



# WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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## Vegetables

**Cold Effects on Early Transplanted Vegetables** -Gordon Johnson, Extension Ag Agent, Kent Co.; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

The frost we had this week should remind growers that as you try to get a jump on the growing season, cold weather effects need to be considered. Over the years, many of our early plantings of summer vegetables have suffered because of early cold damage and inadequate provisions to protect plants.

There has been a tendency to risk earlier and earlier plantings as growers try to hit the early market.

Earliest plantings of watermelons, cantaloupes, summer squash, and tomatoes will begin in the next 10 days. First transplanting of crops such as peppers and eggplant will begin in early May. One of the characteristics that all of these crops have in common is that they are warm season vegetables that are sensitive to cold temperatures, both in the root zone and above ground.

Considerations for early transplanted warm season vegetables:

1. Choose the lightest ground that warms up quickly for early plantings. Plant higher sections in the field first. Avoid areas that receive any shade from woods or hedgerows. Early fields

should be protected from extreme wind and should not have frost pockets.

2. Lay plastic mulch well ahead of time to warm soils. Black plastic mulch should have excellent soil contact. Loose mulch is much less effective in warming soils.

3. Consider using IR plastics that trap heat (green and brown plastics). Clear plastics can be used but weeds are an issue and a good herbicide program will be needed

4. Make sure that there is good soil moisture when forming beds and laying plastic because soil water will serve as the heat reservoir during cold nights.

5. Careful attention needs to be paid to hardening off warm season vegetable transplants that will be planted early. Gradual acclimation to colder temperatures will reduce transplant shock. Do not transplant tender, leggy plants or plants coming directly out of warm greenhouse conditions for these early plantings.

6. Use vegetative windbreaks such as rye. This will reduce heat transfer by wind. Consider using windbreaks between each plastic bed in early plantings.

7. Consider using covers to protect from cold and wind and to increase accumulated heat. This includes slitted and perforated row covers and floating row covers.

8. Watch extended weather forecasts and plant at the beginning of a predicted warming trend.

9. Monitor soil temperatures in plastic beds and do not plant if they are below 60°F. Soil temperature in beds should be measured at the beginning of the day when at the coolest. When soil temperature conditions are not favorable, wait to plant.

10. Avoid planting in extended cloudy periods, especially if plants have come out of the greenhouse after an overcast period. These plants will not perform well.

11. When transplanting, make sure that there is good root to soil contact and there are few air pockets around roots.

Transplanted warm season vegetables vary in their ability to tolerate adverse weather after being set out. Tomatoes will stop growth but will grow out without much damage once warm weather returns. Summer squash also handles adverse conditions fairly well. Watermelons will hold if they have been hardened off properly. Cantaloupes can be permanently stunted if exposed to excessively harsh early conditions. Peppers and eggplants will not put on any root growth until temperatures are warm enough. Remember that all of these vegetables are susceptible to frost damage and will be killed by a late freeze.

In years with cold, cloudy, windy weather after transplanting, we have had large losses of transplants in the field. In many fields considerable hand labor was used to replace dying plants and in some cases whole fields were replanted. It is critical to have warm soil conditions after transplanting to allow roots to grow out into the bed quickly. What happens in cold, cloudy conditions is that plants shut down physiologically. Little root growth occurs and the existing roots on the transplant do not function well. If there is any wind, plants lose more water than they can take up and they die due to desiccation. This is accelerated when the sun does come out - the first sunny day after an extended cold, cloudy period is when you will see the most wilting of weakened transplants.

Later on in the growth cycle, cold weather during flowering can lead to problems with pollination and fruit formation resulting in reduced fruit set and malformed fruits.

## Vegetable Diseases in the Greenhouse - *Kate Everts, Vegetable Pathologist, University of Delaware and University of Maryland;* [keverts@umd.edu](mailto:keverts@umd.edu)

Many vegetable transplants are being grown in greenhouses across Delmarva. Potential for disease can be minimized in many ways:

- use certified tested and treated seed (even organic vegetable growers can treat with hot water or bleach solutions)
- walls, benches, hand tools, pots and trays should be sanitized with 5% commercial bleach
- weeds should be eliminated
- new (or sterilized) potting mix should be used
- 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 circulation and exchange in the greenhouse to minimize periods of high humidity

However, even after careful sanitation and good greenhouse management practices, disease may develop. Most fungicides are **not** labeled for greenhouse use.

The following table, which is modified from the Vegetable Management Guide 2008-2009 New England Region, is a good summary of available fungicide options and the diseases that they manage. Please note that Ridomil is **not** labeled for use in the greenhouse. Use only labeled fungicides or biofungicides. Read the label carefully because if a product is not applied properly, phytotoxicity may occur.

