soft White Winter Wheat Performance in the Treasure Valley.

Variety	Yield	Protein	Test Weight	Height	Lodging
	bu/acre	%	lb/bu	in	%
			Parma (planted Oct. 10)		
Brundage	145	10.9	59.9	40	33
Eltan (club)	100	11.5	56.3	44	98
Hiller (club)	109	10.6	52.9	41	79
ID8610420A	123	10.8	59.5	47	68
Lambert	142	11.4	56.8	44	85
MacVicar	129	10.9	57.9	41	70
Madsen	120	11.2	59.3	45	78
Malcolm	132	11.0	57.0	41	60
OR939645	128	11.3	55.6	40	85
Rod	122	11.0	57.0	42	81
Rohde (club)	122	10.8	59.3	42	80
Stephens	127	11.1	58.0	41	80
Tres (club)	103	10.2	59.6	44	90
WPB 470	148	11.3	63.4	42	18
XWH 1017	130	10.9	57.3	44	60
XWH 1019	147	11.4	62.1	42	43
XWH 1020	114	10.8	57.1	45	78
$LSD_{.10}$	13	0.6	2.0	2	19
			Weiser (planted Oct. 18)		
Brundage	125	11.0	58.6	37	0
Eltan (club)	91	13.0	57.4	39	100
Hiller (club)	113	10.7	53.1	39	13
Lambert	118	12.3	56.4	40	74
MacVicar	128	10.3	58.6	38	35
Madsen	111	12.5	56.6	39	96
Malcolm	136	10.6	58.9	38	23
OR939645	130	10.8	56.4	36	8
Rod	115	11.2	57.1	37	45
Rohde (club)	111	10.9	57.5	36	84
Stephens	123	11.5	57.0	37	70
Tres (club)	99	11.8	55.6	39	94
WPB 470	119	12.4	62.0	37	0
XWH 1017	114	11.0	56.9	39	33
XWH 1019	125	11.7	60.6	38	13
XWH 1020	90	11.3	56.1	39	86
$LSD_{.10}$	14	0.8	2.2	2	19

Table 2. 1997 Late Planted Irrigated Soft White Winter Wheat Performance in the Treasure Valley.

Variety	Yield	Protein	Test Weight	Height	Lodging
	bu/acre	%	lb/bu	in	%
		Parma (planted Nov.14)			
Winters					
Brundage	139	9.7	59.8	38	10
Lambert	118	10.3	56.8	42	81
MacVicar	117	10.3	55.8	41	70
Madsen	104	11.3	57.0	43	90
Malcolm	120	10.2	55.2	40	63
OR939645	116	10.3	55.4	38	70
Rod	114	9.5	55.3	41	68
Rohde (club)	105	9.8	57.5	38	60
Stephens	130	10.2	56.5	39	78
Tres (club)	83	9.8	54.9	42	78
XWH 1017	132	10.0	57.1	42	63
XWH 1019	134	10.4	59.6	39	45
XWH 1020	130	9.6	56.3	43	70
$LSD_{.10}$	13	0.5	1.4	1	21
		Mtn Home (planted Nov. 13)			
Winters					
Brundage	88	11.8	62.1	25	0
Lambert	116	11.8	60.9	31	0
MacVicar	119	12.3	58.6	30	0
Madsen	112	12.3	60.4	32	0
Malcolm	117	12.0	59.6	29	0
OR939645	109	11.9	58.1	27	0
Rod	124	11.1	58.8	31	0
Rohde (club)	110	11.3	62.3	28	0
Stephens	117	11.7	59.5	28	0
Tres (club)	99	11.3	59.8	28	0
XWH 1017	119	11.0	60.8	31	0
XWH 1019	125	11.0	62.1	29	0
XWH 1020	110	11.7	59.1	31	0
$LSD_{.10}$	13	1.3	1.8	2	0

For producers seeking a shorter variety to put under hand or wheel lines, we evaluated for the third year **OR939645,** a shorter advanced line from OSU. It is typically 1-3" shorter than **Stephens**, has good straw strength, but poorer test weight, and may not tolerate stress as well as **Stephens**. After three years of testing it does not appear that this line is nearly as well adapted to the Treasure Valley as **Stephens** and will also be dropped from further testing.

