



# The Cereal Sentinel

*A newsletter for Treasure Valley cereal producers*

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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)**

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# Pest Update

## *Cereal Leaf Beetle*

Cereal leaf beetle continues to plague many southwestern Idaho producers. The Idaho Department of Agriculture (IDA) has been instrumental in the release of leaf beetle larval parasites for biological control, but these wasps have been slow to establish in western Idaho. While parasitized larva have been found near some release sites, their incidence has been very low (<5%) as it was at the Parma Station last season.

Additional parasites were released in western Idaho this past month in Washington County. Hopefully these additional releases will spur more rapid establishment of the wasp. One of the difficulties with beetle parasite establishment is the elimination of the larval host with control measures. Without the larval host the parasitic wasp has no way of completing its life cycle.

The most successful parasite establishment occurs where cereal leaf beetle nurseries are maintained. These nurseries require a site dedicated and managed specifically for cereal leaf beetle propagation. The release site is selected based on the prevalence of cereal leaf beetles. The beetles are allowed to proliferate on the host and minimal if any tillage is used after harvest in order not to disrupt the pupae in the soil. A susceptible host is then planted nearby for the over-wintering adults.

No control measures are used for the leaf beetles in the host crop. Ideally the cycle is repeated to perpetuate the beetle population into which the parasite is released. The nursery then provides parasitized larvae that can be distributed to other release sites.

Few leaf beetle nursery sites have been established in western Idaho and few of these have been managed to maximize the success of the parasite release. This is one of the limitations to successful parasite establishment in western Idaho. More sites are needed. If you believe you have a site suitable for a parasite release, can afford to devote the site to a cereal leaf beetle nursery for 2 to 3 years, and are willing to manage the site for propagation of the CLB (and wasp), contact Mike Cooper with the Idaho Department of Agriculture at 208-332-8620.

Pheromone aggregation traps are also being evaluated for their ability to monitor cereal leaf beetle adult populations. The pheromone is still being isolated and characterized according to Ben Simko, until recently the Malheur County Extension Educator, who worked with the pheromone together with local producers. The results are still preliminary but the numbers on the pheromone traps appear to be associated with the numbers of adults present with sweeps in the field.

Others in the PNW are also evaluating the traps and we hope to have more to report this next spring.

## *Stripe Rust (Puccinia Striiformis)*

A stripe rust alert was posted on the PestAlert network this past spring based on reports of higher and earlier than normal incidence of stripe rust in eastern Washington and Oregon. We have stripe rust on wheat in western Idaho this season but it is largely confined to three commercial fields of a susceptible variety.

Stripe rust infection occurred in commercial scale plantings of the HRW wheat variety **Columbia-1** earlier this spring. This infection resulted from a mild winter but cool and wet conditions during late spring. The infection became a severe infection by late grain fill and will undoubtedly affect yield. While a concern for this grower, it is the only heavy infestation of stripe rust that we have documented. None of the wheat surrounding these fields of **Columbia -1** appeared to be adversely affected. **Brundage** lacks the stripe rust resistance of **Stephens**, yet we did not find Stripe rust in **Brundage**.

This is the first occurrence of Stripe rust in this variety that we've noticed in our area. Previous **Columbia -1** plantings over the past two or three seasons were not affected. We have this same variety in our Extension Winter Wheat Variety Performance nurseries at Parma, Weiser, and Grandview and have very little if any infection in these smaller scale plantings. We do have very low levels of infection in some spring wheat varieties including **Winsome** and **Whitebird**.

We tend to take for granted the excellent work of our plant breeders in providing wheat varieties with sufficient Stripe rust resistance that we seldom worry about its occurrence. Stripe rust inoculum is ever present and there is risk in growing varieties in this area with unknown Stripe rust resistance. Whenever you have the combination of inoculum, a susceptible host variety, and the environmental conditions for Stripe rust development, we can have severe Stripe rust incidence.

One factor that may have pre-disposed a susceptible variety to Stripe rust this year is that winter wheat tillered more than usual due to a long fall, mild winter, early re-growth in late winter, and a cool late spring. Additional tillering may have resulted in a more dense canopy that remained more humid between wettings.