## Selected Fungicides and Bactericides Labeled for Vegetable Bedding Plants

Insecticide	Target Pests	Labeled Crops	Comments
<b>BASIC COPPER SULFATE</b> (Cuprofix Disperss) 24 hr. REI	Many diseases including angular leaf spot, downy mildew. <i>Alternaria</i> blight, <i>Anthracnose</i> , 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.
<b>BACILLIUS SUBTILLIS</b> , QST, 713 Strain (Serenade) 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.
<b>COPPER HYDROXIDE</b> (Kocide 101, Kocide 2000, Kocide 4.5LF, Kocide DF) 24 hr. REI	Leaf spots, <i>Anthracnose</i> and bacterial spots	See labels for specific crops	See labels for specific usage instructions.
<b>COPPER SALTS</b> 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 Camelot can be used safely prior to use. Observe for 7 to 10 days for symptoms of injury.
<b>HARPIN PROTEIN</b> (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.
<b>HORTICULTURAL OIL</b> (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.
<b>HYDROGEN DIOXIDE</b> (Oxidate) 0 hr. REI	<i>Anthracnose</i> , downy mildew, powdery mildew, <i>Pythium</i> root rot	Many including cole crops, cucurbit, leafy vegetables, peppers and tomatoes	Strong oxidizing agent. Contact, oxidizing sanitizer.
<b>MANCOZEB</b> (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.
<b>PENTACHLORO-NITROBENZENE PCNB</b> (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.
<b>POTASSIUM BICARBONATE</b> (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.
<b>PROPAMOCARB HYDROCHLORIDE</b> (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.
<b>STREPTOMYCES GRISEOVIRIDIS</b> strain K 61 (Mycostop) 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 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.
<b>STREPTOMYCIN SULFATE</b> (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.
<b>SULFUR</b> (Microthiol Disperss) 24 hr. REI	Powdery mildew	Crucifers, cucurbits, peppers and tomatoes	Crops grown in greenhouses may be more sensitive to sulfur injury, so the lowest labeled rate should be tried initially. Do not use within two weeks of an oil spray treatment.
<b>TRICHODERMA HARZIANUM</b> (PlantShield) 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.
<b>TRICHODERMA VIRENS GL-21</b> (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.

This information is modified from the Vegetable Management Guide 2008-2009 New England Region. If any information in these tables is inconsistent with the label, follow the label.

**Vegetable Crop Insects** - *Joanne Whalen, Extension IPM Specialist; [jwhalen@udel.edu](mailto:jwhalen@udel.edu)*

### **Asparagus**

The first asparagus beetles can be found actively laying eggs on asparagus spears. As a general guideline, a treatment is recommended if 2% of the spears are infested with eggs. Since adults will also feed on the spears, a treatment is recommended if 5% of the plants are infested with adults.

### **Cabbage**

Begin scouting fields for imported cabbage worm and diamondback larvae. With the increase in temperature, we could see an increase in moth egg laying activity. As a general guideline, a treatment is recommended if you find 5% of the plants infested with larvae. If both insect species are present, Avaunt, the Bt insecticides, Proclaim, Rimon or Spintor have provided control. Radiant is now also labeled on cabbage for both insect species.

### **Peas**

Be sure to sample peas for pea aphids as soon as small seedlings emerge. On small plants, you should sample for aphids by counting the number of aphids on 10 plants in 10 locations throughout a field. On larger plants, take 10 sweeps in 10 locations. As a general guideline, a treatment is recommended if you find 5-10 aphids per plant or 50 or more aphids per sweep. Be sure to check labels for application restrictions during bloom.

### **Sweet Corn**

As soon as plants emerge from the ground, be sure to sample fields for flea beetles and cutworms. As a general guideline, treatments should be applied for cutworms if you find 3% cut plants or 10% leaf feeding. In order to get an accurate estimate of flea beetle populations, fields should be scouted midday when beetles are active. A treatment will be needed if 5% of the plants are infested with beetles.

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**Grower's Guide to Understanding DMI or SBI (sterol biosynthesis inhibitor) Fungicides (FRAC Code 3)** - *Andy Wyenandt, Assistant Extension Specialist in Vegetable Pathology, Rutgers University; [wyenandt@aesop.rutgers.edu](mailto:wyenandt@aesop.rutgers.edu)*

The DMI (DeMethylation Inhibitors) or Sterol Biosynthesis Inhibiting (SBIs) fungicides belong to FRAC code 3 which include the triazoles and imidazoles. Some of these fungicides are commonly known as Tilt (propiconazole), Nova or Rally (myclobutanil) and Procure (triflumizole).

