University of Idaho
Cooperative Extension System

The Cereal Sentinel

A newsletter for Treasure Valley cereal producers

May 21, 2004 Issue No. 36

Topics: **Page**

Parma Station Field Day June 29
Malheur Station Field Day July 14

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 Ext. 216) (Fax-208-722-6708) (Email bradb@uidaho.edu)**

Brad Brown

Brad Brown,
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Cereal Leaf Beetle

Cereal Leaf beetle continues to be a troublesome pest in some western Idaho wheat, barley, and oat fields. Adults were seen flying as early as mid March during the warmer days in some wheat fields and evidence of adult feeding on leaves was already evident in late March. This was very early activity. The adult feeding occurs through the entire leaf in short lengths (1/4 to 1 inch) along a vein in a narrow strip (about 1mm wide) and is typically inconsequential. Larval feeding, the greater concern, is confined to the leaf surface and also occurs in strips along the vein.

CLB eggs were found in infested fields by mid April and began hatching by April 23. Early scouting is essential to determine if populations are high enough to warrant control measures. 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 and merit a spray, make sure it is the larvae that you're treating rather than the adults. Warrior has received another Section 18 for Cereal Leaf Beetle control in barley and apparently can be tank mixed with some broadleaf herbicides. Check the label in all cases.

CLB Nursery

Biological control holds the greatest ultimate promise for CLB control. Whereas larval parasitic wasps proved effective in other parts of the country as well as parts of eastern Idaho in controlling CLB, released larval parasites in the Treasure Valley have not been as readily established, although some parasitism can be found.

A different parasite that attacks the egg phase rather than the larvae will be evaluated beginning this spring. ***Anaphes flavipes***, a tiny egg parasitic wasp, was introduced April 27 into an oat planting at the Parma Research and Extension Center. The sequential oat planting is part of a determined effort to attract sufficient CLB adults to improve the successful establishment of this new biocontrol agent. The wasp was reared at the USDA-ARS Niles Biological Control Laboratory in Michigan. Ben Simko, Idaho Dept. of Agriculture, coordinated the release. It is the first of several releases planned for the field and the sequential oat plantings.

If successful, growers in the future could conceivably be invited to take home leaves with attached parasitized eggs to release in their own fields. Of course if wildly successful, the wasp will spread on its own. Time will tell.

We have made some observations in this CLB parasite nursery. It appears there may be some predation of eggs by Lady Bird Beetles, and possibly other predators such as big eyed bugs. The other observation is how much more the adult CLB prefers a new oat seedling for egg laying to a more established winter barley plant. These differences are well known. But there's no substitute for seeing just how stark the difference really is.

Niles Lab Closing

Now for some bad news. The USDA Niles laboratory responsible for rearing CLB parasites is scheduled for closing. This lab pioneered the CLB parasites, as well as other biological control insects, such as the one responsible for control of purple loose strife, the aquatic weed threatening game habitat in western Idaho.

It's not clear what the rationale for the closing is. But it's certainly not in the best interests of western small grain producers in need of CLB biocontrol agents, or agents useful for other serious crop pests.

Water Management and Scheduling

Water use by fall planted small grains was greater for the months of March and April this year. Precipitation at the Parma station was a whopping 0.04 " for March and only 0.46 for April. Then it was unseasonably warm as well. I heard one report that the average temperature for March was 15ºF warmer than normal.

For an early October planting, estimated water use using the Agrimet Model was 2.16" by April 1, 4.91" by April 15 and 8.34 " by May 1. By the time there was water to irrigate with, soils were depleted well below 50% available and some wheat was under stress. Later planted wheat that was later emerging and delayed in its development may have avoided the stress.

Late April and early May daily water use by early October planted wheat in western Idaho ranged from 0.22 to .29" with occasional spikes up to 0.34" with significant wind. With only two feet of soil available and each foot holding 2" of available water, it takes only 8 days of 0.25" daily use to reach 50% available water, and less than seven days with daily water use of 0.30".

