University of Idaho Cooperative Extension System

The Cereal Sentinel

A newsletter for Treasure Valley cereal producers

May 28, 2008 Issue No. 48

Topics: **Page**

Reminders

Parma R & E Center Small Grains Tour **June 12, 2008**

Winter and spring wheat and barley variety performance, N fertilization trials testing slow release N fertilizers for winter and spring wheat, relay cropping of oil seed crops and corn in barley.

Malheur Station Field Day **July 9, 2008**

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:
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Pests

Cereal Leaf Beetle

Cereal Leaf beetle (CLB) adults have been feeding since late April and hatched larvae are feeding in fields infested. While adult feeding (1 mm wide by 1 to 2.5 cm feeding paths along leaf veins) is typically inconsequential in terms of yield damage, larvae feeding in high enough numbers can reduce yields.

Egg laying may have been later this year than last year due to the cooler temperatures, but eggs were evident as early as May 1.

Scouting is essential to determine if egg and or larvae populations are high enough to warrant control. The economic threshold is three larvae or eggs per plant before boot stage and one larvae per flag leaf after boot stage. If you suspect from CLB egg numbers that control will be necessary, make sure it is the larvae that you're treating rather than the eggs or adults, unless an ovicide (a pesticide that is active on eggs) is labeled. That means waiting for larvae emergence. Check the label in all cases.

Biological Control Survey

As I've reported previously, CLB parasites have been released in Idaho for bio-control of this pest. The first release in SW Idaho was by Mike Cooper, Idaho State Department of Agriculture, who released a larval parasite ***Tetrastichus julis*** at the Parma R & E Center and other sites. This parasite release had proved effective in southeastern Idaho.

In larval samplings in 2005 and 2006, about 50% of the larvae collected at Parma were parasitized with ***Tetrastichus julis***. Practically all collected larvae were parasitized by the end of the season in 2006. It appears to be established and providing effective control where we have not attempted to control CLB with insecticides.

To determine how widespread the larval parasite has become established in SW Idaho, a survey will be conducted this spring. The survey project participants include Ben Simko (ISDA); Jim Barbour, Jerry Neufeld, Steve Reddy (UI), and Phil Allison (Landview Fertilizer).

If you have CLB larvae that you want included in the survey you should contact Jerry Neufeld at 454-6003. Verification of significant larval parasitization might preclude the need for control of the larvae with pesticides. Say you have two CLB larvae per flag leaf after the boot stage, or twice the economic threshold of 1.0 per flag leaf, but 90% of them are parasitized. In this case, controlling the larvae present probably isn't called for. We won't know how prevalent the parasite is until the survey is conducted this spring and summer. But that information should be useful for future decisions.

Where the CLB is repeatedly controlled with prophylactic chemical treatment, those pesticides applied annually regardless of the numbers of pests present, there is less likelihood that the bio-control agent has been established. After all, the bio-control agent is specific to the CLB larvae, and needs it as a host for establishment.

Economic thresholds

With the higher price for grain this year, many will be tempted to control CLB even though egg or larval numbers are well below the economic thresholds of three eggs or larvae per plant before boot stage or one larvae per flag leaf after boot. The economic thresholds were developed in the eastern US. We have assumed, for lack of better information, that the thresholds are appropriate for southern Idaho. However, the data is very limited in the PNW. The most recent information from the southern US suggests the economic threshold may be lower than what we've used historically.

As an economic threshold, the price of the commodity being protected figures in to the calculation. For example, the higher the price for wheat, the lower the economic threshold would be (the lower the pest incidence that would justify control).

If pest control costs (pesticide and application costs) greatly exceeded the wheat price per bushel, it would take the loss of several bushels of wheat to justify control measures. Say wheat prices were $3 per bushel and CLB control costs were $18 per acre. Control would not be warranted unless yield losses were estimated to be higher than 6 bushels per acre ($18/3). More realistically, assume wheat prices are locked in at $6 per bushel, then the producer would be justified in CLB control if projected losses are greater than 3 bu per acre.

It is intuitive then that the higher the wheat price, the lower the economic threshold should be. We now have relatively high prices. Does that mean we should treat regardless of the pest level? No. If you didn't have any CLB, paying for control would be a waste of money.

