



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

Volume 17, Issue 5

April 17, 2009

Vegetable Crops

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

Asparagus

Be sure to check for asparagus beetles 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

Continue scouting fields for imported cabbage worm and diamondback larvae. With a few days of warm temperatures, we can 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.

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.

Fumigation Alternatives - Biofumigants -

Gordon Johnson, Extension Ag Agent, Kent Co.;
gcjohn@udel.edu

Crop rotation is a key to successful vegetable production. However, land limitations often make long term rotations difficult. Shorter rotations lead to a buildup of pests, with soil borne diseases being a major challenge for many vegetable crops. One approach to tighter rotations is to fumigate soils using commercially available chemical fumigants. Methyl bromide has been phased out and can only be used for certain exempted critical uses in specified states as listed by the EPA (go to <http://www.epa.gov/ozone/mbr/cueinfo.html> for more information). Other fumigants such as chloropicrin; dicloropropene + chloropicrin; metam-sodium, metam-potassium, and iodomethane + chloropicrin are being used in this region where labeled. Numerous experimental materials are being studied for use as soil fumigants and may receive labels in the future. A major drawback to chemical fumigation is material cost. There are also application requirements and equipment considerations to take into account.

There has been considerable interest in the use of certain crops as biological fumigants ahead of vegetable production to reduce the need for chemical fumigation, especially in tight rotations. These are crops that would be grown for their naturally occurring compounds that kill soil borne pests. Plants in the mustard family, such as mustards, radishes, turnips, and

rapeseed, and Sorghum species (sudangrass, sorghum-sudangrass hybrids) have shown the potential to serve as biological fumigants. Research in this region and across the country has shown some promise in using these crops to reduce soil borne pests. Plants from the mustard family produce chemicals called glucosinolates in plant tissue (roots and foliage). These glucosinolates are released from plant tissue when it is cut or chopped and then are further broken down by enzymes to form chemicals that behave like fumigants. The most common of these breakdown products are isothiocyanates. These are the same chemicals that are released from metam-sodium (Vapam) and metam-potassium (K-Pam), commonly used as chemical fumigants. Sorghums produce a cyanogenic glucoside compound called Dhurrin that breaks down to release toxic cyanide when plant tissue is damaged.

While rapeseed, mustards, radish species, sudangrass, sorghum-sudangrass hybrids and other related species have shown some promise as biofumigants, results in Delaware have been inconsistent, often with minimal benefits. It is important to note that success with biofumigant crops depends on a number of factors. The following are some suggestions to achieve the best results:

- Plant biofumigant crop varieties selected or bred for higher levels of active compounds if available.
- Produce as much biomass of the biofumigant crop as possible. This requires that you have a good stand, fertility, and sufficient growing time. The more biomass that is produced and that is incorporated, the more chemical is released. However, as plants mature, they will reach a point where levels of these active chemicals will decline and you should not let the plants go to seed. There is also the practical consideration that it is difficult to do a good job of incorporation with too much biomass. With a crop like sudangrass, this means you cannot let it get too tall.
- The plant material must be thoroughly damaged so that enzymes can convert glucosinolates into isothiocyanates or so that the

Dhurrin is converted into cyanide. This means that you need to chop the material as much as possible and work it into the soil as quickly as possible so as to not lose the active compounds to the air. A delay of several hours can cause significant reductions in biofumigant activity. The finer the chop, the more biofumigant is released.

- The material should be incorporated as thoroughly as practical to release the biofumigant chemical throughout the root zone of the area that is to be later planted to vegetables. Poor distribution of the biofumigant crop pieces in the soil will lead to reduced effectiveness.
- Sealing with water or plastic after incorporation will improve the efficacy (as with all fumigants). Soil conditions should not be overly dry or excessively wet.

Biofumigant crop systems include overwintering rapeseed; early spring planted mustards, cover-crop type radishes, or turnips; and late spring planted sorghum/sudangrass. Each has the potential to fit different vegetable cropping sequences for early, mid, or late season production.

Different species and cultivars of biofumigant crops contain varying levels of active compounds. There have been significant efforts to evaluate species, and varieties within a species, for levels of biofumigant chemicals produced, as well as some breeding and selection efforts to increase levels of these compounds. This work is on-going in different parts of the US. Where varieties with higher levels of active chemicals are available, they should be used.