These early high temperatures should have provided the heat units necessary to support good tillering and rapid plant development. We saw some fall planted barley heading as early as April 23. Early plant development is good for yield, if it results in better tillering, earlier flowering, cooler temperatures during grain filling, and an extended grain filling period. For soft white producers that should mean lower protein and better quality for export.

If you aren't aware, there is a pretty good website that offers evapo-transpiration (ET) estimates for most of the crops grown in the area based on local weather conditions. The Agrimet System is offered by the Bureau of Reclamation and is based on the automated weather stations strategically located throughout southern Idaho and downloaded daily from satellites.

If you know the water holding capacity of your soil, the ET estimates provide a convenient way of monitoring moisture use and scheduling irrigation. The information is available at http://www.usbr.gov/pn/agrimet. When you get there, click on "Crop Water Use" and choose the weather station closest to you. Once you find the page most pertinent to your location, bookmark or add it to your list of favorites. You can also get the daily ET for all days of the season up to the present.

With some of our winter wheat rapidly approaching the boot stage, heading, and flowering, keep in mind that these are critical growth stages for avoiding moisture stress.

Winter Wheat N and Water

The drought continues, and limited water may be available in some districts. In some areas, allocated water will be limited enough that early cutoffs will occur, even for small grain short season watering seasons. Besides affecting yield, early season cutoffs may affect the response to other inputs such as fertilizer.

Early season cutoff can exacerbate the sensitivity of wheat to excess N. The problem with determining appropriate N rates, especially preplant applied N in fall planted wheat, is that the next season's availability of irrigation water is largely unknown. Pre-plant fertilization, assuming a full water supply, risks spending unnecessary dollars, possibly lowering yields and quality, and reducing returns.

Winter Wheat Study

We measured the soft white winter wheat response to N in several irrigation scenarios at the Parma and Kimberly Research and Extension Centers during the 2003 season. The project is funded by the **Idaho Wheat Commission**.

Irrigation treatments consisted of (1) not irrigating, (2) irrigating all season at 50% of ET, (3) 100% ET or fully irrigating to flowering, and (4) 100% ET or fully irrigated all season. Rates of N were topdressed in late winter (0, 40, 80, or120 lb/A) to each irrigation treatment at Parma. There were four replications of treatments. Only the results for Parma are discussed here. Residual N (0-24") at planting measured 250 lb/A at Parma.

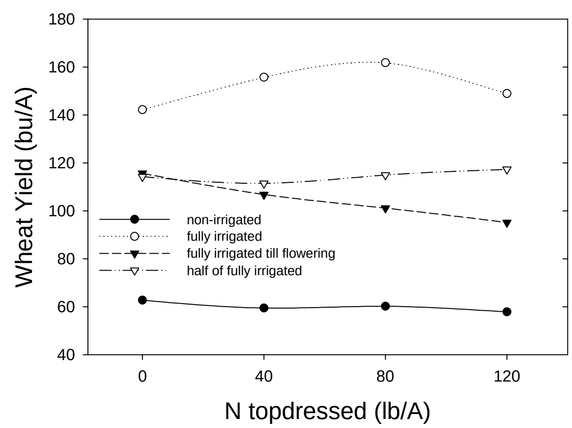

Figure 1. Mean grain yield as affected by four different irrigation scenarios and four topdressed N rates. Parma, 2003.

The yield response to topdressed N is shown in Figure 1. Yield tended to increase in the fully irrigated treatment (top curve) as the N rate increased to the 80 lb rate, then may have declined with an additional 40 lb of N. Grain protein in the highest N rate was 13.7%, well above the level (12%) we have previously associated with excessive N induced yield losses.

Yield was not affected by N in the non-irrigated treatment (bottom line) or when irrigated at only 50% of estimated ET, because increased vegetative growth with N prior to flowering was limited and extreme drought during grain fill was not as severe as with the early cutoff of irrigation. Yield was roughly doubled over that of the non-irrigated wheat by applying half the estimated water requirement at each wetting. The N applied in these two irrigation scenarios was largely wasted as there was no return to the money invested and grain protein increased to levels well above those desired for soft white wheat export.