The difficulty is that using a set threshold (of one larvae per flag leaf) as we have historically as a trigger for deciding whether to control or not, may not serve as well this year. The set threshold was used in part to simplify the decision making. What might be more useful is to know the relation between given CLB numbers and the estimated yield losses. But we don't have that information at this time.

There are several considerations for CLB control that need to be weighed: the infestation level, price of wheat, yield level, control cost, the percentage of larvae parasitized, and need for establishing the parasite.

Barley Trait Response to N

The production of barley for human food has potential for increasing the value of barley, the production acreage, and rural income from barley. This is especially true now that there is a USDA Food and Drug Administration approved health claim for soluble barley fiber (Beta-glucan) to reduce heart disease.

Beta-glucan soluble fiber is higher in some barley varieties than others. Waxy barley (higher in amylopectin, lower in amylose) tends to have higher Beta-glucan than non-waxy barley. This is the case for Salute, a Westbred waxy, higher Beta-glucan, two row, hulled barley. Salute was one of the waxy hulled varieties that we identified as one of the best adapted to this area in our specialty barley variety trials.

While it would be nice to have a local facility for processing food grade barley, the lack of a local facility has not precluded Idaho production and marketing of waxy, higher Beta-glucan barley. The variety Salute was contracted in N Idaho in 2007 and marketed to Japan. Japan has taken a particular interest in this variety due to the marketing efforts of the Idaho Barley Commission.

Higher protein may also be desired in barley processed for food. High protein barley historically is avoided for malting and is seldom sought out by the feed industry because of its association with low test weight barley from rain-fed production. A market for high protein but plump barley is somewhat of a novelty.

USDA-ARS breeding programs as well as others have focused for the most part on developing acceptable malting barley. Since high protein malt barley is unacceptable to brewers, there has been little attempt by barley breeders to develop high protein varieties.

Since high protein barley was historically avoided, there is limited information on the barley protein response to cultural practices, such as nitrogen management, known to affect protein of similar grains such as hard wheat used for bread making. We have extensive information and local research on the protein response of hard wheat to N management. Much of this information is likely pertinent to enhancing barley protein.

Less clear is the influence of management practices on Beta-glucan soluble fiber and its relation to protein and starch. It is important to know how the relative components are affected by N management practices, especially for irrigated waxy barley. A grant from the federal **Barley for Rural Development Initiative** enabled us to examine N management effects on waxy barley value added traits.

Parma Study

A field study was repeated in 2007 involving two fall planted waxy two row barley spring genotypes (hulled Salute and hulless Merlin) grown with four winter top-dressed N rates (0, 60, 120, and 180 lb/A). At the 60 and 120 N rates, late season N was applied at 0 or 40 lb/A with the N applied as either (1) dry urea, (2) foliar urea solution, or (3) foliar urea-ammonium nitrate (uran). The results for 2006 were reported in the ***Cereal Sentinel Issue 45*** available on-line at http://www.ag.uidaho.edu/swidaho/Newsletters/Sentinel45.pdf.

There was significant winter kill of these fall planted spring genotypes in the 2006-07 winter. Winterkill of Merlin and Salute averaged 65 and 97% at Parma. Consequently, these varieties were replanted in the spring of 2008. Yields were lower in 2007 than in 2006 (116 vs 124 bu/A) due to the spring plantings.

Winter topdressed N increased grain yield, protein, and Beta-glucan concentration (Fig. 1). Optimal winter N for yield in this replanted trial was 180 lb N/A if no late season N was applied. Higher fertilizer N was required in 2007 than in 2006. Protein and Beta-glucan continued to increase with N applied at the highest N rate. As protein increased, total starch content declined. Varieties did not differ in their response to winter topdressed N.

Late season N (40 lb/A) increased yield and protein at Parma at the 60 lb winter topdress N rate. Late season N influence on yield was inconsistent at the 120 lb rate. Typically, late season N doesn't affect yield nearly as much when early season available N is closer to the optimum for yield.

At the 60 lb winter top-dressed N rate, foliar N at heading was more effective for increasing both protein and Beta-glucan than dry top-dressed urea which did not affect protein in 2007. Solution urea and Solution 32 foliar treatments did not differ in their effectiveness for increasing protein and Beta-glucan content.

