



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

Vegetable Crop Insects - *Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu*

Durivo on Vegetables

Syngenta Crop Protection just received a supplemental label for Durivo that revises the application methods for brassica, leafy veggies, cucurbits and fruiting veggies. It can now be applied not only through drip irrigation, but also at planting or transplanting as an in-furrow spray or as a transplant drench, and also post-seeding and post-transplanting via various methods (<http://www.cdms.net/LDat/ld8NA005.pdf>).

Lima Beans

Continue to scout for spider mites, stink bugs and lygus bugs. Early detection and treatment will be needed to achieve spider mite control. In addition, multiple sprays may be needed for mites, especially if populations are high at treatment time and/or numerous eggs are present. Be sure to sample for corn earworm larvae as soon as pin pods are present. A treatment will be needed if you find one corn earworm larvae per 6 ft of row.

Melons

Continue to scout all melons for aphids, cucumber beetles, and spider mites. We are starting to see an increase in cucumber beetle and aphid populations. Treatments should be applied before aphid populations explode and leaf curling occurs.

Peppers

As soon as the first flowers can be found, be sure to consider a corn borer treatment. We are starting to see an increase in moth populations and egg masses can be found on pepper leaves. Depending on local corn borer trap catches, sprays should be applied on a 7 to 10-day schedule once pepper fruit is $\frac{1}{4}$ - $\frac{1}{2}$ inch in diameter. Be sure to check local moth catches in your area by calling the Crop Pest Hotline (instate: 800-345-7544; out of state: 302-831-8851) or visiting our website at (<http://ag.udel.edu/extension/IPM/traps/latestblt.html>). You will also need to consider a treatment for pepper maggot. Be sure to watch carefully for beet armyworm larvae since they can quickly defoliate plants. In addition to beet armyworm feeding on leaves you should also watch for an increase in aphid populations. We are starting to find aphid populations increasing and they can explode quickly, especially where beneficial insect activity is low. As a general guideline, treatment may be needed if you find one or more aphids per leaf and beneficial activity is low.

Snap Beans

As corn borer and corn earworm populations start to increase, you will need to consider treatments for both insect pests. Sprays are needed at the bud and pin stages on processing beans for corn borer control. As earworm trap catches increase, an earworm spray may also be needed at the pin stage. You will need to check our website for the most recent trap catches to help decide on the spray interval between the pin stage and harvest for processing snap beans

(<http://ag.udel.edu/extension/IPM/traps/latestblt.html> and <http://ag.udel.edu/extension/IPM/thresh/snapbeanecbthresh.html>). Once pins are present on fresh market snap beans, a 7 to 10-day schedule should be maintained for corn borer and corn earworm control.

Sweet Corn

Continue to sample all fields from the whorl through pre-tassel stage for corn borers, corn earworms and fall armyworm. We continue to see an increase in whorl infestations of fall armyworm. A treatment should be considered when 12-15% of the plants are infested. Since fall armyworm feeds deep in the whorls, sprays should be directed into the whorls and multiple applications are often needed to achieve control. The first silk sprays will be needed for corn earworm as soon as ear shanks are visible. Be sure to check both blacklight and pheromone trap catches for silk spray schedules since the spray schedules can quickly change. Trap catches are generally updated on Tuesday and Friday mornings (<http://ag.udel.edu/extension/IPM/traps/latestblt.html> and <http://ag.udel.edu/extension/IPM/thresh/silksp raythresh.html>). You can also call the Crop Pest Hotline (in state: 1-800-345-7544; out of state: 302-831-8851).

