



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

Volume 17, Issue 1

March 6, 2009

From the Editor: Subscription Information for the 2009 WCU

We hope that this early issue of Weekly Crop Update, the first for 2009, will help you get your growing season off to a good start.

The next WCU for 2009 will be issued on March 27. The WCU will then be posted on the web, and sent to mail and fax subscribers by 4:30 p.m. each Friday until September 18. The cost of mail or fax subscription is \$40. You can subscribe by returning the form available online at <http://www.rec.udel.edu/update09/WCUFlyer2009.pdf>.

Crop Update is also available for free online as a printable PDF or in a blog format at the following web addresses:

<http://ag.udel.edu/extension/wcu/index.htm>
<http://www.rec.udel.edu/TopLevel/Publicat.htm>

For those of you who access the newsletter via the internet we offer to send a weekly email reminder which will let you know when the WCU has been posted online, provide a link directly to the current issue, and give you a taste of the headlines. If you would like to receive the email reminder or if you experience problems during the season with the online WCU please contact me at emmalea@udel.edu or (302)-856-7303.

Emmalea Ernest

Vegetable Crops

Potato Seed Quality and Handling - Gordon Johnson, Extension Ag Agent, Kent Co.; gcjohn@udel.edu

With the recent snow it is hard to believe but potato planting season is right around the corner. In most years, the first potatoes are planted around St. Patrick's Day (March 17) in Delaware or soon after. One of the most important factors in growing a high yielding potato crop is to plant seed pieces from quality seed potatoes. This will lead to better stands and more uniform emergence. Some seed potatoes have already arrived in the state, other loads will follow soon. The following are some pre-plant considerations relating to seed potatoes.

- Purchase high quality certified seed potatoes from a grower that you have developed a good relationship with. Ask about last year's growing conditions and how the seed potatoes performed (yields, visual quality, plant health, stress). Take a visit to your seed supplier every couple of years to see their operation and evaluate the potatoes in storage. Tuber physiological age in seed potatoes is affected by growing conditions and to a larger extent by storage temperatures. Seed potatoes stored at higher temperatures have aged, are considered older, and will behave differently than seed potatoes stored at lower temperatures where tubers have not aged as much and are considered young seed. Seed that

has been “aged” so that it is older from a physiological standpoint will emerge more quickly, have more stems per plant, set tubers earlier, have more tubers, have smaller tubers, and have better early yields. This aged seed should be used for earlier plantings and to obtain early harvest dates to hit early markets. Seed that has not been aged is considered young physiologically. This seed will emerge later, have fewer stems, set fewer tubers, have larger tubers, and mature later. Overall tonnage will be higher. Use younger seed for later plantings and to obtain higher numbers of large or “Chef” sized potatoes.

- Inspect all incoming loads well. Note any signs of rots (dry rot, soft rot), other tuber diseases (silver scurf, scab), storage problems, freezing, bruising, or other defects and reject any loads that are sub-standard.
- Minimize bruising of seed potatoes during handling. Bruising is one of the major factors affecting seed performance.
- If seed potatoes are to be stored for any length of time before cutting, keep at 40-42° F in well ventilated conditions at 85-90% humidity. Separate bins are recommended for different lots.
- Warm the seed 7 to 10 days prior to cutting at a temperature of 55° F. This lowers levels of certain sugars and initiates bud break. Provide good air circulation and a humid condition. Warming time should be adjusted according to variety. It is important to avoid excessive sprouting. Another option is to cut the seed first and then warm it 7 to 10 days prior to planting. There is a somewhat higher risk of loss from rots using this method, but it has some advantages. Precut seed should be piled no more than 6 feet high at temperatures of 55-65° F with plenty of air for drying and wound healing. Humidity should be 85-95%. Precut warmed seed that has been allowed to heal for at least a week emerges more quickly, has better stands, and leads to increase yields (studies have shown 10% or better yield increases compared to fresh cut and planted seed).
- Use a clean, disinfected cutter (or clean knives if hand cutting). Keep the blades sharp and

adjusted to deliver an average seed piece weight of about 2 ounces. Clean and disinfect cutting equipment, preferably each day and definitely between seed lots. Note any signs of internal diseases during cutting and discard bad lots. An 8 ounce tuber will produce the highest percentage of good seed pieces with the least waste (range between 6-10 ounces is acceptable). All potatoes should be fungicide treated after cutting. Whole B seed potatoes can be planted without cutting if sized properly but still benefit from fungicide treatments.

Vegetable Diseases in the Greenhouse -

Kate Everts, Vegetable Pathologist, University of Delaware and University of Maryland;
keverts@umd.edu

As vegetable transplant production in greenhouses gets underway, remember that the potential for disease can be minimized by using certified, tested, and treated seed. Sanitation is the most important management practice. Walls, benches, hand tools, pots and transplant trays should be sanitized with 5% commercial bleach. New potting mix should be used each year. Destroy any volunteer seedlings and keep the area in and around the greenhouse weed free. Once seed is planted, seedlings should be watered early in the day so that the foliage dries quickly and, if possible, watered at the seedling base to reduce moisture on leaves.