Note that yield steadily declined with topdressed N when the water was shut off at flowering (the second curve from the bottom-upside down filled or dark triangles). This is in part because vegetative growth increased with N and the increased transpiration of the additional vegetative growth rapidly depleted available soil moisture after flowering. The result was a moisture stress that the wheat plant was not pre-conditioned to tolerate. Wheat yield at the highest N rate was 22 bu/A lower with the early cutoff of water (just after flowering) than when only half of ET was provided throughout the season, despite receiving 1.9 inches more moisture for the season.

There may be another factor in the yield loss with topdressed N in the irrigation cutoff at flowering. Grain protein increased from 11.0% without N up to 13.2, 14.2, and 15.3% with each successively higher N rate.

We have measured yield losses in fully irrigated wheat with excessive N even in the absence of lodging. Yield reductions with excessive N, in the absence of lodging, are poorly understood, are seldom studied, but are not uncommon, and seem always to be associated with excessive protein. It seems there is an upper limit to the N that wheat can tolerate during grain fill.

There is another aspect to this study that bears mention. Residual N was measured after the wheat harvest. The post-harvest residual N at three depths is shown for the lowest and highest N rates in all irrigation treatments (Figure 2). Post-harvest residual N was highest in the non-irrigated wheat, where limited moisture reduced root activity, vegetative growth, and N uptake.

Limited moisture reduces the N scavenging potential of wheat. Note that N was scavenged (residual N is lower) from as deep as the third foot to minimal amounts where any irrigation was used, and there was no topdressed N. The results demonstrate that wheat can use N well beyond the first foot, the depth to which most soil samples are collected. For this reason, small grains are useful rotation crops in that they reduce the nitrate-N at lower depths otherwise subject to leaching into shallow ground waters where nitrates may exceed the public health standard.

Also, the highest N rate resulted in more residual N to the three foot depth in all treatments. Whenever applied N exceeds the N used by a crop we can expect higher residual N. Excessive residual N should be avoided to prevent groundwater degradation. But the

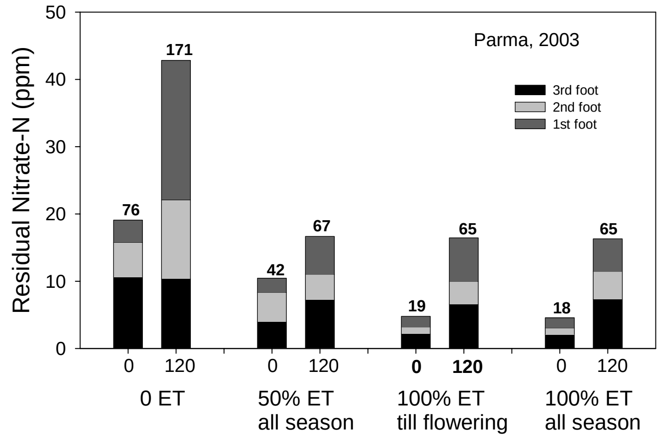

Figure 2. Shown is the post-harvest residual N at three depths from four different irrigation scenarios and two N rates, 0 and 120 lb N/A. The N rates are shown on the bottom axis for each irrigation scenario. The number at the top of each bar is the residual N in lb per acre summed for the three depths. Parma, 2003

amounts measured in this study are not excessive considering the wheat residues would have been returned to the soils and caused some N immobilization in the depths to which they are mixed.

The higher residual N in the non-irrigated wheat to some extent would be available for subsequent crop N use and should be measured and taken into consideration when fertilizing the next crop.

The residual soil N, from the wheat fully irrigated either to flowering or for the whole season, was essentially the same, since conditions were the same prior to flowering in both treatments and most wheat vegetative growth and N uptake occurs prior to flowering.

Conditions after flowering appreciably affect the amount and fraction of vegetative tissue N translocated to the grain. N removed with the grain at the highest N rate was 58 lb N/A higher while vegetative N content in the nongrain tissue was only 80 to 84% as high in fully irrigated wheat than the wheat grown with irrigation cutoff at flowering Drought after flowering significantly reduced the translocation of N to the developing grain leaving higher vegetative N concentrations.