The Idaho advanced line **ID8614502B** was released this past year and named **Brundage**. It is also shorter than **Stephens**, a couple days earlier heading, and it's test weight ranged from 1.6 to 1.9 lb per bushel higher than **Stephens** in the mid October plantings and 2.6 to 3.3 lb per bushel better in the later plantings. **Brundage** protein is **lower** than **Stephens**. **Brundage** has excellent straw strength and lodged considerably less than **Stephens**. It has yielded as well or better than **Stephens** in the absense of stress. Certified seed of **Brundage** should be available in fall 1998.

WPB 470 is from Western Plant Breeders and was evaluated for the second year. It has yielded as well as or better than **Stephens**. **WPB 470** has outstanding test weight averaging from 5 to 5.4 lb per bushel better than **Stephens** in 1997 under high lodging conditions and from .5 to 3.0 lb per bushel better in 1996 with little lodging. **WPB 470** is slightly taller than **Stephens** but is considerably less susceptible to lodging.

Lambert, a UI release, does not appear to have a yield advantage over **Stephens** in high or moderate yielding conditions and is 3" to 4" taller than **Stephens**.

Three HybriTech hybrids were evaluated for the first time this year. Of the three, **XWH 1019** was the best adapted to our area. This hybrid lodged less, had better test weight, and yielded at least as well as or better than **Stephens** in both early and late planted trials.

The irrigated club wheat varieties as usual did not yield as well as most common soft white entries. Club wheat premiums would have to exceed 10- 15% of the market price for common soft white wheat to offer equal returns. Those premiums have not been available the past two years even though the portion of club wheat in the Western White market class has increased to 20% from 10% for Japan. The premiums can be expected in years when significant winter kill reduces club wheat stocks.

Performance in any given trial is not as reliable as the combined performance over several sites and years. The yield results for each year (averaged over 2-4 sites) since 1991 are shown in Table 3.

The performance of **Malcolm** over the years should be obvious. The yearly average for **Malcolm** was less than **Stephens** in only one year (this year) and in some years was appreciably higher than **Stephens**. The yearly average for **MacVicar** has been less consistent relative to **Stephens**.

Table 3. Irrigated Soft White Winter Wheat Yield Performance, 1991-97.

Variety	1991	1992	1993	1994	1995	1996	1997
Malcolm	112	113	153	155	140	147	126
MacVicar	120	101	143	154	137	149	123
Stephens	108	104	144	145	138	155	124
Madsen	--	93	149	142	126	138	112
Rod	--	102	148	143	138	146	119
Lambert	--	--	--	138	135	147	124
OR939645	--	--	--	--	130	139	121
Brundage	--	--	--	--	--	144	124
XWH1017	--	--	--	--	--	--	124
XWH1019	--	--	--	--	--	--	133
XWH1020	--	--	--	--	--	--	111
$LSD_{.10}$	6	11	7	6	5	6	7

Rod and **Stephens** are closely matched for yield. **Madsen** and **Lambert** in most years provided no advantage in yield over **Stephens**.

Hard Red Winter Wheat

Hard red winter wheats are also evaluated in the Cooperative Extension Variety Performance Trials. Hard red winter wheat is generally less productive than the soft white winter varieties but market prices can be considerably higher. Test weight is generally higher with hard red winters.

Results for 1997 testing are shown in Table 4 and 5. Wheat in the subirrigated trial at Weiser was shorter than in the irrigated trial at Parma and protein was generally higher. Winter hard reds were not evaluated in the later planted trials.

Finley, a new WSU release (WA7773), is apparently poorly adapted to our area with excessive height, poor straw strength, and lower yield potential.

Hawk, is an Agripro variety (North American Plant Breeders, Inc.), that performed well in 1997 trials. It has also yielded well in some of the previous years tested (Table 5). It is not as tall as Finley but is taller than some of the other varietes. It has good protein and excellent test weight.