Provide good air exchange throughout the greenhouse to minimize periods of high humidity (high humidity favors pathogens). Even after careful sanitation and good practices for managing disease, disease may develop in the greenhouse. Most fungicides are not labeled for greenhouse use. Do not use unlabelled fungicides because the lack of a greenhouse label indicates that there are problems with safety, phytotoxicity, or resistance development risk associated with a fungicide.

The following table, which is modified from the Vegetable Management Guide 2008-2009 New England Region is a good summary of available fungicide options. Please note that Ridomil is *not* labeled for use in the greenhouse. Please follow label directions carefully.

Selected Fungicides and Bactericides Labeled for Greenhouse Use

Fungicide	Target Diseases	Labeled Crops	Comments
BASIC COPPER SULFATE (Cuprofix Disperss) 24 hr. REI	Many diseases including angular leaf spot, downy mildew, <i>Alternaria</i> blight, <i>Anthraco</i> se, bacterial blight, etc.	Vegetables including cucumbers, eggplant, peppers, tomatoes, etc.	Crops grown in the greenhouse may be more sensitive to copper injury so the user should determine plant sensitivity. Some formulations are OMRI approved, see labels for details.
<i>BACILLUS PUMILUS</i> (Sonata) 4 hr. REI	Early blight, late blight, downy mildew, powdery mildew	Many vegetables including brassicas, bulb vegetables, cucurbits, fruiting vegetables, leafy vegetables and root and tuber crops	OMRI approved.
<i>BACILLIUS SUBTILLIS</i> , QST, 713 Strain (Serenade MAX, Rhapsody) 4 hr. REI	Many diseases including downy mildew, powdery mildew, bacterial spot, early blight, etc.	Many greenhouse vegetables including broccoli, leafy vegetables, cucurbits, peppers, tomatoes and others	Applied as a protectant fungicide. OMRI approved.
<i>CONIOTHYRIUM MINITANS</i> (Contans) 4 hr. REI	<i>Sclerotinia sclerotiorum</i> , <i>Sclerotinia minor</i>	Many vegetables including leafy vegetables, brassicas, legumes, fruiting vegetables and bulb vegetables	OMRI approved. Contains a beneficial fungus. Do not allow to stand in tank overnight following mixture. Acts as a preventative.
COPPER HYDROXIDE (Kocide 101, Kocide 3000, Kocide 4.5LF, Kocide DF) 24 hr. REI	Leaf spots, <i>Anthraco</i> se and bacterial spots	See labels for specific crops	See labels for specific usage instructions.
COPPER SALTS of fatty and rosin acids (Camelot) 12 hr. REI	<i>Alternaria</i> blight, downy mildew, angular leaf spot, powdery mildew, scab, gray mold, bacterial soft rot, bacterial spot, <i>Cercospora</i> leaf spot, etc.	Vegetables such as broccoli, cabbage, cucurbits, tomato, etc.	The user should determine if coppers can be used safely prior to application. Observe for 7 to 10 days for symptoms of injury.
DICLORAN (Botran) 12 hr. REI	Pink rot, gray mold, <i>Sclerotinia</i> and <i>Sclerotium</i> rots, leaf blight and neck rot	Many vegetables including celery, lettuce, onions, garlic and shallots	May cause leaf bronzing on lettuce. Use adequate volume of water.
HARPIN PROTEIN (Messenger) 4 hr. REI	Increases vigor and aids in the management of disease	Vegetables including cucurbits, fruiting vegetables, and leafy and cole crops	Do not use chlorinated water when mixing this product. Activates natural defense mechanism in plants. Has no direct effect on pests or pathogens.
HORTICULTURAL OIL (Ultra-Fine Oil) 4 hr. REI	Powdery mildew	Cucurbits, melons and squash	Application should be made when disease is first noticed. See label for information on plant safety. Use lower label rates in the greenhouse. OMRI approved.
HYDROGEN DIOXIDE (Oximate, Zeritol) 0 hr. REI	<i>Anthraco</i> se, downy mildew, powdery mildew, <i>Pythium</i> root rot	Many vegetables including cole crops, cucurbits, leafy vegetables, peppers and tomatoes	Strong oxidizing agent. Contact, oxidizing sanitizer. OMRI approved