# Barley Prospects

## Malting Barley

Busch Ag Resources returned to the Treasure Valley for contracted acreage of two-row **Harrington** barley this season as announced earlier. Growers eventually contracted 1400 acres locally with **Weiser Feed and Storage, Inc.** at \$6.50 a hundred weight.

Plumpness may be more of an issue this year than most years. High temperatures during grain fill reduce the duration of grain fill resulting in smaller kernels, lower test weight, plumpness, and yield. Maximum daily temperatures during June averaged about 4.5 °F above normal. July temperatures are continuing the trend. Plumpness would not ordinarily be an issue with a 75% plumpness requirement, but meeting that spec may be a problem for certain producers this year. Fields particularly at risk are those planted late that matured under less favorable temperatures.

Lodging is another issue that may affect plumpness. **Harrington** is relatively weak strawed and high winds have taken their toll in some fields. Even strong strawed varieties can lodge under the right conditions.

The importance of avoiding excessive N for malting barley was mentioned in the previous newsletter. Excessive N conditions are relatively easy to avoid if the residual N is measured pre-plant and taken into consideration. Residual N following some crops like onions or potatoes can easily be sufficiently high to preclude the need for any fertilizer N. When this residual N is not measured it can lead to excessive N and exacerbated lodging. In fact excessive N can occur without any fertilizer N applied. Residual N following onions can exceed the N required for a weak strawed barley by several fold. Soil testing for residual N is a must in fields going into malting barley.

Another harvest issue is skinned and broken kernels. Slower cylinder speeds are generally required for threshing. Other settings may differ for malting barley compared to feed barley. Be sure and check with your contract or elevator fieldman for setting information before starting the 2003 harvest.

We need to put our best effort forward for this malting barley planting. Following direction on combine adjustments for malting barley should help in delivering sound barley and demonstrating our ability to produce and deliver a quality product.

If your malting barley is severely lodged in some areas and you know it will not meet the malting specs, you might consider harvesting it separately. That might

be better than mixing it with your better barley and risking rejection of all your production.

## Barley Fractionation/Ethanol

As reported in the last issue, a group of local producers has organized as **Treasure Valley Renewable Resources, LLC (TVRR)** to pursue a combined barley and wheat fractionation-ethanol facility for the Treasure Valley. An update on their progress follows.

Barley fractionation involves separating the bran, starch, and protein components of the grain and marketing them individually into food or feed grade channels. The barley bran would be separated into fractions high in either niacin, beta-glucans, or soluble fiber, all of which would enter the food or nutraceutical market. Food grade starch would also be marketed into food channels with the residual starch going for ethanol. The protein would be marketed primarily for aquaculture feed. Wheat would be fractionated into high value gluten and the residual starch would go for ethanol. The ethanol facility would also accommodate corn.

The first proposed site for this facility was Fruitland but a zoning change from agricultural to industrial was not supported by the Payette County Commission. **TVRR** is now actively considering proposals from other Treasure Valley Communities including Caldwell, Emmett, Weiser, and Ontario. A decision on which proposal to accept should be made by the end of July.

The sooner this facility is located and built in the area, the earlier Treasure Valley small grain producers can benefit from the value added processing that is so often talked about for improving returns to growers and sustaining our rural communities. For an update on **TVRR** contact John Hamilton (208-452-7807).

## Dockage

Wheat cleanliness is an abiding issue that will continue to plague producers for the foreseeable future. It appears that exporters are attempting to recoup the cost of their cleaning facilities at the port by increasing dockage discounts. Dockage, to refresh your memory, is the easily removed non-grain material in the wheat sample including chaff, stems and rocks.

New dockage rates have been proposed this spring by exporters in Portland that will lower the minimum dockage percentage to 0.2%. Wheat delivered above 0.2% dockage will suffer a minimum discount of 2¢ per bushel. The proposed new rates were as follows:

0.1% or less	no discount
>0.1 to 0.6%	2¢ per bu
>0.6 to 1.0%	4¢ per bu
>1.0 to 1.6%	1¢ per bu for each 0.1% over 1
>1.6 to 2.9%	1.5¢ per bu for each 0.1% over 1.6

Example discounts for specific dockage percents based on these rates might run as follows for 15,000 lb:

0.5% dockage	\$5 discount
0.8%	\$10
1.2%	\$15
2.3%	\$48.75

Actual discounts may vary from these but the point is that significant discounts can result with high dockage.