The efficiency with which wheat used the initial residual N can be roughly calculated. We measured about 250 lb N/A before planting and can assume at least

30 lb N/A were mineralized during the season from the organic fraction for a total of 280 lb total available N/A. In the fully irrigated and non-fertilized treatment, total N uptake in the whole above ground plant measured 220 lb N/A. Roughly 78% of the total soil N available was in the above ground portion of the plant at the dough stage. About 6% of the total available N was measured as post-harvest residual N, leaving about 16% or 40 some lb N/A of the total N unaccounted for. We can't rule out some leaching beyond the three foot depth, but some of the unaccounted for 16% N is also tied up in the root system and soil microbial tissue. Using the same approach, if the wheat was fully irrigated and 120 lb N/A topdressed, the unaccounted for N was only about 9 % of the total N available. Overall, the utilization of available N was pretty good in this study in the fully irrigated treatment, even where somewhat excessive N was available. By contrast, N use efficiency by other crops is often 50% or considerably less.

Summary

The implications of this research are clear. If the irrigation water supply is unknown for the coming season, as it is in many seasons, it is imprudent to apply a normal N rate for fall planted wheat in hopes that water supplies will be adequate. If supplies turn out to be short, you risk losing any return on the fertilizer investment, or worse, reducing yield and that income as well, if water supplies run out altogether at flowering.

If limited N is applied pre-plant and irrigation supplies turn out to be more adequate, there are other opportunities for adjusting the available N to match estimated water available. If rainfall and estimated snow water equivalent improve by the start of late winter or early spring resumption of growth, or after 40 to 60% of the normal snow pack occurs, then N can be topdressed in late winter or early spring without sacrificing yield in most years. Since N can be tank mixed with many herbicides, weed control applications provide an additional opportunity to adjust applied N to updated estimates of irrigation supplies. Of course sprinkler systems provide the maximum flexibility for adjusting the N to available irrigation water.

Also, given the option of using all of the limited water prior to flowering or spreading it out over the entire season, it is better to spread it over the entire season, or saving it for the most sensitive growth stages when N has already been applied.

Wheat P Response

Spring wheat in the past was assumed to require higher residual P than winter wheat, but for reasons that are not clear. Spring wheat may have a less developed root system, but winter wheat can produce more biomass, has greater yield potential and conceivably uses more total P.

If winter and spring wheat differ in P requirements, those differences need to be quantified. If P requirements do not differ for winter and spring wheat it will expedite the development of optimal P fertilization practices for both genotypes by precluding the need for separate studies.

Since winter and spring wheat genotypes are typically planted at different times, comparison of their P requirements is normally confounded by planting dates and genotypes. In other words, we could not separate the effects of winter and spring genotypes and fall and spring planting dates.

The fall planting of spring genotypes in western Idaho, while not widespread, does occur, and research trials have demonstrated the increased yield potential from fall plantings. With this information we designed a study that would allow us to examine the response to available P as it was affected by both genotype and planting date.

We were also interested in the association of available P to soft wheat quality as very little research has been conducted on this topic.

Therefore, the objectives of this research were to (1) determine if the response to available P is affected by winter and spring genotypes or the planting dates typically used for them and (2) evaluate soft wheat baking quality as affected by available P.

Irrigated field studies were conducted on a calcareous silt loam (10-12% free lime) at the Parma Research and Extension Center for four years (2000-03). They involved two soft white winter (Stephens and Madsen) and two soft white spring varieties (Treasure and Whitebird) grown in soils previously treated with P to give a range in available P. The previously treated P plots served as the main plots in a split plot experimental design with the varieties as subplots. The winter varieties were seeded only in the fall whereas the spring varieties were both fall and spring seeded.