Cucurbit Downy Mildew Update - Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu

Conditions continue to be favorable for downy mildew on all our cucurbits. Be sure to be including downy mildew fungicides such as Ranman, Previcur Flex, Tanos and Presidio for downy mildew control. They all need to be tank mixed with a protectant fungicide. Disease pressure is increasing and waiting until the three leaf stage may not provide the control desired if infected plantings are nearby. **Check the website often for the latest forecast at <http://cdm.ipmpipe.org>.**

Late Blight on Tomato - Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu

Late blight on tomato was identified in a backyard garden near Ellendale in Sussex County this week. Conditions have been favorable lately for late blight. Commercial tomato growers should be including a late blight specific fungicide in their fungicide rotation. Previcur Flex plus Bravo, Tanos, Ranman, or Forum could be used. Check label for specific information and all should be tank mixed with a protectant fungicide. Potatoes are rapidly reaching maturity and late blight should not be an issue at this stage of the season. Organic growers only have copper as a fungicide choice which is not very effective. If backyard tomatoes are badly infected the best control measure is pull them up, place them in sealed plastic bags and dispose of them. Do not put them on a compost pile. Backyard tomato growers have several protectant fungicides that can be used namely mancozeb and products containing chlorothalonil or Daconil. Sprays should be applied at 5 to 7-day intervals before symptoms appear.



Late blight on the underside of a tomato leaf. Note the white cottony growth on the dying tissue.

Powdery Mildew on Cucurbits - Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu

Symptoms typically begin on older, lower leaves and can spread rapidly under dry, humid conditions. Control of powdery mildew begins with regular scouting for symptoms and weekly

fungicide applications. Begin a fungicide program when PM has been found in the region and/or when 1 lesion is found on the underside of 45 leaves. Fungicide resistance management of the fungus which causes powdery mildew is critical in the Mid-Atlantic region! Fungicides with a high risk for resistance development, such as the strobilurin fungicides (Pristine, FRAC code 11) and Rally or Procure (FRAC code 3), should be tank mixed with a protectant fungicide such as chlorothalonil (M5) and rotated with fungicides of a different chemistry.

The following are some fungicide recommendations for control of powdery mildew in a variety of crops:

To control powdery mildew in pumpkin and winter squash:

Alternate:

Nova or Rally (myclobutanil, 3) at 5.0 oz 40WP/A *plus* chlorothalonil at 2.0-3.0 pt 6F/A

or

Procure (triflumizole, 3) at 4.0-8.0 oz 50WS/A *plus* chlorothalonil at 2.0-3.0 pt 6F/A

With:

Micronized Wettable Sulfur (M2) at 4.0 lb 80W/A; Sulfur may injure plants especially at high temperatures. Certain varieties can be more sensitive. Consult label for precautions.

or
chlorothalonil *plus* Pristine (pyraclostrobin + boscalid, 11 + 7) at 12.5-18.5 oz 38WG/A

If powdery mildew has become well established in the mid to late part of the season, only apply protectant fungicides such as chlorothalonil or sulfur or Quintec* (quinoxifen, 13) at 6.0 oz 2.08F/A *plus* chlorothalonil at 2.0-3.0 pt 6F/A.

*Quintec (quinoxifen, FRAC code 13) from Dow AgroSciences has a section 3 supplemental label for powdery mildew control on pumpkin, winter squash and gourd. The label is available at <http://www.rec.udel.edu/update09/Quintec.pdf>.

To control powdery mildew in summer squash and cucumbers:

Alternate:

Nova or Rally (myclobutanil, 3) at 5.0 oz 40WP/A *plus* chlorothalonil at 2.0-3.0 pt 6F/A,

or

Procure (triflumizole, 3) at 4.0-8.0 oz 50WS/A *plus* chlorothalonil at 2.0-3.0 pt 6F/A

With:

chlorothalonil *plus* Pristine (pyraclostrobin + boscalid, 11 + 7) at 12.5-18.5 oz 38WG/A

To control powdery mildew in muskmelon and watermelon:

Alternate:

Nova or Rally (myclobutanil, 3) at 5.0 oz 40WP/A *plus* chlorothalonil at 2.0-3.0 pt 6F/A

or

Procure (triflumizole, 3) at 4.0-8.0 oz 50WS/A *plus* chlorothalonil at 2.0-3.0 pt 6F/A

With:

Quintec (quinoxifen, 13) at 6.0 oz 2.08F/A *plus* chlorothalonil at 2.0-3.0 pt 6F/A

or

Pristine (pyraclostrobin + boscalid, 11 + 7) at 12.5-18.5 oz 38WG/A *plus* chlorothalonil at 2.0-3.0 pt 6F/A

For more information on control of powdery mildew of cucurbits please see the [Delaware Commercial Vegetable Production Recommendations](#).