Garland, a USU release, is the shortest of those listed and has excellent lodging resistance. The relative yield performance of Garland has been sporadic, sometimes doing well, other times less well. It is one of the few lines in either the soft white or hard red winter classes that fit conveniently under wheel or hand line sprinklers. Garland test weight is fair.

Table 4. 1997 Irrigated Hard Red Winter Wheat Performance in the Treasure Valley.

Variety	Yield	Protein	Test Weight	Height	Lodging
	bu/acre	%	lb/bu	in	%
		Parma (planted Oct. 10)			
Finley	91	11.9	61.2	52	100
Hawk	125	12.5	61.5	45	96
Hoff	120	12.3	60.0	42	75
IDO467	108	11.8	59.5	43	78
Meridian	111	11.9	60.3	42	75
$LSD_{.10}$	13	0.6	2.0	2	19
		Weiser (planted Oct. 18)			
Finley	97	13.1	61.8	43	60
Hawk	117	13.7	61.9	35	28
Hoff	114	12.4	61.3	34	0
IDO467	112	11.9	62.1	34	3
Meridian	125	13.6	60.6	35	43
$LSD_{.10}$	14	0.4	1.4	2	23

Hoff, an OSU release, has good test weight, straw strength and lodging resistance, especially for its height. **Hoff** was named after the long time superintendent of the Malheur Experiment Station, Neil Hoffman.

Meridian was released by the UI and tends to lodge more than **Garland** or **Hoff**. **IDO467** is a potential release from the UI that has good lodging resistance.

Table 5. Irrigated Hard Red Winter Wheat Yield Performance, 1991-97.

Variety	1991	1992	1993	1994	1995	1996	1997
Garland	--	102	138	134	139	137	--
Hawk	113	108	125	147	130	154	121
Hoff	114	96	134	137	128	148	117
Meridian	108	103	131	145	120	139	116
$LSD_{.10}$	6	11	10	5	5	9	10

Winter Barley

Winter barley was evaluated in the two earliest planted irrigated trials at Parma and Weiser. Plant height was appreciably lower at Weiser due to more limited moisture during stem extension. Consequently, lodging was less at Weiser and test weight was higher than at Parma. Extensive lodging at Parma contributed to a higher percentage of thins than at Weiser.

Test weight at both locations did not exceed 50 lb per bushel for any variety. Therefore, none of these six row winter varieties would have graded Idaho Prime.

Kold and **Strider**, OSU releases, are the only varieties tested with barley stripe rust resistance. Stripe rust was not present in the two trials. Boyer is the oldest release of those tested.

Sunstar Pride was one of the shortest varieties tested but tended to have the highest percentage of thins. **WPB Sprinter** averaged the highest in test weight.

ORW10 and **ORW11** are OSU advanced lines with Stripe Rust resistance.

Table 6. 1997 Irrigated Winter Barley Performance.

Variety	Yield	Test Weight	Height	Lodging	Thins
	bu/acre	lb/bu	in	%	%
		Parma			
Boyer	98	44.4	42	98	7.4
Kold	112	44.4	42	96	7.3
ORW10	139	46.6	44	81	7.4
ORW11	128	45.8	42	96	5.9
Strider	122	43.3	42	96	5.7
Sunstar Pride	95	46.4	38	95	9.5
WPB Sprinter	75	47.4	40	98	3.2
$LSD_{.10}$	19	1.7	2	13	2.2
		Weiser			
Boyer	115	46.0	30	24	2.8
Kold	108	47.9	32	43	2.4
Strider	120	48.6	33	23	1.8
Sunstar Pride	116	47.8	28	28	3.6
WPB Sprinter	107	49.4	29	46	1.4
$LSD_{.10}$	19	1.8	4	36	1.5

Dryland Trials

Dryland winter wheat and barley production in southwestern Idaho's outlying areas generally receives less than 15 inches annual rainfall. Much of this land is currently in the Conservation Reserve Program, but these contracts may expire within the next few years and growers may not want or be able to participate in the CRP program.