Winter topdressed N did not affect test weight appreciably. Test weight was considerably higher for the

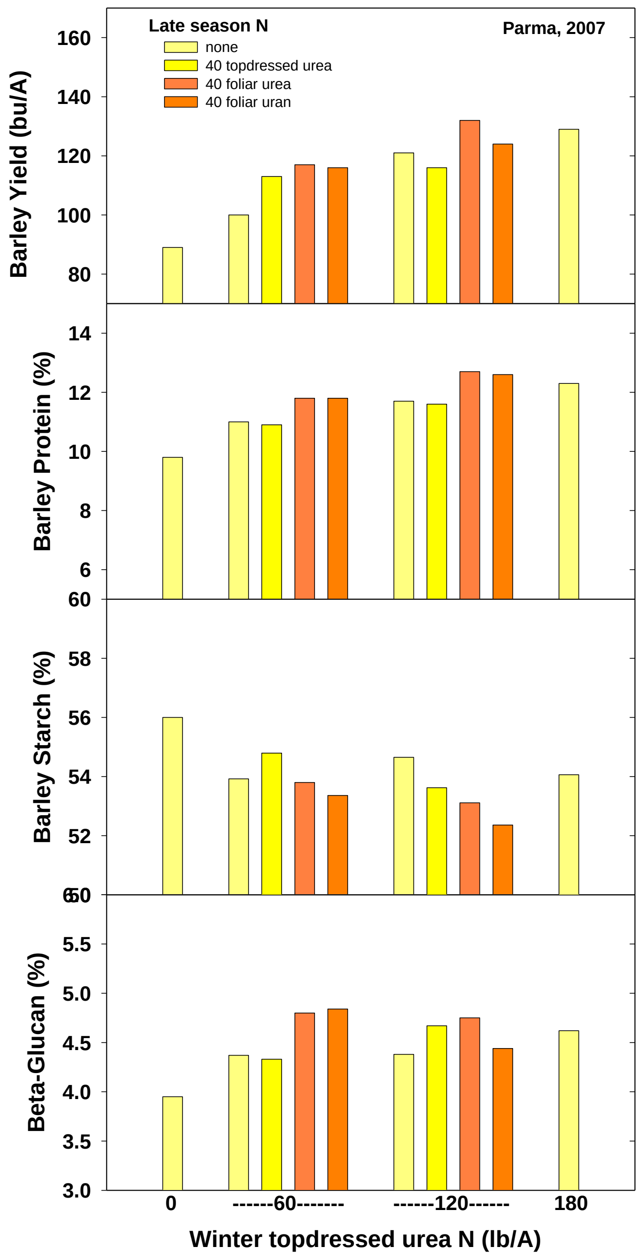

Figure 1. Barley yield, protein, starch, and Beta-glucan content as affected by late winter topdressed N and late season N treatments.

hulless Merlin than for Salute (60.9 vs 54.5 lb/bu) as expected.

Total starch content was also measured in the harvested grain samples at the Dr. Kerry Huber lab in Moscow. Starch content was highest in the unfertilized control, then tended to decrease with any N applied.

Lower starch was also due to higher protein (Fig. 2). Starch and protein concentrations are commonly inversely related, especially where higher protein results

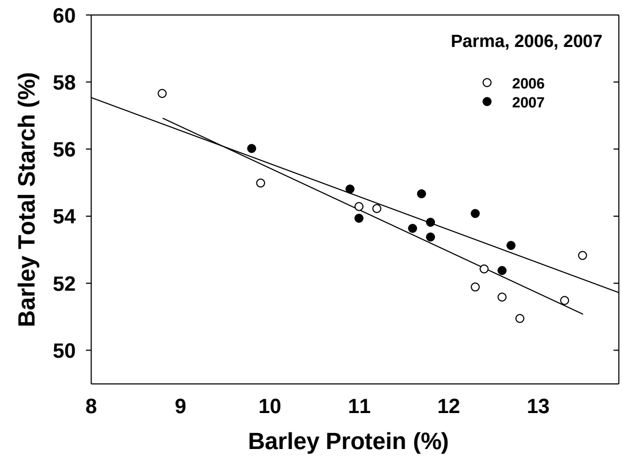

Figure 2. Barley total starch as related to barley protein in 2006 and 2007 at Parma.

from drought stress and low test weight in dryland systems. This research indicates that the inverse protein starch relation holds even for irrigated barley that is not stressed.

The implication for food barley is that producing for higher protein concentrations will come at the expense of reduced starch concentrations. Both high protein and high starch apparently are not to be.