Blossom End Rot In Tomatoes - Jerry Brust, *IPM Vegetable Specialist, University of Maryland*; jbrust@umd.edu

Blossom end rot has appeared in tomatoes throughout Maryland in the last few weeks (Fig. 1). This is mostly due to the very dry conditions we have had this month. Blossom end rot is caused by too little calcium reaching the cells on the blossom end of the fruit as it is developing. Calcium is dissolved in soil water and is taken up by the plant through the vascular system. During periods of high moisture stress, water containing calcium moves rapidly through the plant to the leaves with most of the calcium ending up in the leaves after transpiration has occurred. Since the fruit transpires very little, less calcium is deposited there; resulting in a localized calcium deficiency in the fruit. Almost all of the calcium that a mature fruit needs is within the fruit when it is the size of a nickel.

Figure 1. Several different 'forms' of blossom end rot on tomatoes



Therefore, the blossom end rot that appears on fruit that is about ready to be harvested had the critical period of inadequate calcium occur weeks earlier. Even a temporary water stress during early fruit enlargement can cause blossom end rot. Another cause of blossom end rot is over-fertilization, especially with nitrogen. The excess nitrogen stimulates vegetative growth, which increases the transpiration rate and further inhibits calcium accumulation in the fruit. Cultivars that grow quickly and produce large amounts of foliage tend to be more susceptible to blossom end rot. Therefore, reducing nitrogen levels will help reduce blossom end rot. The prevalence of blossom end rot also may be exacerbated when there is a low ratio of calcium to certain other nutrients such as potassium and nitrogen. About the only place where I have seen little blossom end rot on tomatoes is when they are in high tunnels where moisture levels can be more precisely controlled.

Two Spotted Spider Mites in Watermelon -
Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

Several watermelon fields I have visited in the last week or so have shown characteristic signs of two spotted spider mite damage. This damage usually shows up first in the crown leaves (oldest leaves of the plant). The top of leaves have a yellowing between the veins with an occasional necrotic spot (Fig. 1). If the underside of the leaf is examined, the area looks more yellow to tan and there is often dirt or sand that seems to be stuck to the leaf—and there is (Fig. 2). The sand is 'stuck' to the underside of the leaf because two spotted spider mites have webbing on the leaf and soil that is blown around or splashed up onto the leaf is held by the fibers. This results in a protective layer, shielding mites from many natural enemies and insecticide sprays. It was surprising to see these levels of infestation in watermelon and in eggplant as it has not been very hot this summer. However, it has been very dry in most places these last few weeks, and mites tend to thrive in dry weather. Growers should be sure to check that they have mites, as ozone damage can cause symptoms to crown leaves similar to mite feeding, i.e.,

interveinal yellowing, necrotic spots on the leaf (Fig.3). A 10x hand lens works best to not only see the mites, but also see the webbing and the numbers of mite eggs – round spheres about a quarter the size of an adult mite (Fig.4). At several fields that had mite infestations I found few adult mites, but many eggs. Mite eggs are difficult to kill and after the initial miticide application an additional application may be needed 5-7 days after the first application to catch all the eggs that have hatched. Agri-Mek EC, Oberon 2SC, and Acramite 50WS have all given excellent control of mites in watermelon.



