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IDAHO BARLEY NEWSBRIEF

Inside this Edition:

Idaho barley check-off dollars at work… IBC affirms strong commitment to research

- The IBC has set its preliminary research budget for the upcoming FY 2014 (begins July 1). Research typically receives about a quarter or more of the annual IBC budget.

USDA/ARS barley breeding - $55,000 ($33,000 in FY 2013)

OSU barley breeding - $5,000 ($18,000 in FY 2013)

UI Tetonia Research Farm - no request in FY 2014 ($15,000 in FY 2013)

UI Extension barley variety trials & north Idaho support scientist - $19,712 ($17,291 in FY 2013)

UI Winter Barley Tolerance to Grass Herbicides - $7,513 ($7,513 in FY 2013)

UI Long-Term Impacts of Manure Applications (8-year study) - $16,000 ($16,000 in FY 2013).

Crop Management Toolbox: Taking another look at seeding rates - contributed by Dr. Juliet Marshall, UI

Seeding rates for barley and wheat have been discussed quite extensively lately, and there are so many "ifs" that it is always a good idea to revisit the topic. How well do plants tiller? How do seeding dates impact seeding rate and yield? Does seeding depth affect tillering? Do different varieties need seeding at higher rates?

We can answer some of these questions by looking at different research, both new and old. We can initially refer to the "Idaho Spring Barley Production Guide" (University of Idaho Extension Bulletin 742) that was published January of 1993, and updated in 2003. While that was ten years ago, many of the same principles apply. It is important to remember that optimal conditions will promote healthy plants and good tillering. Plant stress, such as irregular seeding, inadequate early irrigation, late planting, and warmer than usual temperatures, will reduce stand and tillering. The later the planting date, the fewer the days of optimal environmental conditions that occur for the cool season grasses to thrive. When stresses are greater, higher seeding rates are needed to compensate for poor conditions.

Seeding recommendations in the UI barley production guide for irrigated barley was 100-120 lbs/A based on a pure live seed basis (if you had 100% germination). Adjustments can be made when the seed you are using has germination rate less than 100%. However, if you look at Tables 1 and 2 as reproduced from the guide (and yield converted to bu/A), the average increase in yield is 2 to 6 bu/A with increasing seeding rate. **The greatest effect on yield is planting date,** with significant decreases in yield occurring with every two-week delay. The results of this study show no statistically significant increases in yields with higher seeding rates.

Table 1. Effects of seeding rate and planting date on spring barley yield in 1989.

	19-Apr	4-May	17-May	1-Jun	Average
Seeding Rate					
lb/acre		Grain yield, bu/acre			
60	104	88	62	55	77
80	102	86	61	58	77
100	111	84	65	57	79
120	111	90	65	58	81
Ave	107	87	63	57	

LSD 0.05:Seeding rate = NS; Planting date = 6 bu/A

Table 2. Effects of seeding rate and planting date on spring barley yield in 1990.

	17-Apr	1-May	15-May	2-Jun	Average
Seeding Rate					
lb/acre		Grain yield, bu/acre			
60	113	103	84	73	93
80	109	101	82	80	93
100	117	109	84	84	99
120	112	97	80	83	93
Ave	113	102	82	80	

LSD 0.05:Seeding rate = NS; Planting date = 20 bu/A

We repeated seeding rate studies in 2012 in Aberdeen and Rupert with three barley varieties (Conrad, M69, and Idagold II) and five seeding rates based on actual seed size. Our typical seeding rate for the extension variety trials is 1,000,000 seeds per acre for irrigated spring barley. The five seeding rates were 80%, 100%, 120%, 140% and 160% (actual lbs/A are shown in Table 3). Statistical analysis showed no effect of seeding rate on yield (see Table 4), test weight, or protein. However, there were some differences in yield between varieties with higher seeding (see Table 5).

Table 3. Actual seeding rate in pounds seed per acre for the spring barley varieties planted in Aberdeen and Rupert in 2012.

	Seeds	80%	100%	120%	140%	160%
	per	Seeding	Seeding	Seeding	Seeding	Seeding
Variety	Pound	Rate[1] (lb/A)	Rate[1] (lb/A)	Rate[1] (lb/A)	Rate[1] (lb/A)	Rate[1] (lb/A)
Conrad	10,428	61	77	92	107	123
M69	9,755	66	82	98	115	131
Idahogold II	11,631	55	69	83	96	110

Table 4. Effect of seeding rate (based on percent of standard population of 1 million seeds per acre) on yield of barley (averaged over three varieties) planted in Aberdeen and Rupert in 2012.