We conducted variety performance trials in these areas prior to 1991. Since then several new soft white (both common and clubs) and hard red winter wheat varieties have been released. In addition, there is greater potential for club wheat production in these areas now that club wheat commands a more consistent premium.

A dryland variety performance trial has been conducted near Midvale since 1995. Rainfall was above normal and yields were high for this wheat fallow production system in 1996, but closer to normal in 1995 and 1997. The performance results for 1995-1997 are given in Table 3.

Winter Wheat

Results from the trials conducted prior to 1991 indicated that hard red winter wheat was as productive, if not more so, than the soft white winter wheat commonly grown. In addition, the hard red winter class averaged about three pounds per bushel higher test weight. Results with more recent varieties are similar.

Average yield for the two market classes has not differed appreciably. Test weight has averaged from 2.1 to 3.3 lbs per bushel higher for the hard red class than for the soft white class. Lower test weight for the soft white class will make it more difficult to produce No. 1 grade wheat which requires a 60 lb test weight.

Protein in the hard red class has been too low in the last three years of testing to be eligible for protein premiums at the 12% or 13% level. However, premiums for higher protein hard red winter are not consistently available.

Club wheat did not yield as well as the common types and also tended to have poorer test weight.

Among the soft whites, few of the varieties were actually released for this production system. Nevertheless, the OSU soft whites such as **Stephens**, **Malcolm**, and **MacVicar** were as productive over the three years as **Eltan** and **Madsen**, the WSU soft white releases which were more targeted to the wheat fallow system. **Madsen** in particular has become popular in eastern Washington due to it's strawbreaker footrot resistance. **Eltan** is noted for its excellent emergence, winter hardiness, and resistance to snow mold, common bunt, and dwarf bunt.

Table 7. Dryland Winter Cereal Performance, Midvale, 1995-1997.

Variety	Yield				Protein	Test Weight	Height
	1995	1996	1997	1995-97			
	bu/acre				%	lb/bu	inches
Soft White Winter Wheat							
Commons							
Brundage	--	55	34	--	10.3	56.6	21
Eltan	35	57	37	43	9.1	59.3	26
IDO479	--	--	31	--	11.2	62.5	28
Lambert	--	59	36	--	9.7	59.3	27
MacVicar	39	50	41	43	9.7	58.8	26
Madsen	40	56	36	44	10.1	59.9	28
Malcolm	41	55	38	45	10.4	59.6	25
Rod	--	61	32	--	9.5	57.4	23
Stephens	43	55	32	43	10.2	58.9	24
Clubs							
Hiller	--	53	30	--	9.9	56.5	20
OR92C10049	--	43	28	--	10.4	55.3	18
OR92C10054	--	49	29	--	10.3	57.5	20
Rohde	38	43	26	36	10.5	58.9	21
Tres	--	51	32	--	9.6	56.4	22
Average	39	53	34	43	10.0	58.4	24
$LSD_{.10}$	9	6	6	4	0.8	1.5	2
Hard Red Winter Wheat							
Bonneville	36	52	36	42	10.1	62.9	33
Buchanan	44	56	39	47	9.0	59.5	28
Hatton	37	47	32	39	9.4	63.6	26
Hawk	--	--	36	--	9.8	61.5	26
Hoff	40	50	41	44	9.6	60.4	28
Judith	36	47	31	38	10.2	61.0	28
Meridian	38	57	38	44	9.7	61.4	26
Promontory	45	59	37	47	10.1	63.6	28
Utah 100	41	57	37	45	9.6	61.1	30
Average	40	54	37	43	9.7	61.7	28
$LSD_{.10}$	7	9	7	5	1.2	0.9	2
Winter Barley							
Boyer	--	--	42	--	--	45.0	22
Kold	--	63	28	--	--	45.6	23
ORW10	--	--	26	--	--	48.0	22
ORW11	--	--	33	--	--	49.4	24
Otis	43	62	0	--	--	--	--
Sprinter	41	64	35	--	--	47.3	22
Strider	--	--	34	--	--	43.9	22
Average	42	63	33		--	46.5	22
$LSD_{.10}$	4	7	10		--	1.1	2

Among the hard reds, OSU's **Hoff** and UI's **Meridian** were irrigated releases that have done reasonably well in these trials. **Bonneville**, a UI release, has resistance to snow mold and dwarf bunt, but yield has tended to lag behind the most productive varieties the past three years.