Whereas it is possible to harvest wheat with appropriate settings and get less than 0.6% dockage, it will be near impossible to minimize dockage to 0.2% without significant grain loss. One elevator informed me that few producers can deliver wheat with only 0.2% dockage without sacrificing wheat out the back of the combine. Even with seed cleaning equipment the best they can get is 0.1% dockage. It appears that the new rates are designed to exact a discount from every delivery to help pay for the exporters cleaning. This, despite the fact that two years ago only a third of the wheat exported from Portland was under strict dockage specifications.

Local elevators will have little choice but to pass these new and steeper dockage discount rates to producers delivering wheat. While it seems that even our best harvested wheat is going to be subject to a minimum dockage discount, the discount will increase rapidly with higher dockage percentages. It is important to minimize these discounts by careful combine settings.

In the past we've been told by elevators that if the elevator knows you are delivering wheat with high dockage they can sometimes segregate that wheat from food channels and reserve it for local feed wheat. To some extent the discounts may be partially avoided. Selling directly to feeders is another option.

## Fall Mineralizable N

UI fertilizer guides for irrigated southern Idaho include estimates of the N released from previous crop residues. The N recommendations in practically all the UI guides could be improved if we could improve the estimates we make for the previous crop N credit.

Wheat residues associated with our irrigated production are relatively high. Producers spend considerable time and effort (\$\$\$) contending with these residues. Many apply N to the residues before they are

plowed down and some of the N rates are two and threefold higher than the 50 lb N per acre maximum recommended in UI fertilizer guides.

The N is applied for a number of reasons, (1) the widespread notion that additional N is needed to hasten residue decomposition under field conditions, despite ARS research to the contrary, (2) that additional N is needed to compensate for the N immobilized during residue decomposition, and (3) because of a lack of information on the N available in soils following the grain harvest.

We don't have measurements for late summer-fall N mineralization following wheat and there are currently no N recommendation differences for straw residue management based on previous crop. However, all UI fertilizer guides for row and field crops include N recommendations based in part on whether small grain residues are returned to the soil.

Late summer-fall N mineralization could be appreciable following previous crops of alfalfa. Small grain vegetative growth occurs during the coolest time of the season when temperatures are least conducive for N mineralization. Then small grains mature relatively early in the season and do not benefit from a full season's N mineralization as do full season crops such as corn. In addition, the soil dries considerably in the first foot depth as the grain matures prior to harvest and following harvest until the residues are worked and water applied. Until the field is re-wetted there is likely minimal N mineralization occurring, due to limited moisture, despite highly favorable temperatures. Delayed N mineralization of previous crop alfalfa residues would conceivably increase N available in the fall for wheat residue decomposition.

If late summer N release from previous crop alfalfa satisfied the N required for straw decomposition and N immobilization, it could (1) significantly reduce N fertilizer costs associated with straw management, (2) reduce late fall soil nitrate concentrations resulting from excessive N applied for residue decomposition, and (3) reduce nitrates leaching to groundwaters

To evaluate the N mineralized following small grain harvests a small survey was conducted at the end of the 2002 small grain season. Soil samples were collected from the first foot depth of several western Idaho harvested wheat fields. The crops prior to wheat included row crops (onions, potatoes, beets), cereal crops (wheat, corn silage), annual legumes (peas and beans), and perennial legumes, (either alfalfa seed or alfalfa hay). The samples were processed uniformly and the initial residual N measured. The soils were then

adjusted in moisture content to insure that it was not limiting to biological activity, put in polyethylene bags and placed in the 0 to 12 inch soil depth on September 6 and left for 2.5 months. They were removed November 22, the soil dried, and the residual N again measured. Mineralized N was calculated as the difference between the initial and final soil test N. A summary of the results is given in Table 1.

Table 1. Residual N after the 2002 wheat harvest and fall mineralized N as affected by previous crop.