Fall Planted Winter vs Spring Genotypes

Grain yield of winter and fall planted spring wheat increased each year with increased available P (Figure 3). Winter genotypes typically yielded more than fall

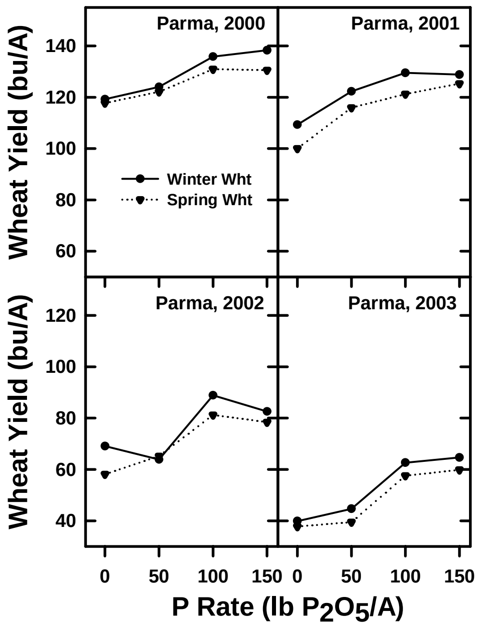

Figure 3. Mean wheat yield of winter and spring genotypes all fall planted on the same day as affected by available P in each of the four years of study. Each point is the average of the two varieties of the same genotype.

planted spring genotypes, but fall planted winter and spring genotypes did not differ in their yield response to available P. There was no winterkill in any year.

Plant P concentrations increased with available P in two of four years (2001 and 2003). Plant P concentrations are typically less sensitive than grain yield to available P because increased P uptake is diluted by greater vegetative biomass.

Winter genotypes averaged higher in plant P concentration than fall planted spring genotypes in 2000 (1010 vs 645 ppm) and 2003 (1320 vs 1162). Higher P concentrations in winter genotypes may result from less mature plants. Our previous research has shown that fall planted spring wheat matures earlier than winter wheat planted the same day. Since plant P concentrations tend to decline as the plant develops, it follows that wheat developing faster would have the lower P concentrations.

Plant P uptake increased with higher available P in most years. Winter genotypes took up more P than spring genotypes only in 2003.

In all years, grain protein decreased as yield increased with higher available P. Averaged across varieties, protein decreased from 0.3 to 0.9 percentage points depending on the year. Despite lower protein with higher available P, baking quality as indicated by cookie diameter was not significantly affected.

Fall Planted vs Spring Planted Spring Genotypes

Spring genotypes fall planted were more productive than when spring planted in 2001 and 2003, especially at higher available P (Figure 4). Higher yield from fall planting resulted either from greater tillering or heavier kernels.

Yield increased in all years with increased available P as a result of greater tillering, heavier kernels and in some years more kernels per head. Spring and fall plantings did not differ in their response to available P.

Biomass was significantly greater for fall planted spring wheat only in one of three years (2003). Biomass from fall and spring planting differed more at higher

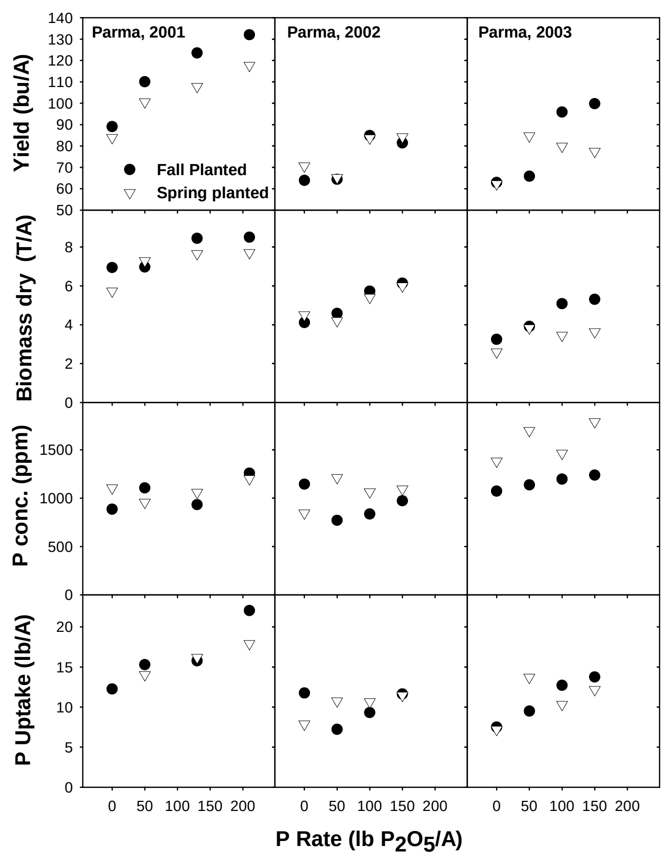

Figure 4. Mean spring wheat grain yield, biomass dry weight, whole plant dough stage P concentration, and P uptake as affected by fall and spring planting of two spring genotypes.

available P in 2003. Biomass did not differ between the two varieties.