Hatton, an older WSU variety ('79), was released for its excellent emergence and winter hardiness capability, but it also has not yielded with more recent varieties.

Judith, a '89 Montana State release also has not yielded as well as others over three years of testing.

Among the more productive hard reds were **Promontory** (USU, '91) and **Buchanan** (WSU, '89). **Buchanan** was released for it's excellent ability to emerge from deeper planting depths, and winter hardiness due in part to moderate snow mold tolerance. **Promontory** has both snow mold and dwarf bunt resistance. **Promontory** appears to have two advantages over **Buchanan**, higher test weight and higher protein.

Winter barley was also planted in the dryland trial. Whereas no winter kill was observed in the wheat, all winter barley varieties suffered stand losses from winter kill. Winter barley typically has less winter hardiness than winter wheat. **Otis** is actually a spring barley and entirely winter killed.

Seed Availability

Occasionally variety performance will be reported in the ***Cereal Sentinel*** for varieties that are not readily available. If you have interest in a particular variety check first with your regular seed supplier. If not in their inventory they may be able to secure seed from a more distant source.

Some of the proprietary varieties have been particularly difficult to find. Western Plant Breeders, for example, until recently did not market their varieties any closer than Le Grande or Burley. This should change with the recent sale of the Cal West Seed facility in Ontario to Evans Grain and their Western Seed subsidiary. Western Seed is an outlet for Western Plant Breeders so their seed should be more available than in the past..

I will maintain a list of available varieties at the various seed dealers. I will in turn provide that information to county UI Cooperative Extension offices.

Broadcast Seeding

Broadcast seeding of wheat with fertilizer spreaders is increasingly popular. Just a few years ago this practice was confined primarily to late fall planted wheat, where time was short and a late fall planting was preferable to waiting until spring to drill. But these days more and more wheat is broadcast even with earlier plantings.

The cheapest of all broadcast practices seems to be the broadcast followed by corrugating. In two operations, only one of which the producer is directly involved in, the seed is on the ground and covered (mostly). Its quick, cheap, and reasonably effective relative to the alternatives, especially under the best of conditions when sufficient rainfall is received for rapid germination and emergence.

In some cases a light tillage is used to incorporate the seed prior to corrugating. It involves another operation but growers are more assured of covering the seed. If there is no corrugating, as with sprinklers, broadcasted wheat is most always tilled lightly to incorporate the seed.

Most producers believe that stands tend to be poorer with broadcast seeding and they compensate with higher seeding rates. The higher seeding rates can appreciably increase seed costs. Poorer stands result from poorer seed to soil contact, seeds covered too deep, and birds feeding on seeds not incorporated to name a few.

Poorer stands can be problematic as weeds are more competitive and maximum yields require a sufficient number of seed producing heads. But even poor stands can be remarkably productive given the ability of our wheat to produce additional stems (tillers), more seeds per head, and larger seed under less crowded conditions.

Unless adequate moisture is available for rapid germination and emergence, broadcasted seed is frequently slower to emerge due to poorer seed to soil contact. Delayed germination and emergence can ultimately reduce tillering and delay maturity such that grain filling occurs under higher and less productive temperatures.

Soil conditions at planting, particularly mid to late fall, are frequently too dry at normal planting depths to germinate wheat without timely rainfall. Broadcast seedings, with the attendant poorer seed to soil contact, are especially vulnerable to slower germination and emergence. It is the combination of poorer stands and delayed emergence that puts broadcast seeding at risk of lowering yields.