A major limitation to biofumigant crop use is the fact that you cannot deliver high enough levels of the active chemicals to do a complete fumigation job and the biofumigation effectiveness is also limited by the depth of incorporation. However, you are adding organic matter and do get the benefits associated with that addition.

The bottom line: biofumigant crops can suppress soil borne pests but are not a full replacement

for chemical fumigants, nor are they a substitute for adequate rotations. However, using biofumigant crops in combination with disease tolerant vegetable varieties can allow for a greater chance of success in tight rotation situations.

There also has been considerable research into the effect of cover crops (such as hairy vetch), compost, and other organic additions on disease suppression in vegetable crops with some positive results. The mechanisms for these benefits may include some chemical suppression. However, other mechanisms such as increasing diversity of the soil microbial community (resulting in increased competition with pathogens) and promoting growth of beneficial microbes that serve as biocontrol agents may be more important.

Scout for Spinach Downy Mildew and White Rust - Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu

Scout spinach for downy mildew and white rust on a regular basis, especially if spring plantings are near overwintered fields. Beginning 2 to 3 weeks after emergence (and prior to symptom development), apply the following on a 7 to 10-day schedule: Quadris (azoxystrobin, 11) at 6.0 to 15.5 fl oz 2.08F/A (use high rate for downy mildew), or Cabrio (pyraclostrobin, 11) at 12.0 to 16.0 oz 20EG/A (use lower rate for white rust only). Rotate to one of the following fungicides: Actigard (acibenzolar-S-methyl, P) at 0.75 oz 50WG/A, or Aliette (fosetyl AI, 33) at 3.0 lb 80WDG/A, or fixed copper (FRAC code M1) at labeled rates (copper containing fungicides may cause some phytotoxicity), or Ridomil Gold Copper (mefenoxam + copper, 4 + M1) at 2.5 lb 65WP/A (on a 14-day schedule). For more information please see the [Delaware Commercial Vegetable Production Recommendations Guide](#).

Grower's Guide to Understanding the Protectant Fungicides (FRAC Codes M1 - M9) - Andy Wyenandt, Assistant Extension Specialist in Vegetable Pathology, Rutgers University; wyenandt@aesop.rutgers.edu

Bob Mulrooney Notes: The following is an article by Andy Wyenandt on protectant fungicides that we have published in the past. Hopefully it will be a good review of some basic information that growers and fieldmen should know.

Protectant (contact) fungicides, such as the inorganics (copper, FRAC code M1) and sulfur (M2), the dithiocarbamates (maneb, mancozeb, thiram, M3) and chloronitriles (chlorothalonil, M5) belong to FRAC code groupings which have a low chance for fungicide resistance to develop. Protectant fungicides typically offer broad spectrum control for many different pathogens. So, why wouldn't fungi develop resistance to protectant fungicides? Protectant fungicides are used all the time, often in a weekly manner throughout much of the growing season. The answer is in their modes-of-action (MOA). Protectant fungicides have MOAs that affect (prevent) fungal development in different manners. In inorganic compounds, sulfur (M2) prevents fungal growth (i.e. spore germination) by disrupting electron transport in the mitochondria. Coppers (M1), on the other hand, cause non-specific denaturation of proteins. Chlorothalonil (Bravo, M5) inactivates amino acids, proteins and enzymes by combining with thiol (sulfur) groups.

In all cases, a protectant fungicide's chemistry disrupts fungal growth and development, either non-specifically or in multiple manners. Because of this, there is a much lower chance for fungi to develop resistance to them. Protectant fungicides are contact fungicides, meaning they must be present on the leaf surface prior to the arrival of the fungus and must then come into direct contact with the fungus. Protectant fungicides can be redistributed on the leaf surface with rainfall or overhead irrigation, but can also be washed off by too much of either! Remember that with protectant fungicides, any new growth is unprotected until the next protectant fungicide is applied. In other words, protectant fungicides are not systemic and do

not have translaminar activity like some of the newer chemistries. Protectant fungicides should be tank-mixed with fungicides with higher risks for resistance development. Protectant fungicides used in this manner will help slow (or reduce the chances for) fungicide resistance development on your farm. In any case, it's best to always follow the label and tank mix protectants with higher risk fungicides when suggested or required to do so.

Agronomic Crops

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

Alfalfa

Continue to scout fields for both alfalfa weevil and pea aphids. Economic levels of alfalfa weevil larvae and pea aphids can both be found in alfalfa fields at this time. 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 per every 50-100 aphids to help crash populations. For alfalfa weevil, 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.