Whole plant P concentrations were significantly affected by planting date only in 2003 when P concentrations in spring planted wheat were markedly higher than fall planted wheat. Despite differences in whole plant P concentrations in one year, whole plant P uptake was not affected by planting date in any year. Plant P uptake significantly increased with higher available P in 2001 and 2003. Spring wheat, fall and spring planted, did not differ in the P concentration or P uptake response to available P.

When higher available P increased yield, grain protein decreased. Protein was lower with fall planting than with spring planting only in 2003. Fall planting invariably hastened heading by 10 days at the lowest available P and increased test weight in two of three years. Increased P hastened heading dates by two to three days and reduced test weight in two of three years.

Summary

The results from four years of study indicate that neither wheat genotype (winter vs spring) or planting dates (fall vs spring) affected the yield response to available P. The results suggest P fertilizer recommendations should be standardized for winter and spring wheat. Furthermore, future P fertilization research on either winter or spring wheat can most likely be extrapolated to the other genotype without duplicating the research at considerable resource savings.

This research was supported by the **Idaho Wheat Commission**. Additional details are available in annual IWC Progress Reports on the Southwest Idaho Extension Cereals website under the fertilization topic.

Clearfield Wheat

Clearfield wheat varieties will be available for planting in fall 2004 and several questions may be raised with the introduction of this technology. Dr, Russ Karow, now a Department Head but formerly the OSU Extension Cereal Specialist, prepared a Clearfield fact sheet explaining the technology for producers and those that serve them. I'm borrowing largely from his information.

Clearfield technology refers to the BASF trademarked technology that enables wheat to have tolerance to the Imazimox herbicide **Beyond™** that allows difficult to control grass weeds to be controlled, as well as any non-Clearfield wheat in the mix. The technology does **not** result in a transgenic derived wheat, or in other words a genetically modified organism (GMO) that so many countries have banned from their food supply. The technology results from a more conventional breeding and development process (gene mutation). It therefore doesn't carry the baggage associated with a controversial GMO.

There is a difference between "tolerance" and "resistance" to a herbicide or pest. Resistance refers to plants that have the genetic capacity to effectively deal with the compound or pest regardless of environmental conditions. Tolerance suggests the genetic capacity to tolerate the compound or pest in most but not all conditions. Therefore, with tolerance, some environmental conditions can affect the ability of the plant to deal with the herbicide.

Clearfield wheat is not one variety, but any variety with tolerance to Imazimox. Several breeding programs are working on Clearfield tolerant varieties, including public breeding programs at OSU and UI and private breeding programs. The expectation is that the Clearfield varieties will be similar to the parents used for crossing. But that depends to some extent on the development process used.

The first commercially available wheat variety was **Clearfirst**, a proprietary soft white winter wheat offered by Northwest Plant Breeders. **Clearfirst** has a **Madsen** background. **Mel** was another release from Northwest Plant Breeders that is a **Coda** derived soft white winter club wheat.

Dr. Jim Peterson, OSU Wheat Breeder, recently released ORCF101 that is derived from **Malcolm**, **Madsen** and **Stephens** varieties. Seed will only be available from seed dealers licensed with OSU to produce seed. Commercial seed is to be available in fall 2004.

Dr Ed Souza, UI Wheat Breeder, released Idaho's first Clearfield variety in **IDO587**, derived primarily from **Stephens**. **IDO587** is very similar to **Stephens** in performance and appearance as would be expected from a series of back-crosses. **IDO587** is only available from seed dealers who have entered into a license agreement with UI for seed production. Commercial seed should be available in fall 2004.