Fungicide	Target Diseases	Labeled Crops	Comments
MANCOZEB (Dithane F-45, DF) 24 hr. REI	Leaf spot diseases, seed treatment for damping off, seed rots and seedling blights	Tomatoes and others	Broad-spectrum protectant fungicide.
PENTACHLORO-NITROBENZENE PCNB (Terraclor 75 WP, Terraclor Flowable, Terraclor 15G) 12 hr. REI	Root and stem rot, damping off (<i>Rhizoctonia solani</i> , <i>Pellicularia filamentosa</i>)	Vegetable bedding plants. Limited to container-grown beans, broccoli, Brussels sprouts, cabbage, cauliflower, peppers and tomatoes.	Flowable and 75WP: Apply as a soil drench. 15G: Used as growing media mix. See label for additional information.
POTASSIUM BICARBONATE (Armcarb 100, Milstop, Kaligreen) 4 hr. REI	Powdery mildew and others	Many vegetables including cabbage, cucumber, eggplant, broccoli, cauliflower, lettuce, peppers, tomatoes and squash	Works by contact. Potassium bicarbonate disrupts the potassium ion balance in the fungus cell, causing the cell walls to collapse. Some formulations are OMRI approved. See label for details.
PROPAMOCARB HYDROCHLORIDE (Previcur Flex) 12 hr. REI	<i>Pythium</i> root rot and damping off	Tomatoes, leaf lettuce, cucurbits and peppers	See label for specific usage instructions.
PYRIMETHANIL (Scala) 12 hr. REI	Early blight and gray mold	Tomatoes	Use in well-ventilated houses only and ventilate two hours after application.
<i>STREPTOMYCES GRISEOVIRIDIS</i> strain K 61 (Mycostop, Mycostop Mix) 4 hr. REI	<i>Fusarium</i> , <i>Alternaria</i> , <i>Phomopsis</i> , suppression of <i>Botrytis</i> , and root rots of <i>Pythium</i> , <i>Phytophthora</i> , and <i>Rhizoctonia</i>	Many vegetables including lettuce, cole crops, cucumbers, melons, peppers, tomatoes and others	Contains a beneficial bacterium. Repeat applications may be needed. Use as a soil spray or drench.
STREPTOMYCIN SULFATE (Agri-mycin 17) 12 hr. REI	Bacterial spot	Tomatoes and peppers	Repeated applications can result in resistant bacteria. Do not apply through any irrigation system.
SULFUR (Microthiol Disperss) 24 hr. REI	Powdery mildew	Brassicas, cucurbits, peppers and tomatoes	Crops grown in greenhouses may be more sensitive to sulfur injury, so the lowest label rate should be tried initially. Do not use within two weeks of an oil spray treatment. Some formulations are OMRI approved, see label for details.
<i>TRICHODERMA HARZIANUM</i> (PlantShield, Rootshield) 0 hr. REI	<i>Pythium</i> , <i>Rhizoctonia</i> , and <i>Fusarium</i> . When applied as a foliar spray, suppresses <i>Botrytis</i> and powdery mildew.	Greenhouse vegetables	Contains a beneficial fungus. Avoid applications of fungicides at least one week before or after application. Acts as a preventative. Will not cure diseased plants. OMRI approved.
<i>TRICHODERMA VIRENS</i> GL-21 (formerly known as <i>Gliocladium virens</i>) (SoilGard 12G)	Damping off and root rot, pathogens <i>Pythium</i> and <i>Rhizoctonia</i>	Food crop plants in greenhouse	Acts as a preventative and will protect noninfected plants. Will not cure already diseased plants. Allow treated soil to incubate for one day prior to planting for best results. Do not use other soil fungicides at time of incorporation. OMRI approved.

Adapted from NE Region Vegetable Management Guide. If any information in these tables is inconsistent with the label, follow the label.

Changes to the Format of the Insect Section of the Commercial Vegetable Production Recommendations - *Joanne Whalen, Extension IPM Specialist;*
jwhalen@udel.edu

In the 2009 edition of the [Delaware Commercial Vegetable Production Recommendations](#), you will notice a number of changes agreed upon by the entomologists from the five-state region that work collaboratively on this publication. These changes include:

1. Common names for insecticides now listed in book - As I am sure you are aware, chemicals (including pesticides) have scientific names based upon their chemical structure (i.e. the chemical name). In many instances, these chemical names are long, complicated and understandable only by those with a technical background in chemistry. Therefore, EPA encouraged the development and use of "common names." The common name of an insecticide is the name given to an active ingredient and it is used in lieu of the chemical name on a day-to-day basis. In many cases, insecticides with the same common name are sold under numerous trade/brand names. A number of years ago we started to list Ambush and Pounce as permethrin (the common name for both products) because there were a number of other "generic permethrins" in the market place. A more recent example is the availability of numerous trade/brand names with the same common name -- bifenthrin (examples include Bifenthrin, Brigade, Capture LFR, Sniper, and Fanfare). With the increase in the number of generic insecticides and mixtures of compounds containing older chemistry as well as new chemistry, it became extremely difficult to include all of the trade names and rates for any one insecticide. Therefore, we decided that it would be more useful to list the common names with a few examples of the more available trade/brand names in parenthesis as well as "OLF" to denote that "other labeled formulations" are available.