The late season N affect on starch content was mixed, but generally starch decreased as late season N increased protein.

The results suggest that N essential for increasing harvested protein may reduce harvestable starch. It is not clear whether the starch reduction with N was food or non-food grade starch. The tradeoff between protein

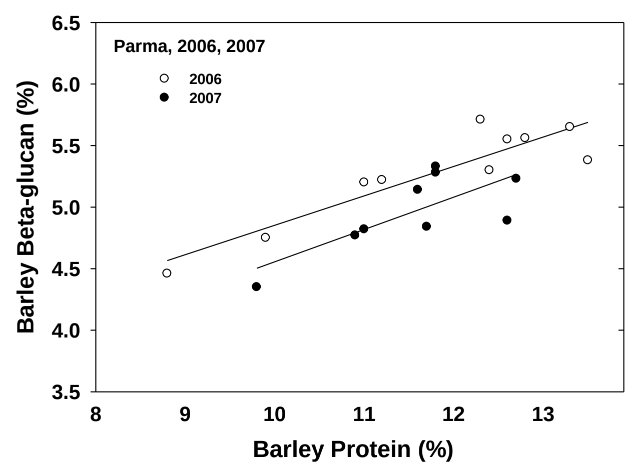

Figure 3. Barley Beta-glucan concentrations as related to barley protein concentrations at Parma in 2006 and 2007.

and starch content in barley is well known, but is often attributed to the effects of shriveled kernels due to lodging or moisture stress.

Barley Beta-glucan, was strongly correlated with barley protein in each year (Fig. 3.). Both measures were determined by Dr. Andrew Ross at Oregon State University. Fertilizer N practices such as late season applied N, designed to enhance protein are likely to increase soluble fiber as well.

Higher concentrations of both Beta-glucan and protein could enhance food barley quality. Higher quality could in turn merit higher contract prices.

Poor Winter Wheat Stands

This past winter was not very kind to some fall "planted" wheat. There were very poor stands in some fields and those most affected seemed to be "broadcast seeded" with or without fertilizer. There were more calls to this office regarding poor stands than I've ever received before. Practically all the calls I received regarding poor wheat stands, were for fields where the seed was broadcast.

A large fraction of these fields were broadcast seeded late in the fall, or if not broadcast late then broadcast when there was little opportunity for applying water to promote rapid establishment. Some fields may have been pre-irrigated, but moisture loss at the depth of the seed with subsequent tillage, seed and fertilizer incorporation, and dry weather in some cases delayed germination and emergence until spring.

There are likely several reasons for the increased calls and the poor stands in broadcast seeded fields. There was just a lot more winter wheat planted last fall. One seed dealer suggested that the seed he sold last fall was three times the norm. Seed if you remember was short. While winter wheat plantings increased only 20% for the entire state last fall, the increase in western Idaho was probably much higher than that.

Some of the increased acreage was broadcast seeded because producers hadn't planted any wheat for some time due to the poor economics, and they no longer owned a grain drill. But broadcast seeding has also been a common practice of those with grain drills for a variety of reasons.

Freezing and thawing soils are especially rough on shallow seeded, poorly established wheat. Shallow seed depths are typical of broadcast seedings. At shallow depths moisture is more limiting for germination.

Nitrogen Issues

And we thought nitrogen fertilizer prices were high at this time last year. They have reached new highs as energy prices continue to climb and worldwide demand increases.

Not so long ago we were relatively self sufficient in domestic N production. Now over 60% of the N used in this country is imported from areas with cheaper and ample energy supplies. "What happened to the domestic production", you might ask. Much of it was moth-balled due to high energy costs in previous years. Companies back then indicated they could not afford to make N fertilizer at the prices they were getting for the product. Much of the production capacity was never brought back on line. The fertilizer industry does not provide much if any assurance that those older plants will ever be renovated and brought back. Do they have plans for new domestic plants? Not that I've heard. There is some indication that even foreign fertilizer N production is not keeping pace with current world demand.

This does not bode well for small grain producers that depend highly on affordable N for profitable production. Some were fortunate this past year to market their grain at historic prices. With our capacity to pull out the stops and produce wheat in this country and elsewhere, historic prices are not likely to last long. New crop prices are already at half the highs listed this past winter. Even if prices for wheat continue at relatively high levels, fuel and fertilizer costs continue to increase.