Small Grains

With the cool rainy weather this past week and the anticipated warmer weather, be sure to watch for increases in aphid populations. 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 per every 50-100 aphids to help crash populations.

We have also seen an increase in winter grain mite activity in no-till wheat fields. As a reminder, this is a cool weather mite so be sure to watch fields for this pest. These mites do not cause the yellowing characteristic of spider mite feeding. Heavily infested fields appear grayish or silvery, a result of the removal of plant chlorophyll by mite feeding. When high infestations feed on the plants for several days, the tips of the leaves exhibit a scorched appearance and then turn brown. Many of the infested plants do not die, but become stunted and produce little forage or grain; damage on young plants, however, is more severe than on large, healthy ones. Damage may also be greater in plants stressed by nutrient deficiencies or drought conditions. There are two types of damage to the small grains, namely, reduced amount of forage throughout the winter and reduced yields of grain in the spring. For pictures of this mite and more information, please refer to our webpage (<http://ag.udel.edu/extension/IPM/index.html>).

Timothy

Another cool weather mite species that feeds on timothy is the cereal rust mite. If you have not checked fields for this pest, be sure to sample fields since they are easily found in timothy fields at this time. Symptoms can appear as retarded growth, leaf curling, stunting, and plant discoloration. Injured plants appear to be drought stressed even when adequate moisture is available for plant growth. There are no established economic thresholds for the pest; however, treatment is recommended in fields with a previous history of cereal rust mites and/or when 25% of the plant tillers exhibit curled tips of the new leaf blades within several

weeks following green-up. As indicated in past newsletters, these mites are microscopic, so the use of a 20x-magnifying lens is often needed to detect the mites. The only effective and labeled material on timothy is Sevin XLR Plus under a 24(c) label (special local needs label). The following is a link to the 24(c) label for Delaware (<http://www.cdms.net/ldat/ld332028.pdf>). You must have this label in your possession at the time of application.

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

Most foliage diseases are at low levels at this time, except where excessive amounts of fertilizer or manure have produced extremely lush growth that favors powdery mildew.

Scouting for powdery mildew is advised at this time. There have been scattered reports of low disease severity of leaf rust and stripe rust in several states such as LA and GA at this time. Weather has been wetter than normal recently in the South so we will have to wait and see what happens as the season progresses. We had another wheat sample test positive for soilborne wheat mosaic virus this week. As I stated last week, once you have identified it you can implement the only control strategy and that is to plant a resistant wheat variety.

Risk Assessment Tool for Predicting Fusarium Head Blight or Head Scab on Wheat - Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu

It is not too early to be thinking about scab on wheat. During the winter meetings we talked to some audiences about the relatively new scab prediction model that is available. The following is some information about the model and the site where it can be found.

The goal of this experimental predictive system is to help growers assess the risk of Fusarium head blight in their region. Major outbreaks of Fusarium head blight are associated with specific weather patterns prior to flowering of the wheat

crop. Researchers at Penn State University, Ohio State University, Kansas State University, Purdue University, North Dakota State University, and South Dakota State University have worked together to develop models that predict the risk of a major epidemic (greater than 10% field severity) based on observed weather patterns. The website is <http://www.wheatcab.psu.edu/>. The directions on the website are easy to follow; however, if you are going to use this tool to help predict the occurrence of scab and time any necessary applications for control, it is important that you start using the website several weeks before heading. Arv Grybauskas and I will be writing commentary for our region when the time is closer for potential scab infection. Remember that this predictive system is only a tool and should be used as such. The website has some good information on the limits of the risk assessment tool and how it should be used.

Prosaro and Caramba are two of the new fungicides that are labeled for suppression of Fusarium head blight or scab and should be considered if needed. More information on this prediction tool and control options will be covered in the next several weeks.

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

There has been no change in the soybean rust situation in the South. There is very little soybean rust at the present time. The recent increase in rainfall in many areas of the South may initiate infection of kudzu but time will tell. Soybean planting and the establishment of soybean sentinel plots have been delayed in many areas. Many sentinel plots are ready to be planted in the South as soon as things dry out enough to get back into the field.