Figure 2. Two spotted spider mite damage on the underside of watermelon leaf



Figure 1. Two spotted spider mite damage on watermelon

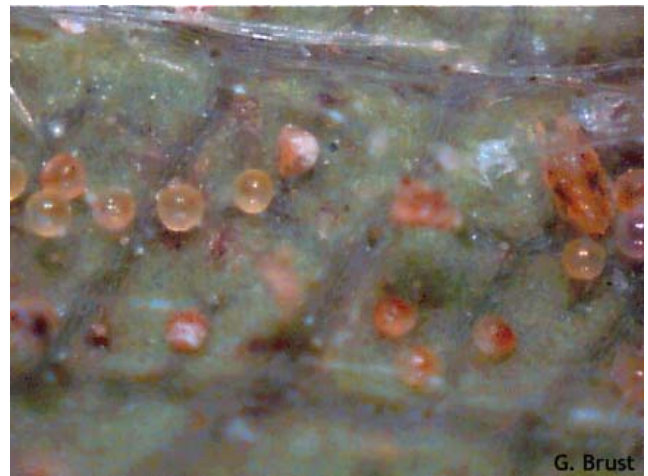


Figure 4. Two spotted spider mite eggs and an adult on watermelon leaf

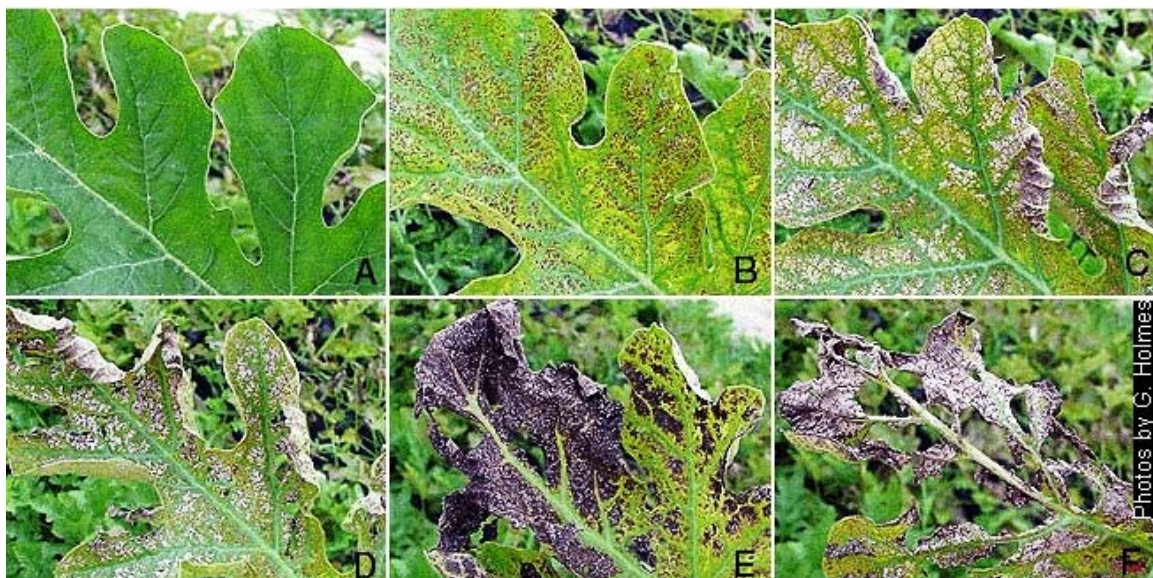


Figure 3. Ozone damage on watermelon; notice different degrees of yellowing and necrotic areas as the damage worsens from A through F. Photograph B looks very much like TSSM damage. Photographs courtesy of Gerald Holmes, NCSU Dept of Horticulture.

Potato Disease Advisory #21 - July 23, 2009 - Bob Mulrooney, Extension Plant Pathologist;
bobmul@udel.edu

Disease Severity Value (DSV) Accumulation as of July 22, 2009 is as follows:

Location: Shadybrook Farms, Little Creek, DE in Kent County.