It will be imperative to manage N to maximize its effectiveness if we are to maximize returns.

Manure

Manure has taken on a significance we did not anticipate even last year when it was mentioned as an alternative N source in this newsletter. Given the shortage and cost of commercial fertilizer N and P, the availability of a useful publication on using manure is repeated below.

PNW 0533, "***Fertilizing with Manure***" is available on-line at http://cru.cahe.wsu.edu/CEPublications/pnw0533/pnw0533.pdf. It can be downloaded or a hard copy purchased from:

Extension Publications
P.O. Box 645912
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Cool Spring and N Mineralization

Some winter wheat looks N deficient despite our best efforts to provide N in a timely and effective manner. There are some things we just don't have any control over.

March was one of the coldest on record. April temperatures averaged five degrees below normal. Soil maximum temperatures at the 4" depth by May 1 had just reached 52-53º and averaged 46.4º for the month of April. Normal for April is closer to 50º.

N mineralization, the N released from soil organic matter decomposition, typically ranges from 30 to 60 lb N/A in the spring for small grains. Mineralization is a microbial process, and as such is dependent on temperatures conducive for biological activity. The cooler soil temperatures this spring have not been favorable for biological activity and have likely slowed N mineralization.

This may not account for all the apparent N shortage we see in some winter wheat fields. But it may be one of the contributing factors. The N deficiency in some fields appears to be considerably more than the N normally contributed from soil organic matter decomposition.

Late Urea Application

Urea topdressed in late winter for winter wheat appears to have been sufficiently incorporated with subsequent rain or snow. That may not be the case if the application was delayed.

Rainfall at the Parma Station measured only 0.1 inch from March 30 to May 22 and occurred in four events (0.01, 0.01, 0.03 and 0.05 inches). That is not sufficient overhead moisture for good incorporation of urea or any other dry N fertilizer.

Any sprinkler irrigation would have provided more than enough water for incorporation by now. Even furrow irrigation will improve availability of topdressed N, but not nearly to the extent a good rainfall or sprinkler irrigation would.

Furrow irrigating is not as effective at incorporating top-dressed N because the urea prills in the corrugates are the most apt to be solubilized and moved into the bed with the wetting front. Fertilizer prills on top of the bed are wetted from below, and only as the wetting front moves beneath them and saturates the soil. Downward movement of water occurs when the soil is saturated.

Ammonia from urea, and to some extent all ammonium based N, can volatilize as the ammonium concentration in the wetted soil surface increases. Volatile N losses from urea are a particular concern. They can occur whenever sufficient moisture is available to solubilize the prill without moving the fertilizer into the soil. The reactions are given in more detail in the Montana State University Extension Bulletin EB 173, "**Management of Urea Fertilizer to Minimize Volatilization**".

Top-dressed urea after the end of March in many cases remained on the surface for weeks. This urea was subjected to very little rainfall, and what did occur was typically just enough to partially solubilize the urea prill. Solubilizing the urea without moving it into the soil would exacerbate ammonia volatilization. Urea volatilization may also account for some of the wheat that looks to be short of N.

Nitrogen Options

For those with winter wheat that appears to be N deficient, there are not many options left. Foliar applications would be the most effective, but the N rates safely applied without causing leaf burn are limited to 40 or less lb N/A. Urea solutions cause less damage than those containing Solution 32.

The last two leaves of the plant to emerge are the most important leaves for yield as they intercept most of the light used for photosynthesis. Damaging those leaves can reduce yield. Considerable leaf burn can be tolerated earlier in the season, before jointing, without affecting yield, because those leaves by heading and flowering are mostly shaded.

Tank mixes are possibly an option to save an application cost. But herbicides for western Idaho winter and some spring wheat have already been applied. If you need to control Cereal Leaf Beetle larvae, that would provide an opportunity for some limited N to be tank mixed. If stripe rust infection occurs, fungicides would be another tank mix application opportunity.

Any foliar application will be more effective the sooner it's applied. Any additional greening occurring from these recovery efforts will serve to improve grain filling and seed size.

Applying N in the furrow irrigation water is another option. The uniformity of the application will be no better than the uniformity of the water applied. If water running N, be sure to shut off the N tank before the water makes it to the end of the field, to avoid wasting the N and running it off into the drainage.