Selected seeding practices were evaluated at the Parma Research and Extension Center during the 1995, 1996, and 1997 seasons. Seeding

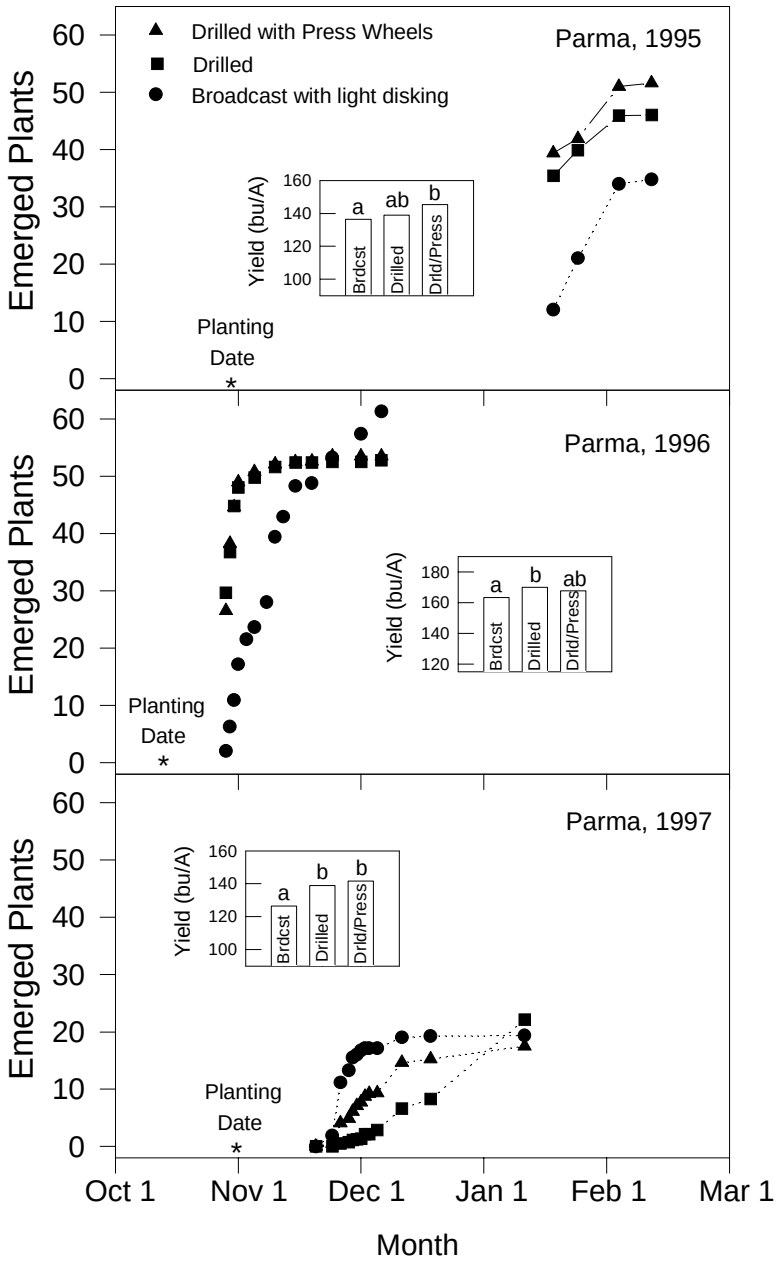

Figure 1. Emerged wheat as affected by seeding method.

methods included (1) broadcast with light disking, (2) drilling using double disk openers spaced 7", and (3) drilling with the same disk openers followed by 2" press wheels. All seeding methods were evaluated at 60, 120, and 180 lb per acre seeding rates. Very little seed was covered during the corrugation operation due to orientation of rows parallel to corrugates.

Wheat planted October 31, 1994 did not begin to emerge until after snow cover and did not finish emerging until late January due to dry soil conditions before and after planting (figure 1). In fall 1995 wheat planted October 13 began emerging within two weeks. Emergence was completed within two weeks in the drilled treatments but took two weeks longer to reach the same population in the broadcast treatment.