Greenrow: May 1

| Date | LATE BLIGHT | | | EARLY BLIGHT |
|-----------|-------------|-----------|-----------------|---------------------|
| | Daily DSV | Total DSV | Spray Recs | Accumulated P-days* |
| 7/1 | 2 | 114 | 10-day interval | 519 |
| 7/2 | 1 | 115 | 10-day interval | 528 |
| 7/3-7/5 | 0 | 115 | 10-day interval | 555 |
| 7/6-7/8 | 0 | 115 | 10-day interval | 581 |
| 7/9-7/12 | 0 | 115 | 10-day interval | 616 |
| 7/13-7/15 | 0 | 115 | 10-day interval | 641 |
| 7/16 | 0 | 115 | 10-day interval | 647 |
| 7/17-7/18 | 2 | 117 | 10-day interval | 662 |
| 7/19-7/20 | 1 | 118 | 10-day interval | 680 |
| 7/21 | 2 | 120 | 7-day interval | 690 |
| 7/22 | 0 | 120 | 7-day interval | 698 |

There have been no new late blight reports on potato in the region. A backyard tomato sample from the Ellendale vicinity was diagnosed on Wed. July 22 with late blight. This is the first report of late blight on tomato in DE.

Current conditions here are favorable again for late blight on tomato. The favorable weather of the last few days will continue to provide favorable weather for late blight especially if thundershowers materialize. Most potatoes will be, or are, close to maturity so they are not particularly at risk at the present time.

Agronomic Crops

Agronomic Crop Insects - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Soybeans

We are starting to see an increase in the levels of bean leaf beetles in full season soybeans, especially on the western half of the state from Greenwood through Middletown. Remember, at this time you will need to consider a treatment both for defoliation as well as consider their ability to feed on the pods. At the pod fill stage, the defoliation threshold drops to 10-15% defoliation. This insect can also feed on pods. Bean leaf beetles can clip pods or plant diseases may enter the pod through their feeding sites.

This can result in seeds that appear shrunken, discolored, and moldy, resulting in a reduction in seed quality. Although we have not established thresholds for pod feeding in our area, the following link provides information that is used in the Midwest

(<http://www.ipm.iastate.edu/ipm/icm/2000/8-21-2000/lblroof.html>). When possible, a material with residual control should be used for bean leaf beetle control. However, the presence of other pests, especially mites, may impact your selection of a control material.

Although isolated at this point, we are seeing a few fields where soybean aphid population levels continue to increase in New Castle County. Population increases are favored by cooler temperatures. The treatment threshold

established in the Midwest is 250 aphids per plant from R1 through R5 stage of growth. Updates on Soybean Aphid can be found at the USDA Public PIPE website: http://sba.ipmpipe.org/cgi-bin/sbr/public.cgi?host=All%20Legumes/Kudzu&est=soybean_aphid. The following links from the University of Wisconsin provide good information on sampling, stages of soybean growth and development, thresholds and treatment guidelines: <http://www.plantpath.wisc.edu/soyhealth/aglycine.htm> and http://www.plantpath.wisc.edu/soyhealth/pdf/aphid_thresholds.pdf.

Spider mites continue to be found in fields throughout the state, especially along field edges. Remember, early detection is needed to achieve control. In addition to dimethoate and Lorsban, we now have Hero (zeta-cypermethrin + bifenthrin) as well as a number of stand alone bifenthrin products (*not all are labeled so be sure to check the label*) available for spider mite control in soybeans. All of these products need to be applied before mites explode. Be sure to read the labels for use rates and restrictions – there is a limit on the number of applications as well as the time between applications on all of the materials labeled for spider mite control.

When it comes to spider mite control, the following are a few things to consider:

(1) Drought conditions favor mite development and create plant growth conditions that make it difficult to achieve effective control. Early detection and multiple applications are often needed under drought stress conditions. Under high population pressure, a single treatment may not be adequate to kill all the life stages. Mite eggs may not be affected by the initial knockdown and thus hatch after a few days.