Residue Removal

More straw residues are being baled from small grain fields than ever was the case ten years ago. There are several reasons. The increased demand and price for bedding in confined animal operations is a good part of it. The need for mulching new seedings and erosion control in burned areas also contributes to the demand. The controversy over and loss of field burn options has also contributed to straw removal. Contending with the considerable residue from irrigated systems (extra tillage, fuel, time, and fertilizer N) has also driven the interest in straw removal.

Maintaining soil organic carbon (SOC) is important for maintaining soil fertility, soil structure, nutrient cycling, both water infiltration rate and holding capacity, and microbial activity. With the straw removed so frequently now from irrigated fields, some have questioned whether this might lead to changes in soil organic C.

Pertinent literature was reviewed recently by Dr David Tarkalson, ARS-USDA at Kimberly, Idaho and presented at the 2008 Idaho Nutrient Management Conference. While there are many studies pertinent to dryland agriculture, there are few that address the question for irrigated systems. In Idaho, most of the straw removed is from irrigated fields, particularly in southern Idaho, since so little residue is generated in southern Idaho dryland acreage.

Dr. Tarkalson found only five studies where SOC was monitored in wheat residue removal treatments; two in Texas and the rest in foreign countries. All studies involved wheat or both wheat and barley. They differed in their duration and cropping system.

After only three years of continuous irrigated wheat in Iran, SOC was unchanged by annually removing the residue. After 5 years of a wheat-corn double crop rotation in Mexico, SOC with wheat residue burned or returned to the soil did not differ. No change in SOC was shown in New Zealand after 6 years of removing residues of wheat, barley, or oats. These were relatively short term studies.

In longer studies in Texas, the results were similar. After 11 years of continuous irrigated wheat in Texas, SOC in the first 3-4 inches tended to increase even with residue removal. In another Texas study, after 14 years of continuous irrigated wheat, again SOC increased despite residue removal.

In no case did SOC decline with residue removal. The results for irrigated systems was surprising. Many would assume that with continual surface residue removal that SOC would drop. The only reasonable explanation is that contributions from below ground plant biomass and stimulated biological activity are compensating for the surface biomass removed, in some cases more than compensating.

In most of the studies, SOC was higher with residues returned to the soil than when they were removed. Apparently, returning residues is more important for increasing SOC than maintaining it.

Relating these studies to Idaho irrigated systems is difficult. All of the studies cited involved continuous irrigated wheat or other small grains, or wheat grown in systems allowing two crops annually, one of which was wheat.

If the underground contribution of wheat to SOC is as substantial as suggested by these studies, what happens when wheat occurs only once in three or five years of a row crop rotation? We don't know.

If nothing else, these studies underscore the importance of including small grains in the irrigated system.

Low Phytate Barley

Phytate, the primary form of phosphorus (P) in seed, is not used effectively by non-ruminants (swine, poultry, and fish) and the portion not used is excreted in the manure. Poor feed P efficiency increases the P supplemented in the ration which increases feeding costs.

In areas such as Idaho the rate of manure applied can be limited by its P content; the higher the P content the less can be applied to fields already P enriched with manure. Manure must then be applied further and further away at increased costs. Finally, higher amounts of applied manure P increase the risk of further enriching soils with P and increasing the potential for P to runoff into surface waters where it can cause nuisance algal growth.

Low phytate barley, as the name suggests, has a lower percentage of the phytate P in the grain than normal barley grain, without reducing the total amount of seed P. Low phytate barley has potential for reducing manure P loading, the risk of P runoff, and reducing P supplement feeding and manuring costs. The first low-phytate barley release, Herald, was developed by USDA-ARS geneticists at Aberdeen. The P in Herald is used much more efficiently by non-ruminants resulting in less excreted P.

Since normal and low phytate barley differ in the form of P in the seed, the question arose as to whether they would respond differently to available soil P. Another question about low phytate barley is whether available P in soil can affect expression of the gene responsible for phytate content? We began addressing these questions with support from the Idaho Barley Commission in the 2005 and 2006 seasons. Other collaborators included Juliet Windes and Stephen Guy. Chad Jackson was the graduate student.