Wheat planted November 1, 1996 did not begin to emerge until three weeks after seeding due to dry soil conditions. Drilling with press wheels hastened emergence, with final stands reached in about 2.5 weeks. Drilling without press wheels significantly delayed emergence for the first time in the three year study. Emergence was delayed even more with broadcast seeding. Whereas emergence was completed by the first week in December when drilling with press wheels, emergence was not completed until mid January for the broadcast seeding.

Broadcast seeding delayed or reduced emergence every year of the study (Figure 1). In 1995 broadcast seeding significantly reduced stand. In other years emergence was delayed with broadcast seeding but stands were eventually the same as with drilled treatments. Stands were considerably poorer in 1997 than in 1995 or 1996.

Yield was lower for broadcast seeding every year of the study. Yield for broadcast seeding was from 3 to 12 bu per acre less than drilled (without press wheel) wheat, and from 4 to 15 bu per acre less than wheat drilled with 2" press wheels trailing behind double disk openers. These yield differences were less than year to year yield differences and would be difficult for growers to see visually.

Using the three year yield average for each seeding method, the income lost per acre of broadcasting wheat was calculated assuming wheat prices of $3.50 per bushel (Table). The yield average for the two drilled treatments did not differ significantly. Gross income with broadcast seeding averaged about $25 per acre less than with drilling.

If drilling wheat requires more labor, the extra labor costs would also need to be considered. If they exceeded the application costs and additional seed costs the difference in gross income would be minimized. Also, if drilling resulted in some wheat not planted until spring, the reduced yield from a spring planting would also have to be taken into consideration.

Table 8. Average gross income loss from broadcast seeding, 1995-97.

Seeding Method	Yield	Gross Income	Income Loss
Broadcast	142.0	497	--
Drilled	149.3	523	26

Seeding rates are frequently increased with broadcast seeded wheat. There are reports of seeding rates of 200 lb per acre in some cases. High seeding rates are sometimes used for even conventionally seeded or drilled wheat.

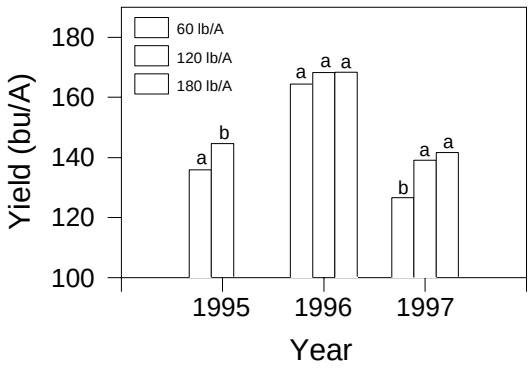

Figure 2. Yield as affected by seeding rate (across all seeding methods).

In this study higher seeding rates were no more important for broadcast seeding than for drilled wheat as there was no yield interaction between seeding method and seed rate. The effects of seeding rates are shown in figure 2.

Seeding rate made little if any difference in 1996 when wheat was planted mid October, emergence was completed by Dec. 1 and a high percentage of planted seed germinated and emerged.

Yield increased 9 bu/A in 1995 and 12 bu/A in 1997 when seeding rate increased from 60 to 120 lbs per acre. Emergence was delayed until spring in 1995 and emergence was poor with all seed treatments in 1997. But even in 1997 when 60 lbs per acre was not

adequate and emergence was generally poor, there was no advantage to using more than 120 lbs seed per acre.

The results suggest that higher seeding rates alone can not fully compensate for the delayed emergence associated with broadcast seeeding. The population of seedlings seems to have less to do with yields than the conditions associated with tillering and grain filling.

Similar results have been found with planting dates. Later plantings are less productive in many years and higher seeding rates don't fully compensate for later planting either. In effect, delayed emergence works pretty much the same as delayed planting. Both result in fewer heads (due to less tillering) and later maturity.

Trailing double disk openers with 2" press wheels in 1997 significantly improved emergence over wheat drilled without press wheels, but yields did not differ appreciably in 1997 or any other year.