2. Rates Removed - It also became apparent that, in a number of cases, different generics with the same common name are labeled on different crops. In other cases, different

generics with the same active ingredient have different formulations so the rates are different. In addition, a number of the new combinations of generics are using different rates compared to the original rates of stand alone chemistry. The only way a producer or applicator can choose the correct product and rate is to read the label. A combination of all of these factors resulted in a decision to leave rates out of the 2009 edition. Labels are always changing so it is important to read all labels on the pesticide container before applying any pesticide. In some cases, the labels you find online or even in label books may not be the most recent label or may have changed after printing.

3. Restrictions - A number of years ago, we removed the restriction box from the recommendations because of the increasing number of new or different restrictions on labels relating to use patterns, resistance management, rotations etc. Since the label is the law, it is critical that the user read the label to be aware of all restrictions as well as the correct use rate.

If you have any questions about these changes, please feel to contact Joanne Whalen at 302-831-1303 or send an e-mail to jwhalen@udel.edu.

New Vegetable Insecticides for 2009 -
Joanne Whalen, Extension IPM Specialist;
jwhalen@udel.edu

We have received a number of new insecticide registrations for the 2009 season. *Be sure to check the label for labeled crops, labeled crops within a crop grouping, use rates and restrictions.* In addition, you should also check the Delaware Department of Agriculture's website to be sure these materials are labeled in Delaware (to use a material it must have both a state and federal label)
<http://www.kellysolutions.com/de/pesticideindex.htm>

Single Ingredient Products:

buprofenzin (Courier) - leafhoppers, whiteflies on cucurbits, lettuce, snap beans and tomatoes (<http://www.cdms.net/LDat/ld6LP007.pdf>)

extract of Chenopodium ambrosioides (Requiem) - aphids, thrips, whiteflies, mites, leafminers on numerous vegetables (<http://www.cdms.net/LDat/ld8R9000.pdf>)

chlorantraniliprole (Coragen) - worm pests on cole crops, cucurbits, fruiting vegetables and leafy vegetables (<http://www.cdms.net/LDat/ld8KF012.pdf>)

NOTE: The following general resistance management statement appears on the label: make no more than 2 applications of Coragen per generation to the same insect species on a crop; make no more than 2 successive applications within a 30-day period to the same insect species on a crop.

flubendiamide (Synapse) - worm pests on cucurbits, fruiting vegetables, leafy vegetables and cole crops (<http://www.cdms.net/LDat/ld8LK003.pdf>)

spirotetramat (Movento) - aphids, whiteflies on fruiting vegetables, leafy vegetables, cole crops and potatoes (<http://www.cdms.net/LDat/ld8L5008.pdf>)

Combination Products

NOTE: Be sure to read the general resistance management statement on all of the following labels.

chlorantraniliprole + lambda-cyhalothrin (Voliam Xpress) - worms, beetles on cucurbits, cole crops and fruiting vegetables (<http://www.cdms.net/LDat/ld8N5000.pdf>)

chlorantraniliprole + thiamethoxam (Durivo) (drip only; one application per crop season) - worms, thrips, beetles, leafminers, leafhopper and whiteflies on cole crops, cucurbits and fruiting vegetables and leafy vegetables (<http://www.cdms.net/LDat/ld8NA000.pdf>)

chlorantraniliprole + thiamethoxam (Voliam Flexi) - aphids, CPB, flea beetles, ECB and potato leafhopper on potato only (<http://www.cdms.net/LDat/ld8NH004.pdf>)

Agronomic Crops

Supplemental Label for Headline Fungicide for "Plant Health" - Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu

Headline and other related fungicides called strobilurins including Quilt, Quadris and Stratego have been applied extensively in the US in last few years to enhance yields of corn, soybeans and wheat. Locally, the majority of the use has been on field corn in irrigated high yield environments. The "Plant Health" claims in this new supplemental Headline[®] label initiated a vigorous discussion among Extension Plant Pathologists throughout the East and Mid-West concerning the claims on this new label. The following article addresses those concerns from a scientific, unbiased perspective of the authors. This is a thoughtful and well articulated article and I am sure this is not going to be the last word on this topic but it explains the issue and the concerns pretty well.

SUPPLEMENTAL LABEL FOR HEADLINE[®] FUNGICIDE FOR "PLANT HEALTH": WILL IT IMPROVE CORN, SOYBEAN AND SMALL GRAIN HEALTH?

By Paul Vincelli, Don Hershman, and Chad Lee*
Departments of Plant Pathology and *Plant and Soil Sciences

Kentucky Pest News, Number 1187, February 24, 2009, online at:

www.uky.edu/Agriculture/kpn/kpnhome.htm

A couple of weeks ago, we learned of a supplemental label for Headline[®] fungicide for use on several crops for "disease control and plant health." The impacted crops grown in Kentucky are corn, small grains (barley, rye and wheat), and soybean, as well as other edible legumes. Headline[®] and related strobilurin fungicides (Quadris[®], Quilt[®], and Stratego[®]) provide excellent control of certain fungal diseases of the above crops. In Kentucky, for example, use of these products to control gray leaf spot and/or northern leaf blight in corn, frogeye leaf spot and brown spot of soybean, and tan spot and leaf rust of wheat makes sense when the risk of disease is high. However, this new supplemental label makes claims that go way beyond disease control.