Four spring varieties were grown at Parma in 2005 and 2006 under a range of available P conditions. Two of the barleys, Colter (a six-row) and Baronesse (a two-row) are normal phytate spring feed barleys. The low phytate barleys, Herald (six-row with Colter parentage) and 01AH451H (two-row with Baronesse parentage) are similar to their parents in most respects except are low phytate. 01AH451H is also different from Baronesse in that it is hulless.

Some of the agronomic characteristics of these barleys averaged over available P treatments are shown in Table 3. Each of the varieties were planted using the same number of seeds per linear foot of row. In the two-rows, the hulless low phytate line resulted in lower plant counts than Baronesse. This has also been observed in low-phytate soybeans. It is not clear if the stands for the two were affected more by the differences in the form of seed P or by the hulless trait. The differences between the hulled low phytate and normal six rows were not as appreciable.

Table 3. Stand counts, grain yield, and test weight of normal and low phytate barley varieties.

Variety	Phytate	Stand counts[1]	Grain Yield	Test Wt
			bu/A	lb/bu
		2005		
Baronesse	normal	75.3a[2]	159a	53.2b
01AH451H	low	59.0bc	132c	57.4a
Colter	normal	62.0b	142b	49.8c
Herald	low	57.8c	147b	50.0c
		2006		
Baronesse	normal	83.1a	109a	51.1b
01AH451H	low	64.8b	90b	55.9a
Colter	normal	55.0c	105a	48.7c
Herald	low	54.4c	93b	47.6d

[1]Plants per 2.9 ft^2
[2]Means within each year followed by the same letter do not differ significantly.

Baronesse was the most productive of all varieties in 2005 but did not differ from Colter in 2006. Baronesse was consistently more productive than its hulless low phytate offspring. But hulless varieties as a rule are 13 to 17% less productive than hulled varieties. The low phytate gene itself does not always render a variety less productive. The low phytate Herald was as productive as its parent Colter in 2005 although it yielded less than Colter in 2006.

Test weight was highest in the hulless 01AH451H as expected, since hulless barley is generally higher in test weight than hulled types. Likewise test weight was higher in the two-row Baronesse than the six-row Colter or Herald.

Table 4. Phosphorus affects on barley.

P added	Height	Lodging	Test Weight	Grain Yield
lb/A			lb/bu	bu/A
		2005		
0[1]	32.9a[2]	0a	52.4a	99a
75	39.0b	5a	52.6a	150b
150	40.1c	5a	52.7a	167c
225	39.4bc	12b	52.6a	164c
		2006		
0	28.4a	0a	50.0a	69a
50	33.6b	0a	50.9b	95b
100	34.7c	3ab	51.1b	114c
150	35.3c	5b	51.1b	119c

[1]Fertilizer P was applied preplant for the 2005 season and two years previous for the 2006 season.
[2]Means within years followed by the same letter do not differ significantly.

Soil test P in the fall prior to planting the barley measured only 2.4 ppm in 2004 and 2.7 ppm in 2005 in the soil that had not been treated with P since 1998 or 1999. Both these values are at the very low end of the range typically found. They practically ensured that low P would limit barley growth and grain yield.

Higher available P increased plant height, lodging, and yield of all varieties (Table 4). Varieties differed slightly in their test weight response to P; some increasing, others either not affected or declining (data not shown). The low phytate gene did not affect the agronomic response to P.

Barley harvested from the trial was analyzed for total P and inorganic P contents. The ratio of inorganic P to total seed P was considered an index of the low phytate gene expression. Cultivars did not differ appreciably in total seed P under low P conditions but the low phytate cultivars tended to be lower in total seed P with more adequate P.

Inorganic seed P in low phytate cultivars were considerably higher (over threefold) than in normal cultivars as expected. The ratio of inorganic to total seed P did not change for the normal cultivars as available P