In summary, broadcast seeding reduced yield due to delayed emergence and increased seeding rates did not compensate. High seeding rates (180 lb per acre) did not improve yield regardless of seeding method. Time and weather may dictate broadcast seeding, but growers should assume lower yield with broadcast seeding in most cases.

Grain Stocks Data Bank

The wheat industry is increasingly moving toward specialty markets for our production. The expectation is that market and production options will expand while the price increases for the grower's product.

The **Idaho Grain Producers Association** (IGPA) is trying to facilitate this trend. The IGPA will keep a data bank of the specific varieties held in on-farm or commercial storage together with the quality of the grain stored. Potential buyers will be notified of the data bank and when buyers request grain with specific quality, the IGPA will provide a list of the locations of that grain.

Whether you have a bin full of a specific variety, or several bins of the same variety but variable quality in each bin, you now have greater potential for marketing that stored grain according to its quality.

Higher prices could be offered for grain with particularly low dockage, for low or high protein grain depending on the intended usage, for extra plumpness or higher test weight barley, for individual varieties of barley or wheat. The possibilities are limited only by the specific needs of our customers.

You have to be a member of the **Idaho Grain Producers Association** to list your grain stocks in the data bank. Simply paying the wheat or barley assessment does not automatically make you an IGPA member. And just because you get the Idaho Grain magazine doesn't necessarily mean you are a member either. The IGPA is a separate organization from either the Idaho Wheat Commission or the Idaho Barley Commission, the two commissions that receive the assessments. To join the IGPA, and for additional information about listing your grain stocks contact Steve Johnson at the IGPA office in Boise (208-345-0706 or igpaboise@internetmci.com).

Wheat after Wheat?

Wheat after wheat is the exception rather than the rule for western Idaho. For those that can't avoid planting wheat after wheat, many will get by without major yield reductions, but the practice involves some risk, particularly of soil borne diseases.

Diseased wheat roots preclude the plant from obtaining the moisture and nutrients necessary for maximum production. Plants are also less able to withstand other pressures such as insect feeding, weeds or foliar diseases.

Diseases occur because the disease agent, or pathogen, builds up on the roots of the first wheat crop, then is perpetuated and increased on volunteer wheat roots. Increased pathogen numbers then increase the risks of the next wheat crop being infected. Volunteer wheat serves as a "green bridge" for the pathogen to survive from the first to the second crop.

Producers can't avoid an increase of pathogens on the first wheat crop. It has minimal effects on yield because pathogen numbers are so low while wheat is being established. Similarly there's no way to avoid the buildup of even more pathogens on volunteer wheat roots. But producers can reduce the risk of pathogens infecting the second wheat crop by timely removal of volunteer wheat.

The longer volunteer wheat is allowed to grow, the greater the infection level on volunteer wheat roots, and the greater the risk of infecting the second wheat crop. Infection is reduced the earlier that volunteer wheat is destroyed before planting the second wheat crop. Without the living root system of volunteer wheat,

pathogen numbers decline. Volunteering wheat should be destroyed at least two and preferably three weeks earlier than the intended planting date.

Avoiding stress is critical in second year wheat. Root diseases that are minor in the absence of stress can cause appreciable yield losses when combined with inadequate fertility or moisture. Though excessive N may exacerbate the problem by stressing the plant, adequate P is critical for reducing the spread of the disease in the plant. Sources of chloride such as KCl and NH_4Cl have also reduced infection of roots. Ammonium sources of N have reduced *take-all* infections as compared to nitrate sources.

Wheat after wheat, and the attendant risks of soil borne diseases can't always be avoided. Wheat producers can reduce the risk by removing volunteer wheat hosts as soon as practical, preferably at least three weeks before planting the second wheat crop.

Aberdeen Cereal Home Page

Those interested in examining cereal variety performance in other irrigated and dryland areas of southern Idaho can access those results from the University of Idaho Cereals Extension Project at Aberdeen Home Page. It can be reached on the internet at www.uidaho.edu/ag/extension/.

A home page for the Extension Cereals Program at Parma should be available for access by the first of the year.

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