Two-Pass Corn Herbicide Programs - *Mark VanGessel, Extension Weed Specialist;*
mjv@udel.edu

A planned, two-pass program for weed control in corn is the best performing program year in and year out. Our soils have low cation exchange (or few herbicide binding sites) and so it is difficult to have enough soil-applied herbicide "stick around" and control later emerging weeds. It is also difficult to cover all of our acres in a timely fashion, so relying solely on a postemergence spray is not practical. Starting off with a solid soil-applied program that will provide control (or suppression) of problem weeds such as triazine-resistant biotypes, crabgrass, etc. is important. Then, use a postemergence spray in a timely fashion (weeds less than 4 inches tall); and if late-emerging species like nightshade or morningglory are present, include a herbicide with residual control.

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

Soybean Stocks to Bolster Markets

Tight old crop soybean carryout is likely to bolster the commodity markets in coming weeks, possibly through the summer. Consensus is building concerning the level of tightness in soybean stocks. In their April supply and demand estimates USDA projected old crop soybean stocks for the end of the '08/'09 marketing year at 165 million bushels. Since the release of the report, market participants are beginning to speculate that this number could be lowered in the months ahead. The reasons given for this scenario developing are: tight old crop carryout forecasts, strong export demand, shrinking Argentine production prospects and stronger world edible oil demand. New crop soybean futures are a different story. New crop soybean futures will be buoyed by the need for a strong increase in 2009 production to offset tight supplies carrying over from the '08/'09 marketing year.

This all adds up to the need to keep a watch on export movement. Thus far this marketing year,

U.S. soybean exports are projected at a record pace. This week, for example, the weekly export sales report showed export sales of 29.7 million bushels. Once again, this was above that needed (only 6 MB) to meet USDA's projection of 1.21 billion bushels for the year. Shipments were also above that needed to stay on pace with USDA projections.

Non-commercial speculative traders are re-entering the soybean market on the belief that tight old crop soybean supplies can only get tighter. Since early March the net-long futures position of these traders has built from about 8,000 contracts to nearly 66,000 contracts. Nearly one third of those contracts were added last week. May soybean futures surged through the \$10.50 mark in this morning's trade.

Weekly Corn Exports

Export sales of corn for the week ending April 9, were reported at 34.6 million bushels, well above the 17.2 MB needed this week to meet USDA's projection for the year. Shipments were reported to be below that needed to stay on pace. Interesting to note, U.S. corn stocks are projected at 1.7 billion bushels, a somewhat burdensome level depending upon what happens to the demand structure of the corn market e.g., whether EPA approves a higher ethanol blend in gasoline or not. U.S. corn exports are also projected at a dismal 1.7 billion bushels for the '08/'09 marketing year. New crop corn futures are currently trading at \$4.13 per bushel, about 20 cents per bushel off of the recent high set on April 2 at \$4.33 per bushel.

Weekly Wheat Exports

The weekly report showed export sales of 4.5 MB, below the 5 MB needed to stay on pace with USDA's paltry projection of 980 MB. Shipments were also reported to be below that needed to keep pace with projections. Currently SRW wheat new crop futures are trading at \$5.26 per bushel, about 43 cents off of recent highs.

Marketing Strategy

The old crop soybean market is likely to move higher in the near term presenting opportunities to pull sales triggers as we move into the summer months. To some extent, tight old crop soybean supplies will help to support new crop

corn, soybean, and wheat prices for a limited time. Any rallies that occur as a result of this support or from outside sources (dollar value weakening, Dow increasing, crude oil prices increasing) should be used to consider new crop sales. For technical assistance on making grain marketing decisions contact Carl L. German, Extension Crops Marketing Specialist.

General

DE and NJ Sign Reciprocity Agreement for Farm Vehicles to Cross State Line -*Anna Stoops, Extension Ag Agent, New Castle Co.; stoops@udel.edu*

It's been an issue discussed at New Castle County Farm Bureau meetings and an issue on the minds of Delaware agriculture producers who haul their products across the Delaware state line into New Jersey. Until this past February, producers hauling agricultural products into NJ were required to have commercial vehicle registrations to cross the state line, which can cost significantly more than the Farm Vehicle registration ('FT' tag) that is offered to Delaware ag producers who haul their own products within the state. Thanks to the efforts of Delaware Department of Agriculture, Delaware Department of Transportation, New Jersey Department of Agriculture and the New Jersey Motor Vehicle Commission, with this reciprocity agreement DE ag producers who haul their own products in their own properly State of Delaware-registered Farm Vehicles may now transport their product across the state line into New Jersey without a special permit or commercial tag (and vice versa).