(2) When dimethoate was used in past years, growers reported that the addition of a penetrating surfactant helped to improve control, especially in drought stressed fields. Although we have also observed this in grower fields, we do not have any research data on the use of adjuvants. Dimethoate must be absorbed

and translocated by the leaf tissues to provide residual action; otherwise, it undergoes rapid photodecomposition from sunlight. This leaf absorption process is greatly reduced in drought-stressed plants that have "shut-down" physiologically. Another important factor that plays a role in the performance of dimethoate is the pH of the water used as the carrier. Many pesticides, especially dimethoate, are subject to breakdown by alkaline hydrolysis (http://www.ag.ndsu.nodak.edu/aginfo/entomology/entupdates/ICG_08/01_Intro_08.pdf). "In alkaline water (high pH), there is a break in certain bonds in the dimethoate molecule, causing two or more new molecules to form. This increases the decomposition rate of the insecticide and can result in poorer than expected field performance. Dimethoate degradation is also accelerated by the mineral content of the water, especially the presence of iron. If a high pH situation exists, you can lower the alkalinity of the water in the spray tank by adding an acid-based buffer. An important consideration is to select a buffering product that lowers the pH to the acid range without causing phytotoxicity. Also, the buffer must be added to the spray tank first, before the addition of dimethoate." Also, be sure to read the new dimethoate labels for use restrictions including maximum number of applications and reapplication intervals.

(3) Lorsban (chlorpyrifos) has provided good contact control of motile mites in situations where it is applied in enough water to get good coverage. However, since Lorsban is not a systemic product, a second spray of another material may be needed to kill newly hatched mites. The Lorsban label states that: "(1) When large numbers of eggs are present, scout the treated area in 3-5 days and if newly hatched nymphs are present, make a follow up application with a non-chlorpyrifos product and (2) do not make a second application within 10 days of the first application." So before applying be sure to read the label (like all products) for restrictions, maximum number of applications, etc.

(4) Hero and bifenthrin products - In fields where these products have been applied this season, we are seeing control at 7-10 days after

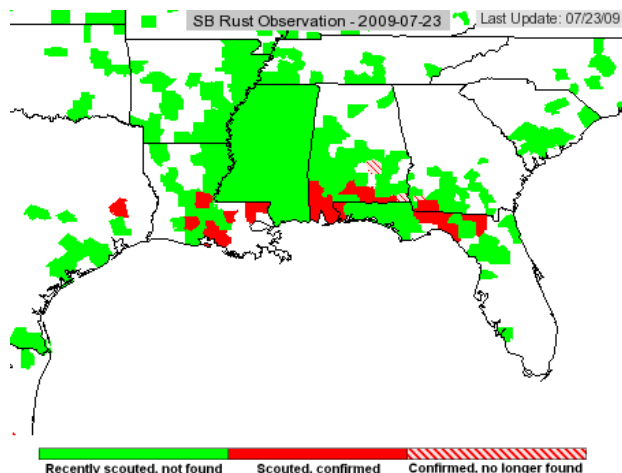
application. However, treated fields have not been evaluated this week to see if the control is holding. Last season, we did see resurgence of populations after application if populations were exploded at the time of application. Like all spider mite control products, these materials must be applied before mites explode and you will need the highest labeled rate for spider mite control. It should also be noted that the labels state: "Do not make applications less than 30 days apart".

You should also scout for stinkbugs and podworms as we enter the pod set and pod fill stages. As corn earworm trap catches increase, open canopy blooming fields will be attractive to egg laying earworm moths. A treatment should be considered for earworms if you find 3 podworms per 25 sweeps in narrow fields and 5 podworms per 25 sweeps in wide row fields (20 inches or greater).

Soybean Disease Update - *Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu*

Soybean Rust Update

On July 21, soybean rust was reported on kudzu from Escambia County in far west Florida. This site has been positive in previous years. On July 20, soybean rust was reported from Avoyelles Parish, Louisiana on soybean. On July 10, soybean rust was reported on kudzu in Columbia County, Florida. Soybean rust scouting continues in the U.S. and Mexico. Soybean rust scouting in DE will begin in August.