Claims Made on the New Supplemental Label
 The supplemental label indicates that, through preventive applications of Headline® to crops, the plant health benefits may include improved host plant tolerance to yield-robbing environmental stresses, such as drought, heat, cold temperatures, and ozone damage. The supplemental label also claims that Headline can improve plant utilization of nitrogen and can increase tolerance to bacterial and viral infections. These benefits often translate to healthier plants producing greater yields at harvest, especially under stressful conditions. The supplemental label also claims that additional specific benefits can occur, including:

- Improved stalk or straw strength and better harvestability (barley, corn, rye, wheat)
- Induced tolerance to stalk diseases (corn)
- Better tolerance to hail (corn)
- More uniform seed size (corn, soybean, and edible legumes)
- Better seed quality (soybean and edible legumes)

Will “Plant Health” Be Improved?

Based on publicly available research reports, we see very little evidence that Headline® or other strobilurin fungicides should be applied to any of the above crops for any reason other than disease control. To date, no data have been circulated in either the scientific or farm communities which suggest that any strobilurin product, including Headline®, can reliably live up to the claims made for stress tolerance under field conditions.

Claims of stress tolerance sound exciting but, based on the data we have seen, deserve to be viewed with cautious skepticism. There are certainly studies in the laboratory, the greenhouse, and occasionally in the field that show beneficial physiological changes in crops treated with strobilurin fungicides. But don’t assume that the beneficial changes observed in those studies result in increased yield under field conditions. When a greening effect and/or yield improvement is observed in a treated crop (in the absence of significant disease pressure), it is assumed that stress tolerance and/or improved plant health (apart from disease control) is at work. This isn’t necessarily true. In order for any real-world stress tolerance claims

to pass muster, scientifically, it is necessary to conduct replicated field studies where the appropriate environment, plant, and crop measurements are made, and appropriate experimental controls are in place. We do not believe these data exist in sufficient quantity to support the above stress tolerance claims. Certainly, it is inappropriate to draw conclusions about stress tolerance based solely on crop appearance and yield. For example, we have observed the greening effect in field crops, but it often does not translate to higher yields. We have also observed occasional yield increases in crops (mostly soybean) following a fungicide application, when no obvious disease symptoms were present. But there are a large number of potential reasons why yields are improved in treated crops. Tolerance to one or more stresses is a possibility, but it is also possible that some soil-borne disease or disease complex is being controlled, but we cannot easily observe it. There are many other possible reasons and the only way to know for certain is to conduct the appropriate replicated, controlled field studies.

Let us look at an example from soybean from two replicated studies conducted at the Research and Education Center where disease pressure was minimal and late season moisture stress was significant (especially in 2007). If Headline® application improves tolerance to drought stress (as per the supplemental label), then the application should improve yield in treated crops. But as can be seen in Table 1, soybean yields were not improved by Headline® in either year. Table 2 shows the results of a similar field trial for corn conducted on a Kentucky farm under drought conditions. You can see that Headline® provided no yield bump.

Table 1. Results of Headline® application (6 fl oz + Induce at R3 stage) in soybean where disease pressure was insignificant, under late season moisture stress (UKREC, Princeton, KY, 2007-2008)

Treatment	2007 Yield (bu/A)	2008 Yield (bu/A)
Check	24.5	51.5
Headline	23.8	53.0
Statistical result (LSD, P=.05)	No statistical difference	No statistical difference

Table 2. Results of Headline® application in corn where disease pressure was insignificant, under late-season moisture stress (Logan County, KY, 2007)

Treatment	% Gray Leaf Spot*	Yield (bu/A)
Check	1.3	160
Headline	2.0	155
Statistical result (LSD, P=.05)	No statistical difference	No statistical difference

*Disease assessed on ear leaf at half milk line.

It is important to emphasize that the data in Tables 1 and 2 are merely examples. The above data are typical of what has been seen over and over in a large number of university-conducted trials conducted over the past several years in corn, soybean, and small grains. If Headline® regularly improves yields by imparting stress tolerance to crops in the absence of disease, then more complete and convincing proof needs to be made public. And in the world of science, claims based on evidence that has not been made public are treated with suspicion.

The claims about improved stalk health in corn are not unreasonable. Occasionally (and we stress the word occasionally), applications of strobilurin fungicides have been shown to improve stalk strength and/or reduce stalk rots in university-conducted field trials. However, in our experience, that improvement in stalk health relates to control of foliar diseases (gray leaf spot, for example). You see, if foliar diseases are aggressively attacking the plant during grain fill, then the corn plant will attempt to fill the grain by cannibalizing the reserves in its own stalk. That weakens the stalk and can result in more aggressive stalk rots as well as reduced stalk strength. So, if foliar diseases are killing the upper and middle foliage during grain-fill, then it makes sense that a fungicide like Headline® might sometimes improve stalk health, which it sometimes does. But note carefully: this benefit still relates to control of foliar diseases. And like we said above, strobilurin fungicides are very good for controlling foliar diseases like gray leaf spot and northern leaf blight of corn if these diseases are present.