SBIs work by inhibiting the biosynthesis of ergosterol which is a major component of the plasma membrane of certain fungi and needed for fungal growth. Resistance by fungi to the SBI fungicides has been characterized and is generally known to be controlled by the accumulation of several independent mutations, or what is known as 'continuous selection' or 'shifting', in the fungus. In any given field population the sensitivity to the SBI fungicide by the fungus may range from extremely high (highly sensitive, i.e. will be controlled by fungicide) to moderate (partially sensitive) or low (mostly resistant to fungicide). This type of resistance is also known as quantitative resistance. With quantitative resistance there are different levels of resistance to the fungicide due to independent mutations, which is unlike the target mutations that occur in qualitative resistance associated with the QoI fungicides (FRAC code 11). Because different levels of resistance to the SBI fungicide may exist in the field, the fungal population may react differently to different application rates of the SBI fungicide. Hence, it is suggested that using a higher rate of a SBI fungicide, may improve control when lower rates have failed.

For example, let's say that a powdery mildew population on pumpkin has 25% high, 50% moderate, and 25% low sensitivity to a SBI fungicide. If fungicide is applied at the low rate, only 25% of the population (highly sensitive) may be controlled, whereas if the high rate is used, 75% of population be been controlled. The main point here is that if low rates of SBI fungicides have been used and control seems to be

weakening, bumping to a higher rate may improve control. Unfortunately, it is difficult to determine what proportion of the powdery mildew population is sensitive or not sensitive by looking at the field until you have begun spraying. The best advice, if you are using low rates and think those rates are not working like you feel they should, the rate should be bumped up to the high rate the next time the fungicide is sprayed, and if the high rate doesn't work it may be safe to assume the fungal population has grown mostly resistant. Importantly, if the high rate fails, whether you bumped up to a high rate or started with one, and control does not seem adequate, **do not continue** to use the fungicide. **Recognizing if and when fungicide chemistries are failing and when fungicide resistance is developing is critical** to producing successful crops and why **scouting** on a regular basis, at least before and after each fungicide application, is important. Regular scouting can help reduce unwarranted and ineffective fungicide applications and help reduce wasted costs. Remember to always tank mix SBI fungicides with protectant (M) fungicides (i.e. chlorothalonil) to help reduce the chances for fungicide resistance developing. Always apply SBI fungicides according to label rates and resistance management recommendations and always be aware of the fungicide rates you are applying.

## Agronomic Crops

**Agronomic Crop Insects** - *Joanne Whalen, Extension IPM Specialist; [jwhalen@udel.edu](mailto:jwhalen@udel.edu)*

### Alfalfa

Economic levels of alfalfa weevil larvae and pea aphids can both be found in alfalfa fields, especially in Kent and Sussex counties. When sampling for aphids and weevils, collect a minimum of 30 random stems throughout a field and place them top first in a white bucket. For aphids, you want to count the number present per plant as well as any that have dislodged from the stem into the bucket. In seedling stage alfalfa, a treatment should be considered if you find 5 aphids per stem. As a general guideline, you should consider a treatment in alfalfa less

than 10 inches tall if you find 40-50 aphids per stem. The treatment threshold for alfalfa 10 inches or taller in height is 75-100 per stem. Although beneficial insects can help to crash aphid populations, the cooler temperatures have slowed their activity. As a general rule, you need one beneficial insect for every 50-100 aphids to help crash populations. For alfalfa weevil, you will also want to record the number of weevil larvae per stem. The following thresholds, based on the height of the alfalfa, should be used as a guideline when making a treatment decision: up to 11 inches tall - 0.7 per stem; 12 inches tall - 1.0 per stem; 13 - 15 inches tall - 1.5 per stem; 16 inches tall - 2.0 per stem and 17 - 18 inches tall - 2.5 per stem.

### Field Corn

Black cutworm moth catches have significantly increased in a number of areas around the state, including Delmar, Leipsic and Selbyville (<http://ag.udel.edu/extension/IPM/traps/current/tbcwtraps.html>). Moth catches of 9 to 15 moths per 7-day period have been associated with a moderate to high potential for cutworm outbreaks in field corn. Although pheromone trap catches can help determine when peak moth flight and egg laying occurs, they cannot predict the amount or magnitude of cutting that will occur. The presence of a major flight only means that the potential for an outbreak exists. Adverse weather, lack of adequate food for newly hatched larvae, predation, and disease can reduce larval populations. Scouting of seedling corn near the first cutting date is the best way to determine whether a problem exists. Even if a preventative treatment was used, all fields should be scouted at emergence for cutworm activity. As a general guideline, a treatment should be considered in 1-2 leaf stage corn if you can find plants with 10% leaf feeding or 3% cut plants.