Seeding rate	2012 Yield (bu/A)
80%	134
100%	132
120%	134
140%	136
160%	139
LSD (0.05)	8

Table 5. Effect of seeding rate on yield of three barley varieties planted in Aberdeen and Rupert in 2012.

Level of variety	Planting rate	Yield (bu/A)	
		Mean	Std Dev
Conrad	80%	132	15
Conrad	100%	130	10
Conrad	120%	130	15
Conrad	140%	137	21
Conrad	160%	132	16
Idagold II	80%	143	16
Idagold II	100%	135	20
Idagold II	120%	142	26
Idagold II	140%	140	18
Idagold II	160%	143	17
M69	80%	127	15
M69	100%	132	20
M69	120%	130	20
M69	140%	131	25
M69	160%	142	11

Things to notice about the data: our seeding rates were very low (55 to 80 lbs/A) with no significant yield gains with higher seeding rates! Only one variety, M69, benefited from higher seeding rate (M69 is a very short malt variety from MillerCoors). We were planting on the Aberdeen experiment station and in Rupert in a cooperator's field and obtained the same results, and both fields had good seed bed preparation.

It is very important that you know your seed weight and plant based on plant population per acre. Some varieties have larger seed and will need to be planted at higher rates (in pounds per acre). Remember, we are talking about management under optimum conditions. Higher plant populations may improve weed control, improve crop uniformity and promote a slightly earlier maturity, but may also result in greater disease pressure and lodging. You know your conditions and the capabilities of your equipment and can make adjustments accordingly, but we cannot predict when conditions may suddenly become hot and dry.

Another guide to use is the **Small Grains Research Report published every year** by our extension program (http://www.extension.uidaho.edu/scseidaho/). In Table 1, we report seeding rate in lbs/A for every variety based on the standard 1 million seed per acre of irrigated barley. You can view plant stand and yield data from each location, and use the information to adjust seeding rates to reflect your conditions.

2013 Cereal Disease Forecast – *contributed by Dr. Juliet Marshall, UI cereal agronomist/pathologist based in Idaho Falls and Aberdeen*

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It is difficult to forecast disease for the upcoming year, as everything depends on mother nature and the production practices of each grower. I have no control over either! However, I can give an opinion of what I expect to see in wheat and barley.

Winter crops, especially winter barley, may be at risk of damage from Barley Yellow Dwarf Virus (BYDV). I have seen some pictures this spring of winter barley with symptoms that resemble BYDV, but until we obtain samples and confirm with serological and / or molecular techniques, we cannot say for sure. However, with confirmed incidence of BYDV last year (2012) in winter barley, it is very likely that we will see it again. Damage from BYDV (if not severe) can be somewhat mitigated by preventing crop stress – provide appropriate fertility and irrigation.

With the frosty and cold conditions this spring, we will probably see quite a bit of frost damage on winter cereals. Keep an eye out for yellowing and browning of the leaf tips. As a result of frost damage, we may also see bacterial blight and / or black chaff.

oot diseases can be reduced with crop rotation away from cereals and practices that promote healthy plant growth, such as the use of starter fertilizers and fungicidal seed treatments. While planting cereals has hit full swing, we are still having very cold conditions. Cool, moist conditions will result in disease pressure from Pythium, which is regularly seen in cool wet springs, especially in barley. Metalaxyl-based seed treatments will help keep these fungi at bay, and are highly recommended. Dry conditions will also be an issue with a risk of seed decay caused by various soil-borne fungi. The impacts of dry rot or dry seed decay will be significantly reduced by broad spectrum seed treatment fungicides.

Some foliar diseases can also be reduced with crop rotation. The things that CAN'T be controlled will be those diseases related to excessively dry planting conditions, or cool and wet seed beds. In addition, the occurrence of foliar diseases that ride the wind or sneak out from residue of other crops like corn are very hard to estimate. However, I expect stripe rust will be minimal and similar to last year, will occur mostly in late-planted (susceptible) spring wheat.

Of major concern to me will be the occurrence of Fusarium head blight (FHB) in spring wheat following corn. FHB can and does occur in any rotation, even wheat following canola, but the risk is very high when spring wheat follows corn. In this situation, PLAN on spraying a triazole fungicide (no strobilurins or strobilurin – triazole mixes) at 50% flowering.

Additional information will be available via the PNW Pest Alert System (PNWPestAlert.net) and also via email alerts.

If you wish to be placed on my email alert email list, please send me an email at juliet.marshall@uidaho.edu.