Previous crop category	Initial	Mineralized N
	Range (mean) -----lb per acre-----	
Row crops (6)	15-80 ( <b>47</b> )	58-104 ( <b>87</b> )
Wheat/Corn (2)	16-24 ( <b>20</b> )	68-80 ( <b>74</b> )
Beans/Peas (6)	24-108 ( <b>71</b> )	36-100 ( <b>65</b> )
Alfalfa Hay (2)	48-76 ( <b>62</b> )	76-96 ( <b>86</b> )
Alfalfa Seed (9)	12-128 ( <b>70</b> )	84-128 ( <b>104</b> )

The results show a considerable range in residual N after harvest for all previous crop categories other than cereals. Previous cereal crops resulted in the least residual N after harvest. The most residual N after harvest occurred following previous legume crops. Residual N after harvest is largely dependent on the total amount of N available to the wheat, including the fertilizer N provided, and indicates the adequacy of N for wheat production. Residual N approaching 100 lb per acre suggests more than adequate N was available for the wheat and that little if any N would be required to compensate for residue decomposition.

Residual N measured soon after wheat harvest doesn't necessarily indicate the N mineralized in the soil through the fall. The N mineralized through the fall in the buried bags varied less than the residual N after harvest. Previous crop did not affect fall mineralized N as much as the categories affected residual N at harvest. The average fall mineralized N ranged from 65 to 104 lb per acre and was highest for alfalfa seed. Note that fall mineralized N averaged 74 lb per acre when the previous crop was a cereal.

The total soil N available for straw decomposition is the sum of the residual N after harvest and the fall mineralized N. The total N at harvest and through the fall averaged from 94 lb per acre for previous cereal crops to 174 lb per acre for the alfalfa seed previous crop. With these amounts of total N available it is

unlikely that there is any benefit to fertilizer N applied in early fall to hasten residue decomposition.

Mineralization of N in the buried bags was not limited by available moisture as it may be in the free soil. On the other hand, N mineralization in the protected bags was only measured from September 8 to November 22. We did not monitor the N mineralized between the initial sample collection in August and placement in the soil on September 8, nor was mineralized N monitored beyond November 22.

The results are preliminary and represent a very small sampling of the fall mineralized N for specific crop categories. There were only 2 wheat fields sampled with previous crop cereal or previous crop alfalfa hay. We need better representation of these previous crops to make any conclusions regarding previous crop effects on fall mineralized N. However, it seems pretty clear that significant amounts of N are mineralized in the fall after a wheat harvest, regardless of the previous crop.

These results are basically in agreement with USDA-ARS research at Kimberly. Straw decomposition rate was not appreciably affected by applied N even though incorporated straw residues were in excess of four tons per acre. They concluded that residual plus mineralizable N was sufficient to maximize decomposition under field conditions.

Factors other than available N can slow residue decomposition and are likely much more responsible for delayed residue decomposition in our system than available N. Lack of available moisture, as with delayed re-wetting, and poorly incorporated residue are probably the two biggest reasons why straw residues do not decompose as rapidly as some prefer.

Adequate moisture is essential for rapid microbial decomposition of residues. The earlier the soil is re-wetted the earlier the decomposers get to work and the more time they have to feed on the residues. Residues remaining on the surface have limited contact with soil microbes. Residues shallowly incorporated have good contact with soil and the decomposers, but the closer they are to the surface the faster the soil dries and the more limited the biological activity and residue decomposition.

In summary, appreciable N is available for residue decomposition after wheat harvest depending on the previous crop and amount of fertilizer N applied for the wheat. Appreciable N is also available from N mineralization during the fall. The total available soil N following a wheat harvest appears to be sufficient to maximize wheat residue decomposition and preclude the

need to apply N fertilizer in the early fall for the same purpose.

The survey will be continued this season. You may be contacted and asked to cooperate by allowing us to sample your field following the wheat harvest and before re-wetting. If you have wheat following a previous crop of forage alfalfa we are particularly interested and you may contact us at (208-722-6701 Ext 216) or contact your local Cooperative Extension Agent.

## 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 me at [bradb@uidaho.edu](mailto: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](mailto:bradb@uidaho.edu).

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