### Small Grains

During the past week, we have received numerous calls regarding aphid management in barley and wheat. Based on research done in VA in past years, they found that small grains can tolerate a lot of feeding, especially lower in the canopy. As a general guideline, the treatment threshold for aphids in wheat and barley over a foot tall is 300 aphids per foot of row. Since we

are past the time of barley yellow dwarf transmission (fall transmission is the most important), the next important time to consider aphid management in small grains is at grain head emergence. Since aphids feeding in the heads of small grains can result in a loss in test weight, it is important to look for aphids as soon as the grain heads emerge. As a general guideline, a treatment should be considered if you find 20 aphids per head and beneficial insect activity is low. Although beneficial insects can help to crash aphid populations, the cooler temperatures have slowed their activity. As a general rule, you need one beneficial insect for every 50-100 aphids to help crash populations.

We have also found low levels of cereal leaf beetle egg laying and the first small larvae in small grains in Sussex County. With the warm temperatures predicted for the end of this week, we could see an increase in larval activity by next week. The following information was taken from Dr. Ames Herbert's fact sheet on cereal leaf beetle, which can be found at the following link: <http://www.ext.vt.edu/pubs/entomology/444-350/444-350.html>.

"Scout after peak egg laying and when up to 50% of eggs have hatched. If the population is mainly made up of eggs, then scouting should be at a later date when a minimum of 50% are small larvae. Samples should be taken at a minimum of 10 random sites in the interior of each field (avoid the edges). At each site, 10 tillers (stems) should be examined for eggs and larvae. This will result in 100 tillers (stems) per field being examined. Eggs may be on the leaves near the ground. Record the number of eggs and larvae counted at each sample site and calculate the total number of eggs + larvae found.

Alternatively, stems can be examined at random while walking through the major portion of the field; again 100 stems per field should be examined. **Scouting Frequency:** Once egg laying has reached a peak, many fields will need only a single scouting for eggs and larvae. If the proportion of eggs in the sample is 50% or greater, then sample again in 5-7 days.

**Economic Threshold:** 25 eggs and/or small larvae total per 100 tillers. This threshold is based on the number of eggs and small larvae present, rather than large larvae. Proper use

allows fields at risk to be identified and treated in time to prevent significant yield loss."

Very low levels of the first small grass sawfly and armyworm larvae have also been found in Sussex county. However, moth flights are behind compared to past years due to the cooler temperatures (especially night temperatures) over the past few weeks. If you treated a few weeks ago for aphids or winter grain mites, you will need to continue to scout for the "worm pests" since those sprays were applied too early to control armyworms and sawflies. In addition, if flag leaves have emerged already and you have typically applied a fungicide/insecticide application on wheat at flag leaf emergence, combination sprays applied this week and maybe even next week, may be too early to control armyworms and sawflies this year. In many years one application of an insecticide, timed when fungicide applications were needed, has been enough to control the complex of insects present; however, delayed moth catches means that peak moth laying and egg hatch will not occur until later this year. As a reminder, this combination spray has generally not been done before the last week in April in past years. Therefore, it will be important to sample fields that were treated early to be sure you do not miss an infestation of these "worm pests".

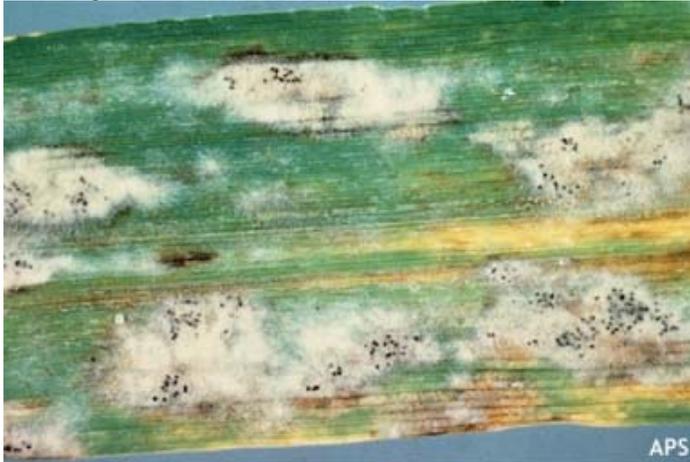
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**Small Grain Diseases** - Bob Mulrooney,  
Extension Plant Pathologist; [bobmul@udel.edu](mailto:bobmul@udel.edu)

### Barley

We have had reports of increasing amounts of **powdery mildew** on barley. Looking at my evaluations of the barley variety trials that Bob Uniatowski conducts yearly, 'Thoroughbred' looks to be the most susceptible in the trials but there has never been enough disease present to warrant spraying. Regionally we have no data to evaluate fungicides for control of barley diseases because barley rarely needs to be sprayed for diseases and the cost has been prohibitive. Times have changed and if the heads are emerging and the top two leaves are infected there may be some benefit to controlling powdery mildew on a susceptible variety if the weather continues to favor powdery mildew.