What about a fungicide enhancing tolerance to hail? Actually, conducting a study that tests for this type of benefit is more complex than you may realize. You must have the right kind of experimental design or you could be misled by the results. The only study we are aware of that tests this claim with a valid experimental design is one conducted in 2008 by Dr. Carl Bradley and colleagues at the University of Illinois. In that study, researchers used a weed-eater to simulate hail damage. In that study, they found absolutely no yield benefit from Headline®, Quadris® or Quilt® when applied following simulated hail damage.

Is There a Downside?

Producers should be aware that sometimes the late-season “greening” effect observed with strobilurin fungicides can result in higher grain moisture and therefore additional drying costs and a slower (more expensive) harvest. Conversely, if crop harvest is delayed until the desired harvest moisture content is reached, there can be a yield and/or quality penalty, depending on the crop. For example, delaying wheat harvest will result in delayed planting of doublecrop soybean, which can lead to lower yields in soybean. In soybean, if harvest is delayed, pod and stem blight levels may increase, which can reduce the quality of grain destined for seed use. This may necessitate additional grain clean-out and/or the use of seed-treatment fungicides prior to planting next season. (Strobilurins, in general, do not do a good job in controlling soybean pod and stem blight). The bottom line is that fungicides applied to corn, soybean, and wheat will sometimes increase production costs.

Another concern specifically relating to the plant health issue is that the use of a fungicide when disease activity is too low to affect yield increases the risk of fungicide resistance. It is because anytime you expose a fungus to the fungicide, even when fungal activity is low, you increase the selection pressure on the fungus towards resistance. Resistance to strobilurin fungicides is an important concern worldwide, and the use of any strobilurin fungicide for plant health reasons increases the risk of developing strobilurin-resistant gray leaf spot. Use of strobilurins may also incite flares in certain

insect and mite populations under field conditions, because fungicides can sometimes suppress fungi that kill these arthropod pests.

Bottom Line

The strobilurin fungicides are very good for control of specific crop diseases (see product labels for a list), if they are present at high enough levels (or the risk is high enough) to reduce yields. However, applying a strobilurin fungicide for plant health or stress tolerance reasons alone – with little or no threat from foliar diseases – doesn't make sense to us, based on our extensive study of the best available information. Land-Grant University trials, thus far, generally do not support claims of reliable improvement in crop yield under stress conditions from an application of *Headline*[®], or any other strobilurin fungicide. Nor have fungicide manufacturers provided sufficient field evidence in support of these claims. In fact, the vast majority of industry data show yield impacts (usually in side by side comparisons) associated with specific fungicide treatments, but provide no measurements of diseases or stresses. The upshot of this is that there is absolutely no way to know what the cause of apparent yield improvement is in the vast majority of industry studies. Thus, at this time, we do not feel there is a scientifically defensible basis for assertions of improved plant health/stress tolerance in the absence of the diseases the fungicide was originally developed to control.

Small Grain Weed Control - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

If you did treat your fields in the fall for weed control, is time to be scouting the crop. Weed control is important to achieve maximum wheat yields. There are a number of good herbicides for small grains, provided they are used at the proper timing. Weeds need to be small (less than 2 inches in height or diameter) and actively growing. This often requires a separate application for herbicides since this often does not coincide with nitrogen applications. Often weeds are not actively growing during the first nitrogen application and then weeds are too large (and wheat interferes with herbicide

coverage) at time of the second nitrogen application.

Fields that were no-tilled or where chickweed emerged shortly after planting in the fall are fields to check first for spring treatment. If you have wild garlic or Canada thistle, the time of application should be delayed since you need to spray these weeds when they have fully emerged. Yet, coverage is important for these species; so allow adequate emergence, but do not wait too long. If weed pressure from winter annuals is great, it may not be possible to get control of the winter annuals and perennials with one application. In that case, two applications may be required.

Harmony Extra can be applied with nitrogen. If spraying Harmony Extra with nitrogen, be sure to pre-mix it in water first. If using nitrogen as your carrier, there is no need for a surfactant unless you have wild garlic and it is over 8 inches tall. If applying Harmony Extra in nitrogen diluted with water, use a non-ionic surfactant at ½ to 1 pint/100 gallons of solution. If applying it in water use a non-ionic surfactant at 1 qt/100 gallons.

There are various formulations of Harmony and Harmony Xtra as well as generic brands. Be sure to read the label so you have the correct rate. Also, remember the TotSol Formulation from DuPont requires extensive mixing to fully dissolve the granules.