I've talked to several producers who haul over the state line, and this agreement is a welcome one. In theory, this agreement allows properly tagged and licensed DE ag producers to drive across state lines without being stopped by law enforcement and being cited for violation. However, you can still be pulled over and cited for violation of New Jersey or Delaware transportation laws if you are out of compliance with current transportation regulations/requirements or your vehicle load is

overweight. The truck enforcement units are out there.

It is a good idea to carry the reciprocity agreement with you when transporting across state lines. Until this agreement becomes well-known, you may still be stopped in NJ for having DE "FT" registered tags, and it's a good idea to have the agreement in hand. The agreement can be found at:

<http://www.nj.gov/agriculture/divisions/md/pdf/mvcdelfarm.pdf>

Along with the Farm Vehicle registration reciprocity, Delaware and New Jersey also signed a separate agreement so that now both states recognize each others' commercial driver's license exemption regulations for farmers. Meaning, if you have properly and legally acquired a valid driver's license in Delaware and transport your own agricultural commodity in your own properly and legally registered farm vehicle, you are now exempt from obtaining a commercial driver's license to haul into the state of New Jersey. This agreement may be found at:

<http://www.nj.gov/agriculture/divisions/md/pdf/delcdlfarmers.pdf>

For more detailed information and specific information on NJ farm vehicle regulations see the following links:

<http://www.nj.gov/agriculture/news/press/2009/approved/press090218.html>

www.nj.gov/agriculture/divisions/md/prog/farmermotorvehicles.html#8 .

For more detailed information on Delaware Department of Transportation code relating to farm vehicle regulations see the following link: <http://regulations.delaware.gov/register/february2009/final/12%20DE%20Reg%201114%2002-01-09.htm>

Announcements

Pasture Walk Featuring Netherfield Estate

Saturday May 2, 2009 2:00-4:00 p.m.

50185 Hays Beach Road
Scotland, MD 20687

Hosts: Ruth & Peter Pry

There will be a tour of host farm highlighting conservation practices. Learn about pasture and hay management, soil testing and nutrient management, cost share incentive programs, manure composting, watering facilities, and more.

SPEAKERS:

Elmer Dengler

Grazing Specialist, USDA Natural Resources Conservation Service (NRCS)

Les Vough

Forage Systems Management Consultant, RCS Southern Maryland RC & D

Bruce Young

District Manager, St. Mary's Soil Conservation District

Terry Heinard

District Conservationist, USDA Natural Resources Conservation Service (NRCS)

Ben Beale

Extension Agent, St. Mary's County Extension

This event is FREE!!

Advance registration is required. Please RSVP by April 25 to Sara Lewis at

St. Mary's County Soil Conservation District: (301) 475-8402 ext. 3 or Sara.Lewis@md.nacdnet.net

Equine Pasture Walk

Tuesday, May 19, 2009 5:00-7:00 p.m.

Two Eagles Farm
1311 McQuail Road
Smyrna, DE

Learn about Natural Resource Conservation Services Cost Share Programs and EQIP Eligibility. See on-farm manure storage facility and storm water management projects. Learn about pasture management and managing the diet to avoid injuries and illness. Experts will be on hand from the University of Delaware and the Natural Resource

Conservation Service (NRCS) to answer your questions!

Please bring a folding chair.

Nutrient Management (1.75), Pesticide (1) and CCA credits will be available.

This meeting is free and everyone interested in attending is welcome. Please call (302) 831-2506 to register by May 15.

New Castle County Weed ID Workshop

Tuesday, May 12, 2009 5:00-7:00 p.m.

University of Delaware Webb Farm
508 S. Chapel Street
Newark, DE

What is that weed!? Learning to identify weed species can help with controlling the weed, crop production and your bottom line. Learn to identify a number of weed species that are found locally. Experts will be on hand to answer your questions and help with weed management issues.

Please bring a folding chair.

Pesticide (2) and CCA credits will be available.

This meeting is free and everyone interested in attending is welcome. Please call (302) 831-2506 to register by May 8.

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of April 9 to April 15, 2009

Readings Taken from Midnight to Midnight

Rainfall:

0.81 inch: April 11

0.07 inch: April 13

1.02 inch: April 14

1.17 inch: April 15

Air Temperature:

Highs ranged from 76°F on April 10 to 49°F on April 15.

Lows ranged from 43°F on April 11 to 28°F on April 13.

Soil Temperature:

52.3°F average

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

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