Stratego, Tilt, Quilt (10.5- 14.0 oz/A) would be suggested for control if necessary. A beneficial non-target effect will be brighter straw if straw is being baled.



Powdery mildew on barley

### Wheat

This week the diagnostic lab received more wheat samples with virus symptoms. The first results have come back and the virus detected was **soilborne wheat mosaic virus**. SBWMV is a virus that is transmitted to the wheat in the fall by a soil born fungus called *Polymyxa graminis*. Symptoms range from mild green to prominent yellow leaf mosaics and streaking. Stunting can be moderate to severe. In this region the symptoms are found on plants in areas that are generally wet or poorly drained. Virus symptoms often diminish when the weather gets warm and symptoms are confined to the lower leaves. Symptoms on the upper leaves can look identical to wheat spindle streak mosaic virus. Planting resistant cultivars is the best solution for fields with a history of SBWMV.

I would suggest waiting until early head emergence before applying fungicides to wheat if disease levels do not warrant spraying now. Delaying until head emergence is the last opportunity to apply most fungicides and that application can carry the crop through harvest if glume blotch, tan spot, or rust should appear at or after heading. Another benefit is sooty mold control if we have poor weather during harvest. In most cases disease levels are low in wheat except where high nitrogen carry-over or over fertilization has occurred. That has resulted in more powdery mildew.

### Soybean Rust Update - *Bob Mulrooney*, *Extension Plant Pathologist*; [bobmul@udel.edu](mailto:bobmul@udel.edu)

On April 10<sup>th</sup>, all green tissue from a soybean rust-infected kudzu vine in Mobile, Alabama was removed. This was the only "known" rust-infected site in Alabama. At this time the disease can only be found in Florida. Soybean rust is still active on kudzu in six counties in Florida. Soybean sentinel plots are beginning to be planted in some of the Gulf Coast states. Kudzu is also greening-up rapidly in this region of the country.

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### Soybean Seed Treatment - *Bob Mulrooney*, *Extension Plant Pathologist*; [bobmul@udel.edu](mailto:bobmul@udel.edu)

Seed production regions were hard hit last year by drought including Delmarva. Seed is in short supply and the quality is variable. It will be important this year to handle your soybean seed carefully. Be gentle with the seed, the seed coats may be thinner than normal and the cracks that form from handling may be avenues for fungal infection when the seed is planted. Most Delaware growers plant soybeans when temperatures are above 60°F which is favorable for rapid germination. At lower temperatures especially around 50°F emergence is delayed and fungi have an opportunity to infect since the cracked germinating seed is leaking nutrients that they can use. Once emergence takes place the plants become more resistant to infection. So the sooner the plant gets out the ground, the shorter the period that it is exposed to infection by soilborne fungi. Most seed will be or should be treated this season. Any seed that tests less than 80% germination should definitely be treated with a fungicide.

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### Update on Wheat Irrigation - *Richard Taylor*, *Extension Agronomist*; [rtaylor@udel.edu](mailto:rtaylor@udel.edu)

This past winter at a Kent County Crops Masters program on irrigation a number of growers talked about their experiences with irrigating wheat. In addition, I've talked recently with others who were able to estimate the value of irrigation on the sandier soils in southern

Delaware. It seems that many of the growers irrigating wheat on sandy loam soil types in Kent County found yield responses on the order of 3 to 5 bu/acre this past year. On the loamy sands and sands in southern Delaware, growers report a larger response in the range of 20 to 30 bu/acre during 2006. This year's very dry spring in many parts of the state suggests that once again we will find responses to irrigation. It's still my contention that your best response to irrigation on wheat will be when you apply a lot of water early (before heads emerge) in an attempt to bring soil water levels to field capacity in both the top soil and the subsoil horizons. Once heads emerge, you should not irrigate while the wheat head is in flower since this can lead to the development of head scab. In our limited research on irrigated wheat, we also found small decreases in yield when irrigation was applied after heading. For that reason, unless the soil becomes excessively dry, I would suggest heavy early irrigation to charge up the soil water supply, no irrigation during heading and initial seed fill, and limit the number of irrigations after the seeds begin to fill to the minimum number possible that will keep the wheat growing up to maturity.