Grass control in small grains is still challenging, even with a few new products. Hoelon is the only product labeled for grass control in barley, and it will only control annual ryegrass before it is more than 2 tillers. For winter wheat, Osprey is also available. Fall will be a better time for Osprey applications, but it will control annual ryegrass in the early spring. Osprey cannot be applied with nitrogen carrier and the Osprey application and nitrogen application must be made 14 days apart. Spray solution can not be any more than 15% liquid nitrogen. Osprey has activity on small annual bluegrass. If Osprey does not fit into your situation because of the nitrogen applications, Axial XL has shown good results with spring applications. However, Axial XL will not control other grass species.

Finally, the following are the timing limitations for small grain herbicides. The timing restrictions are based on crop safety.

- 2,4-D - up to jointing stage (pre-jointing)
- Banvel/Clarity - up to jointing stage (pre-jointing)
- Osprey - up to jointing stage
- Buctril - up to boot stage
- Harmony Extra or Harmony GT - up to flag stage (pre-flag leaf)

Concerns with Some Chickweed

Populations - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

Scott Hagood, extension weed specialist from VA Tech, has identified four fields from Virginia (across the bay) that had common chickweed that was resistant to Group 2 herbicides (this includes Harmony, Harmony Extra, Finesse, and others). Likewise, we have had reports of fields on Delmarva with chickweed populations not controlled with Finesse or Harmony Extra. We are investigating this in the greenhouse and have no answers yet as to why the chickweed was not controlled.

However, if you have fields with poor chickweed control and do not feel Harmony or Harmony Extra are performing as they should, your alternatives are quite limited. Other small grain herbicides that we are familiar with do not provide acceptable chickweed control. One product to suggest is Starane Ultra (from Dow AgroSciences). This product is labeled for wheat and barley and has been used in the western US for control of Group 2 resistant weeds. Local data is lacking on its performance, but it appears to have good crop safety and good chickweed control. However, it will not control other key species such as wild garlic. Starane Ultra can be tankmixed with Harmony Extra to broaden the spectrum of control. Starane Ultra by itself does not need an adjuvant and can be applied in nitrogen. Be sure to read and follow label directions.

Time to Employ a Defensive Marketing

Strategy - Carl German, Extension Crops Marketing Specialist; clgerman@udel.edu

What is defensive marketing? Defensive marketing is taking the necessary steps to be able to weather the storm given the extreme uncertainty being depicted in the commodities and financial markets for the remainder of the 2008/2009 and 2009/2010 marketing years. Blanket recommendations concerning marketing decisions seldom serve the individual well. However, this cropping season is different from the recent past and from a historical perspective.

During the winter, under more normal conditions, commodity prices (corn, soybeans, and wheat) would have been expected to bounce from price levels that were set in mid-December or even early January. Instead, due to economic conditions in the U.S. and abroad, the most recent low for November soybean futures was posted on March 2nd at \$7.89 per bushel. New crop December corn futures, last traded at \$3.89 in the overnight e-trading session just 40 cents above the most recent low of \$3.49 made in active trading on December 5th. The primary driving force in commodity trading over the last two months has been the fate of the general economy reflected in the Dow Jones Industrial Average. In mid-December, the Dow was trading near 8700, in early January near 8980, and 6760 on March 2nd. The 7099 support level was broken last week, representing a 50% retracement from the 14,200 high. The next level of support for the Dow is at 4600, a 67% retracement from the high. If the Dow heads to the next level of support then we can be assured of a further decline in commodity prices.

2009/2010 Marketing Strategy

1. Consider buying crop insurance. You must have crop insurance in one form or another to be eligible for SURE (information on SURE is available at your FSA office). Crop insurance is not a panacea that can fit everyone's needs on every farm and every crop. However, it can prove to be very beneficial for some crops on some farms, particularly when proven yields on the farm are well above the county or state average yields or when a crop disaster occurs.

For CRC and GRIP crop insurance policies the price guarantees are now set at \$4.04 per bushel for corn and \$8.80 per bushel for soybeans. The deadline for crop insurance is March 16th.

2. Visit your FSA Office. Make sure that everything gets done that needs to be given attention. Consider entering FSA's Acre program or opt to stay in the old DCP program.

3. Watch for opportunities to cover unprotected intended production via forward cash contracts or the purchase of put options. Remember, crops covered by CRC present one with an opportunity to price those crops at higher levels than the price guarantees. In other words the CRC covered crops place a price floor under the insured portion of your crop.

4. Bear in mind that every bushel of your intended production must be marketed or sold. Do not over contract intended production.

5. Plan to store a portion of your 2009 crop production. The crop size for the 2009 growing season will determine whether pricing opportunities prevail this summer and fall. If a huge crop is grown in the U.S. this year, coupled with a contracting economy, we could see commodity prices moving to the loan by harvest. Current circumstances require that one prepares for the worst of outcomes and hopes for the best.