Therefore, a number of varieties will be available in fall 2004 for planting in those situations where troublesome grass weeds merit use of the technology. Since Imazimox tolerance among the Clearfield wheat varieties is expected to be similar, growers should choose the variety that is closest in performance to those varieties best adapted to their production system and environment.

Clearfield technology will be helpful to many producers but Imazimox tolerant wheat is not the answer to all grass weed problems. Imazimox works very well on non-tolerant volunteer wheat and goatgrass and reasonably well on downy brome (cheat grass). It works less well on Italian ryegrass, feral rye, and not at all on most broad-leafed weeds. **Beyond™** herbicide is more expensive than some other grass herbicides, and Clearfield varieties will likely be more expensive as well. Producers need to weigh these additional costs against alternative strategies for controlling difficult to manage weeds.

Also, producers need to consider the plant back restrictions on the **Beyond™** label. Barley and Canola were affected when planted one year after the application of **Beyond™** in low pH soils and low rainfall conditions in Oregon, conditions which reduce **Beyond™** degradation and adsorption of the active ingredient to soil. Other crops grown in irrigated systems may also be affected. Check the label carefully. OSU has a nice web-site that covers the OSU Clearfield technology development, performance, licensing and stewardship program at http://cropandsoil.oregonstate.edu/wheat/orcf-101/.

New Publications

There are several new publications available that you might consider for your evening reading. Most of them pertain directly to if not exclusively with small grains production.

Idaho Spring Barley Production Guide, University of Idaho Extension Bulletin 742, was published last year. It was prepared by UI Cooperative Extension faculty and the production costs were defrayed by Idaho producers with a grant from the Idaho Barley Commission. This bulletin is a revision of the original publication printed in 1993.

Southern Idaho Dryland Winter Wheat Production Guide, University of Idaho Extension Bulletin 827, was published in January 2004. The publication was prepared by UI Cooperative Extension faculty and the production costs paid for by Idaho wheat producers with a grant from the Idaho Wheat Commission. This is the first comprehensive UI production guide on dryland winter wheat production and has been several years in the preparation.

Plantback Restrictions for Herbicides Used in the Dryland Wheat Production Areas of the Pacific Northwest, PNW Extension Publication 571, is targeted for areas with wheat, barley, pea, lentil, canola, rapeseed, or mustard production but includes many herbicides used in rotations with small grains throughout the PNW, irrigated or rainfed. In addition to compiling the plant-back restrictions for the mentioned crops, it covers the factors and phenomena affecting the dissipation and transfer of herbicides. This publication has a charge of $4. It is available from UI Ag Publications.

Farming With the Wind II, is a free WSU Bulletin that provides a comprehensive overview of the research and outreach achievements of the Columbia Plateau PM-10 Project. This project during the past six years has investigated management practices on dryland and irrigated cropland in the Columbia Plateau and Columbia Basin for reducing wind erosion and improving air quality. It would also be pertinent for the Southern Idaho area that is subject to blowing dust. You may obtain a free copy of the book from the WSU Bulletin Office by calling 1-800-723-1763.

Miscellaneous

China Wheat Market

There has been a significant development in the Chinese Wheat market. As you know this has been a tough nut to crack, what with Chinese concerns about TCK smut and their embargo of PNW wheat since 1972. China relented on its zero tolerance of TCK spores in 1999, allowing in that agreement 30,000 spores per 50 gram sample. But it made little difference in their imports from the PNW, as they've imported no more than token amounts of PNW wheat since that agreement. Any wheat imported from the US was primarily soft red wheat from the Gulf ports.

In all the years that China embargoed PNW wheat, they paid dearly for it financially. Soft red wheat is typically 2 to 3 % higher in moisture, 2% lower in flour extraction rate, and it's considerably farther to ship from gulf ports than from the PNW.

Now comes news of a recent official Chinese delegation meeting with PNW industry representatives about importing PNW soft wheat. The result was a Chinese announcement of their intent to purchase 440,000 metric tons of PNW soft white wheat over this and the next marketing year. That's a goodly sum if it comes about, roughly 7% of the total annual production in the PNW.