Other than the lower than ideal rainfall totals across the region at this point, the growing season has generally been very favorable for wheat development with cool nights and moderate daytime temperatures. Temperatures have been nearly ideal for wheat. Limited rainfall and cool weather also means that very little of the nitrogen fertilizer applied to wheat has been lost so yield potential from the fertility viewpoint should be high.

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**Tips for Successful Corn Production -**  
*Richard Taylor, Extension Agronomist;*  
[rtaylor@udel.edu](mailto:rtaylor@udel.edu)

With the higher prices available for corn, it would seem that profitable corn production is assured. However even if a profitable season is highly likely where either irrigation or timely rainfall is plentiful, there are many agronomic practices that can be used to improve the chances of success. The first one that comes to

mind relates to the yield curve as affected by planting date. In research conducted in Delaware and surrounding states in the past, we've seen slightly (3 to 5 percent) lower yields when corn is planted before the first of May. Large acreage growers often feel the need to begin planting early just to be able to finish planting their corn acreage before yields begin to decline due to late planting. Small acreage growers can get restless seeing others out planting corn and move to plant before the ideal window, the last week of April and the first week of May. Growers can still satisfy the need to plant enough acres to finish in time or the urge to get into the field early by dividing their fields up into high yield potential fields, moderate yield potential fields, and low yield potential fields. Plant the low yield potential fields at the earliest opportunity and again at the end of the corn planting window if all of the acres aren't completed early or if special soil conditions preclude entering the field until later in the spring. If all the low yield potential fields are planted and more time is available before the ideal planting window, growers should move to the medium yield potential fields. As soon as the ideal window opens, growers should change to the best high yield potential fields. The higher yield potential during this period can add quite a bit of extra corn to your final farm yield. Once past the first week of May or once all the best fields are planted, move on to finish with the medium yield potential fields and finally those low yield potential fields with special problems are that weren't planted earlier.

On no-till fields, be sure to use row sweeps or row cleaners to help warm up the soil at the planted rows. Soil temperatures high enough for rapid uniform germination are essential in obtaining the highest possible yield potential. Also, consider using hybrids ranked highest for cold tolerance since improvements have been made on that front in the past few years.

The same thing applies to deciding where to apply the most fertilizer dollars. You should always aim at fertilizing your high yield potential fields with enough fertilizer to obtain maximum economic yields (MEY). Recognizing that yield from your medium yield potential fields will be lower than that in the high potential fields, you

should reduce your input levels on these fields. For the low yield potential fields, keep the number of fertilizer dollars spent on these fields to the minimum needed to obtain the average yield you expect off these fields. By adjusting your fertilizer rates for each field, you can reduce your overall fertilizer bill as well as ensure that you get the biggest bang for your buck from your best fields.

I think it is safe to say that seed costs are higher than ever nowadays. Again, choose the best hybrids and use the highest (best) seeding rate on your best fields. Not only will you get more for your money but since you'll be planting this expensive seed at the ideal time, your plant stands will be better and less seed will be wasted. In other words, use your race horse hybrids on your better fields. For the medium and low yield potential fields, choose the work horse hybrids which can tolerate the less favorable growing conditions and still respond if the growing season turns out to be a good one. Adjust your seeding rate slightly up when planting early to help ensure better stands and lower your seeding rate later in the planting window when the soil is warmer and germination conditions are closer to ideal. In addition, you won't waste as much seed in fields that have lower potential.

A final suggestion on irrigated land would be to consider irrigating early if the dry conditions persist. A recent visit down the state showed very low water levels and therefore water tables in much of central and southern Delaware. Although corn uses very little water when it is early in its growth cycle, it is highly likely that the subsoil layers are not at field capacity. It is highly advisable to bring soil moisture levels in both the top soil and subsoil close to their maximum water holding capacity early in the season so that the corn will not suffer early water stress. This also will give you a base or buffer so that later in the season during tassel, silking, and seed fill, the irrigation system can keep up better with the crop's water demand.