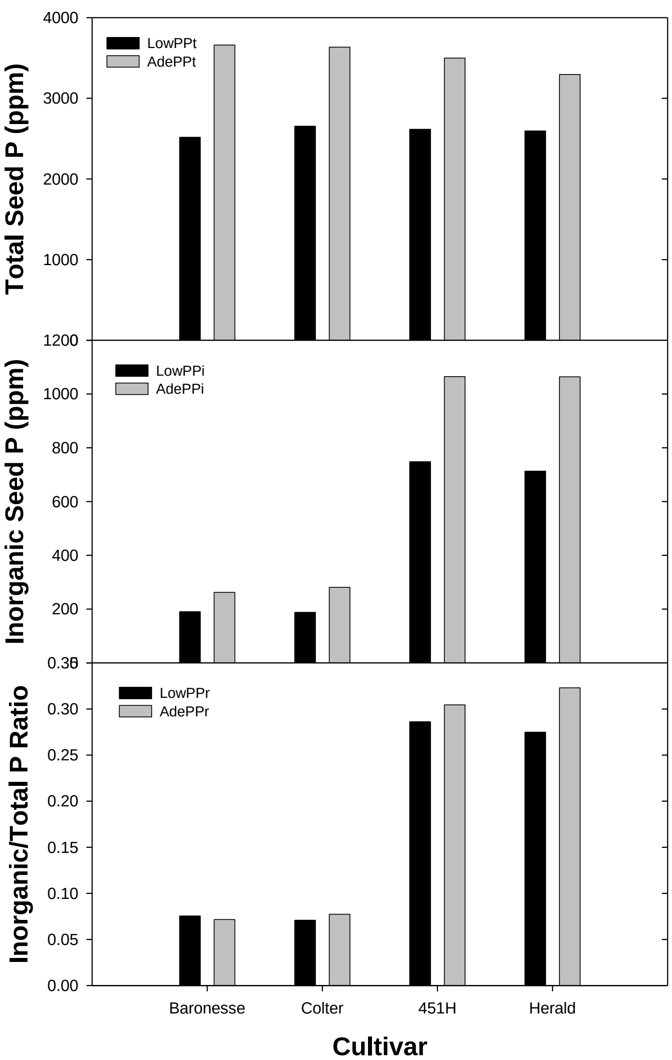

Figure 4. Total seed P, inorganic seed P, and the ratio of inorganic to total seed P as affected by cultivar under low and adequate soil P conditions. Parma, 2005-06.

increased. However, as available P increased, the ratio of inorganic to total increased somewhat for the low phytate cultivars. Low phytate gene expression apparently can be affected by available P. The gene seems to be expressed more fully under adequate P conditions.

In concurrent studies at other locations in the state, where soil test P was adequate and fertilizer P did not increase yield, the ratio of inorganic to total seed P was unaffected by increased available P.

Marketing low phytate barley in southern Idaho could be challenging. Southern Idaho may have large ruminant dairy and beef numbers, but those would not benefit from low phytate barley as much as the fewer poultry and swine operations. The aquaculture industry also could benefit.

Low phytate barley may have export potential. The Idaho Barley Commission is helping sponsor catfish feeding trials in Vietnam to determine the benefit. One concern is test weight. Low phytate lines have had lower test weight than their parents in other trials even if they did not consistently in this trial.

Parma Small Grains Field Tour

A tour of the small grains research at the Parma R & E Center near Parma is scheduled for June 12, 2008. We will register at 9 AMand start the tour at 9:20 – 9:30. A lunch will be served at the end of the tour for those registering. Some of the topics to be discussed include:

- Winter and spring wheat and barley variety performance. *Is there a variety you should be asking your seed dealer about?*
- Slow release N for winter and spring wheat. *Do new slow release N technologies provide any advantage for your irrigated small grain system? Where do they fit?*
- Increasing barley protein with late season N. *What does it take to produce higher protein barley? Does higher protein increase barley value?*
- Relay cropping oilseeds or corn in barley. *Is it feasible to plant oilseeds or even corn into standing barley for harvest in the same season?*

Acknowledgement

The **Idaho Wheat Commission** has awarded a grant of $3600 to subsidize this newsletter. We are pleased to acknowledge their support for this Cooperative Extension educational project.

Southwest Idaho Extension Cereals Website

Previous issues of the ***Cereal Sentinel*** newsletter back to 1996 can be viewed as PDF files on the Southwest Idaho Extension Cereals Homepage at http://www.ag.uidaho.edu/swidaho. If you would like to receive electronic notice of new ***Cereal Sentinel*** newsletters posted to the website, rather than the hard copy through the mail, send an e-mail message to me at bradb@uidaho.edu. The advantage for us is that we don't need to produce a hard copy and put it in the mail to you. The website is still under development but the content is considerably expanded from the initial website published in June 2000. In addition to the ***Cereal Sentinel*** newsletters, variety descriptions and performance have been added as well as other topics. If you have suggestions for the website send them to me at bradb@uidaho.edu.

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