What does it mean for western Idaho producers? Not all PNW soft wheat will qualify for the China market. The maximum protein limit is 10% and they prefer 9.5%. This will rule out the considerable amount of wheat harvested with protein above 10%.

How much of Idaho's production is eligible? About 15 years ago, soft white wheat protein surveys were sponsored by the Idaho Wheat Commission. At that time only about 20% of the production was less than 10% protein. There has not been a significant shift in varieties or cultural practices since then so the portion of wheat produced with acceptable protein probably has not changed significantly.

Furthermore, southern Idaho is known to produce soft white wheat with protein averaging higher than some other areas. There are many reasons; varieties, high residual N that is not fully credited through soil testing, and periodic drought in water short areas to name a few.

Regardless if southern Idaho wheat goes to China, if China proves good on its announcement, that would be a positive development for the PNW wheat market, and Idaho's producers stand to benefit.

Protein Segregation in an Ideal World

Wheat received at export terminals has been segregated by protein for many years. High protein in soft white wheat is a recurring issue and an abiding concern as many of our cash paying customers have maximum upper limits for protein. Japan requires less than 10.5%, Taiwan less than 9.5%. There are occasionally small premiums offered for low protein soft white wheat in the neighborhood of 5 cents a bushel.

Segregation is certainly the key as there is a considerable range in protein at every harvest. I've reported in the past that roughly a third of the wheat is harvested with protein low enough to suggest it was inadequately supplied with N (<10% protein). Another third was clearly over supplied with N (>11% protein), and the remaining third was within the intermediate protein range suggesting that more nearly optimum N was available.

Segregating wheat by protein at inland elevators could conceivably improve these low protein premiums, but it's not clear how much. It might have an additional advantage.

Considerable wheat in the Treasure Valley is fed locally to beef. Ideally the high protein soft white wheat would go to the feed lot and the low protein for export. But it's not likely any segregation will occur without a financial incentive.

Triticale P

Triticale as you know is the cross of rye and wheat. The primary use of triticale in southern Idaho is for forage. The triticale is harvested at the early boot to heading stage and generally followed by silage corn. The triticale is used primarily by dairies to maximize P removal, especially where they are limited by statute in the manure that can be applied to limited land resources. The system is also used to maximize forage production.

The credit for P removal depends on both the amount of forage produced and the P concentration of the forage. If the forage P concentration isn't measured, National Research Council (NRC) estimates are used. For a heading stage harvest, the value is 0.33% P on a dry matter basis. It is not clear how appropriate this default P concentration is for triticale grown in soils enriched with manure P.

We have initiated a small survey of the forage triticale grown in southern Idaho to determine its P content. Sampling is being done in the Treasure and Magic Valleys by U I Cooperative Extension.

One observation so far is that triticale is often harvested earlier than the boot or heading stage. That's because many growers time the harvest not so much by the triticale growth stage as by the need to plant full season corn hybrids.

This year's high temperatures in March and April caused earlier triticale development than normal. That should lead to higher production. But even with the earlier development, much of the triticale we've seen harvested has not reached the full boot stage. If it doesn't reach the boot stage this year, it's not likely to reach it in years with cooler more normal temperatures.

If less mature forage is harvested, the P concentrations are probably higher. Plant P concentrations typically decline as the plant develops. We look forward to the results.

Wheat Talk Forum

For those of you with burning questions that you'd like other producers, or practitioners, to address, consider the Wheat Talk Public Forum on the **Idaho Wheat Commission** website (http://www.idahowheat.org. Recent posted questions particularly relevant to western Idaho include: Increasing Wheat Yield, Is the Cereal Leaf Beetle Here to Stay?, What is Clearfield Wheat.

You might take a look at the IWC website. You might also check out the **Idaho Barley Commission** website at http://www.idahograin.org/barleycommission/barleyhome.htm.

Acknowledgement

The **Idaho Wheat Commission** has awarded a grant of $3000 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://agweb.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 bradb@uidaho.edu. The advantage for us? 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. If you have suggestions for the website send them to me at bradb@uidaho.edu.

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