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## Update on Hay and Pasture Crop Irrigation

- Richard Taylor, Extension Agronomist;  
[rtaylor@udel.edu](mailto:rtaylor@udel.edu)

Many of our hay and pasture species are just beginning the rapid growth phase that occurs each spring. More and more hay and pasture fields are set up to receive irrigation. The limited rainfall the southern half of the state has received so far this spring means that the soil water supply will be rapidly depleted as the cool-season hay and pasture grasses enter the rapid growth phase. Orchardgrass, in particular, since it matures earlier than many of the other species we grow, will be using large quantities of water during the next few weeks. If you are set up to irrigate hay and pasture fields, now is the time to begin the irrigation system. Try not to let the soil moisture levels be lowered to the point that water stress symptoms actually show up on the crop. As the species enter the rapid growth phase of spring, water use will increase from about a tenth of an inch of water per day to a quarter inch or more water per day. To keep fields actively growing, be sure to replace that quantity of water each week. When warmer temperatures occur in June, water use can increase to that approaching corn (about a third of an inch per day) so your irrigation regime will need to increase as summer approaches. Keep in mind that you will need to stop irrigation long enough for the soil to dry enough to support haying and baling equipment without causing significant compaction. It's also usually best to wait until the crop begins regrowth before resuming irrigation so that you do not encourage weeds.

It also is time to get nitrogen (N) out on irrigated and non-irrigated hay and pasture fields. For hay, the latest research from Pennsylvania State University and Dr. Marvin Hall's team shows that you should be applying about 50 lbs of N per acre per ton of expected yield. This is a good compromise between maximum economic yield from the hay and the risk of high nitrate levels in the hay if the crop becomes very drought stressed. For pastures, our N recommendations still vary based on the amount of legume in the pasture. If pastures contain a one to one ratio of legume to grass (50 percent of the biomass— forage—comes from the legume), additional N

fertilizer will not be needed. If the legume component makes up between 25 and 50 percent of the forage, then apply about 25 lbs N/acre and if there is less than 25 percent legume in the forage, you may need as much as 50 lbs N/acre to maximize productivity of the pasture.

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**CFTC Announces Details of Agricultural Forum** - *Carl German, Extension Crops Marketing Specialist*; [clgerman@udel.edu](mailto:clgerman@udel.edu)

The Commodity Futures Trading Commission (CFTC) has announced the details concerning the **April 22<sup>nd</sup>** roundtable discussion on the agricultural markets. The roundtable is designed to gather information about whether the futures markets are properly performing their risk management and price discovery roles.

**Discussion Agenda**

The roundtable will include discussion of the following topics:

- I. Price Discovery in the Agricultural Futures Markets
  - a. Overview of market supply/demand in markets
  - b. Role of speculators, index funds, and commercial hedgers
  - c. The adequacy of transparency in the markets
  - d. The adequacy of contract terms and conditions
- II. Hedging in the Agricultural Futures Markets
  - a. Convergence of futures and cash prices
  - b. Forward contracting in the current markets
  - c. Role of agricultural swaps and other risk management tools
- III. Margin Levels (Performance Bond) and Agricultural Credit
  - a. Role of margin and the clearing system
  - b. Overview of agricultural credit and record margin levels
  - c. Proper determination of margin
  - d. Price limits and margin levels
  - e. Credit market conditions and Ag lending outlook

**Participants**

Officials from the CFTC, U.S. Department of Agriculture, Farm Credit Administration, Federal Reserve System, and a broad spectrum of agricultural market participants, including producer groups, commodity merchandisers, consumer groups, financial firms, and futures exchanges.

**Attendance and Comment**

The roundtable discussion session will begin at 9:00 a.m. on Tuesday, April 22, 2008 in the Commission's hearing room located on the ground floor of CFTC headquarters - Three Lafayette Centre, 1155 21st Street, NW, Washington, DC 20581. Hearing room doors will open at 8:30 a.m.

Due to significant space limitations, interested members of the public are strongly encouraged to use the following alternative options to access the hearing:

1. Watch the live broadcast of the roundtable via Webcast on [www.cftc.gov](http://www.cftc.gov)
2. Call into a toll-free telephone line to connect to a live audio feed. Call-in participants should be prepared to provide their full name and affiliation. Conference call information is listed below:  
Domestic Toll Free: 866-759-0291  
Conference ID: 43214239  
Call leader name: "CFTC"

Members of the public may submit statements for the official record up to two weeks following the roundtable discussion.

Go to <http://www.cftc.gov/newsroom/generalpressreleases/2008/pr5484-08.html> for an official copy of the press release.