For technical assistance on making grain marketing decisions contact Carl L. German, Extension Crops Marketing Specialist.

Announcements

Pre-Deadline Crop Insurance Workshop Presented by DDA

Monday, March 9, 2009 6:30 – 8:30 p.m.
Delaware Department of Agriculture
2320 S. DuPont Highway, Dover, DE
with live ITV link to
Carvel Research and Education Center
16483 County Seat Hwy
Georgetown, DE

The featured speaker will be Clif Parker, recently retired Assistant Deputy Administrator with the USDA Risk Management Agency (RMA). During his career with RMA, Mr. Parker worked with many aspects of the development and administration of federal crop insurance. His inside perspective will be of interest to Delmarva farmers preparing to make crop insurance decisions prior to the March 16 sales closing and policy change date.

The latest information on Crop Revenue Coverage, Group Risk Plan, Group Risk Income Protection, and traditional Actual Production History coverage will be presented. Discussions will include how to use crop insurance to optimize your potential benefits under the new Supplemental Revenue Assistance Program (SURE) administered by the USDA Farm Service Agency.

The USDA Risk Management Agency has announced the following for crops covered by Crop Revenue Coverage (CRC) and Group Risk Income Protection (GRIP). Coverage and premium examples for these crops will be covered during the Pre-Deadline Crop Insurance Workshop

Crop Revenue Coverage

The following 2009 crop year base prices, along with low and high price factors, have been approved for CRC corn, grain sorghum, soybeans, and spring wheat in counties with a March 15 cancellation date.

Price Factors

Crop	Base Price	Low	High
Corn	\$4.04/bushel	0.944	0.944
Grain Sorghum	\$3.56/bushel	0.833	0.833
Soybeans	\$8.80/bushel	1.831	1.831

Group Risk Income Protection

The following 2009 CY expected prices and volatility factors have been approved for GRIP corn, grain sorghum, soybeans, and wheat in counties with a March 15 cancellation date.

Crop	Expected Price	Volatility Factor
Corn	\$4.04/bushel	0.34
Grain Sorghum	\$3.56/bushel	0.34
Soybeans	\$8.80/bushel	0.31

So that enough workshop materials can be made available, those planning to attend are asked to register by calling the DDA Crop Insurance Info Line – (877) 673-2767.

Sussex County Agronomic Crops Breakfast Series: Managing Production Inputs for Maximum Profitability in 2009

Thursday, March 12, 2009 7:30 – 10:30 a.m.
Carvel Research and Education Center
16483 County Seat Hwy
Georgetown, DE

Topics and discussions will include: 2009 crop production budgets, controlling costs, attaining maximum economic yields, and efficient fertilizer and manure use.

DE Nutrient Management Credits (1)

Please call Kim Lewis at (302) 856-2585 x542 to register.

Kent County Crop Masters Winter 2008-2009 Session VII: Taking Advantage of the Information Age

Tuesday, March 10, 2009 6:00 – 9:00 p.m.
UD Paradee Center, Dover, DE
(Next to DelDOT)

In this session we will discuss how to take full advantage of the information age that we live in. Topics will include finding and evaluating information on the internet, internet tools to promote your farm, internet commerce, electronic tools to collect and

evaluate information on your farm, web based decision aids, taking advantage of free web based software and applications, blogging, creating and managing web pages, site specific crop management using digital field data and much more.

Nutrient Management Credits (1)
CCA Credits (3)

Dinner is provided.

Please call (302) 730-4000 to register.

LEADelaware is Accepting Applications

LEADelaware is now accepting applications for the next class of leadership Fellows. LEADelaware is an agricultural and natural resource leadership program designed to help build the next generation of leaders within the food and fiber industries. The LEADelaware Program will recruit a class of 15 to 20 leaders in Delaware to participate in a two-year program.

Applications are due March 31, 2009

To learn more, visit our website at:

<http://ag.udel.edu/frec/LEAD>

or contact Laurie Wolinski at lgw@udel.edu or (302) 831-2538

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of February 26 to March 4, 2009

Readings Taken from Midnight to Midnight

Rainfall:

0.08 inch: February 28

0.27 inch: March 1

~6 inch snow: March 1 and March 2

Air Temperature:

Highs ranged from 66°F on February 27 to 31°F on March 2.

Lows ranged from 45°F on February 27 to 2°F on March 4.

Additional Delaware weather data is available at http://www.deos.udel.edu/monthly_retrieval.html and <http://www.rec.udel.edu/TopLevel/Weather.htm>

Weekly Crop Update is compiled and edited by Emmalea Ernest, Extension Associate - Vegetable Crops

Cooperative Extension Education in Agriculture and Home Economics, University of Delaware, Delaware State University and the United States Department of Agriculture cooperating. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Delaware Cooperative Extension, University of Delaware. It is the policy of the Delaware Cooperative Extension System that no person shall be subjected to discrimination on the grounds of race, color, sex, disability, age or national origin.