Downy Mildew

Downy mildew in soybeans is now being seen. Soybean downy mildew is caused by the fungus, *Peronospora manshurica* which only infects soybeans. The fungus causes irregular yellow spots on the upper leaf surface and a tuft of gray fungus growth on the corresponding lower leaf surface. Varieties vary in their level of resistance to this fungus. As best we know here downy mildew rarely, if ever, affects yield. In heavy infections seeds can become infected and have a coating of the reproductive structures of the fungus (oospores) over them. Fungicides are not recommended.



Downy mildew on soybean

Grain Marketing Highlights - *Carl German, Extension Crops Marketing Specialist; clgerman@udel.edu*

NASS to Adjust U.S. Corn Acres

The National Agricultural Statistics Service (NASS) announced yesterday afternoon they will collect updated information on 2009 planted acres from seven states because of 'variable weather conditions'. We will have to wait on the results to see if anything emerges from the update that would change the dynamics of the corn market. In last night's trading, non-commercial traders used this information as an opportunity to bid corn prices higher. The

update can be expected in the August Supply/Demand revisions.

Meanwhile, new crop corn prices were headed toward testing support at \$2.90 before the announcement, Dec corn futures are currently trading at \$3.31 per bushel, about a 12 cent per bushel rally since the announcement was made. Weather conditions in the Corn Belt continue to be viewed as nearly ideal, giving that portion of the U.S. corn and soybean crops planted late a chance to make trend line or better yields, at least that was true as of Monday's release of the Crop Condition report. Dry weather is now rumored to be a concern in some portions of the Corn Belt. Some would also question the lack of growing degree days that we seem to be experiencing this summer as something that might stand in the way of achieving such lofty yields. The yield forecast, that will impact the production forecast and ultimately the price, will be revised in the August report.

Market Strategy

Whether we see any pricing opportunities emerge as a result of current market action will depend on the severity of any weather problems developing across the U.S. and the degree to which NASS makes their acreage adjustments. According to this morning's Weekly Export Sales report corn shipments were below what's needed to meet USDA export projections for the '08/'09 marketing year. U.S. corn exports need to average 53.3 million bushels weekly for the next six weeks in order to meet USDA projections of 1.8 billion bushels. The Dow hit 9,070 this morning, the dollar index is trading at 78.7, and nearby crude oil is trading at \$65.15. Dec '09 corn futures are currently trading at \$3.31; Nov '09 soybeans at \$9.24; and Dec '09 SRW wheat at \$5.48.

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

Announcements

Hay You Farmers!! Breakfast Social and Informational Meeting

Wednesday, August 5, 2009 7:00 a.m.
Ches Del Diner
2120 DuPont Parkway, Middletown, DE

We know it's been a wet year... we can't do much about the weather — but we can help you understand how to manage your hay fields and how to keep a bad situation from getting worse.

Join your fellow producers and the UD Extension team to hear about this year's small grain variety trial results and an information segment on making hay. There will be time for questions and answers. Get your questions answered by asking the experts!

We will apply for DE Pesticide and Nutrient Management and CCA credits.

Please pre-register by July 28th.

This meeting is free and everyone interested in attending is welcome. To register, request more information or if you require special needs assistance for this meeting, please call our office in advance at (302) 831-2506.

See you there!
Anna Stoops, New Castle County Agricultural Extension Agent

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of July 16 to July 22, 2009

Readings Taken from Midnight to Midnight

Rainfall:

0.29 inch: July 21

0.01 inch: July 22

Air Temperature:

Highs ranged from 90°F on July 16 to 81°F on July 20.

Lows ranged from 72°F on July 17 to 61°F on July 19.

Additional Delaware weather data is available at
http://www.deos.udel.edu/agirrigation_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. For subscription information, contact her at emmalea@udel.edu or (302) 856-2585 x 587.

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