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**Grain Marketing Highlights** - *Carl German, Extension Crops Marketing Specialist*; [clgerman@udel.edu](mailto:clgerman@udel.edu)

**U.S. Row Crop Planting Progress Slowed**  
Cool and wet conditions throughout much of the Corn Belt has kept planting progress to a bare minimum so far this row crop season. U.S. corn

plantings were running 5 percent behind and spring wheat plantings were about 4 percent behind the 5-year average on Monday, April 14<sup>th</sup>. Although there is still plenty of time to get this year's corn planted, it will take another week of drying weather before planters can roll in large parts of the Corn Belt. The corn-to-soybean price-ratio has recently favored corn production. General consensus suggests that another 3 to 4 million acres of corn plantings are needed, above the 86 million acres reported in the March 31<sup>st</sup> planting intentions report. Based upon yesterday's close (4/16/08 - Dec corn @ \$6.25; Nov soybeans @ \$12.73) the ratio is currently at 2.08:1, favoring corn planting. The price-ratio needs to bid to 2.5:1 or better before favoring soybean plantings. Some analysts have suggested that a 2 or 3 million acre shift to corn plantings may be more in line with reality when all things are considered e.g., the high cost of growing corn as compared to soybeans.

#### **Weekly Export Sales Report Bullish Corn, Soybeans, Neutral Wheat**

U.S. corn exports for the 32<sup>nd</sup> week of the current marketing year are slightly ahead of what's needed to stay on pace with USDA's projection of 2.5 billion bushels to be booked in '07/'08. For the week ending April 10, 2008 shipments were reported at 36.3 million bushels. Note: actual shipments at 43.8 mb were slightly behind the 45.6 mb needed to be on pace with projections.

U.S. soybean exports, reported at 17.6 mb, were viewed as bullish for the soybean market considering only 2 mb of soybean sales were needed last week to stay on pace with USDA's projection of 1.075 bb for the '07/'08 marketing year. Soybean exports are running well above the quantity needed to reach the official export projection before September 1. Shipments of 15 mb were ahead of the 10.3 mb needed to be on pace with projections.

Weekly sales reported for all U.S. wheat at 4.7 mb brings accumulated sales in the 45<sup>th</sup> week of wheat's '07/'08 marketing year up to 1.231 bb. USDA's projection for export sales in the current marketing year ('07/'08) is currently pegged at 1.275 bb. Shipments at 11.8 mb were well below

the 30.4 mb needed to stay on pace with projections.

#### **Marketing Strategy**

The price of crude oil hit an all time high of \$114.93 per barrel in yesterday's trading (04/16/08), with the high at \$115.00. The U.S. dollar index, marked at 71.64 at yesterday's close, is within four tenths of its low made on March 17<sup>th</sup>. We can expect commodity prices to remain extremely volatile in the near term.

A webinar on using Agricultural Options on Futures, specifically, the put option is being planned to air in mid-May. The thinking is that grain marketers will need to consider/use the put option for forward pricing decisions around mid-June to early July for corn and mid-July to early August for soybeans. More details to follow.

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

## **Announcements**

#### **Certified Pesticide Applicators Test**

Wednesday, April 23, 2008 8:00 a.m. - noon  
Delaware Department of Agriculture  
2320 S. DuPont Highway, Dover, DE

For additional information got to  
<http://ag.udel.edu/extension/pesticide/index.php>

Or contact Susan King [swhitney@udel.edu](mailto:swhitney@udel.edu) or Larry Towle at [larry.towle@state.de.us](mailto:larry.towle@state.de.us).

For Current Agricultural Information from  
the UD Kent Co. Extension Office Visit  
[www.kentagextension.blogspot.com](http://www.kentagextension.blogspot.com)

**Recent Topics:**

Landscape and Nursery – Crabapple Scab  
Cold Weather and Early Transplanted Vegetables  
Corn Production Tips  
Observations and Notes from the County  
Glyphosate Use Decisions in Soybeans  
Aphids, Aphids, Aphids  
Grain Markets – Corn Fundamentals Remain  
Strong  
Grain Marketing – Recent Supply and Demand  
Estimates  
Dairy and Livestock – Fineness of Corn Grind  
Poultry Water Systems – Questions to Ask  
Check Your Center Pivot Systems  
Pictures of Later Wheat Growth Stages  
Wheat Growth Stages – Flag Leaf to Maturity  
Seed and Seedling Issues in Beans and Other  
Legume Vegetables  
Cutworm Countdown Starts

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## Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of April 10 to April 16, 2008

Readings Taken from Midnight to Midnight

**Rainfall:**

0.04 inch: April 12

**Air Temperature:**

Highs Ranged from 78°F on April 11 to 55°F on  
April 14.

Lows Ranged from 58°F on April 12 to 29°F on  
April 16.

**Soil Temperature:**

57°F average.

(Soil temperature taken at a 2" depth, under sod)

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

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

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