



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

Volume 24, Issue 6

April 29, 2016

Vegetable Crops

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

Asparagus

Asparagus beetles adults can be found laying eggs and feeding on spears. As a general guideline, a treatment is recommended if 2% of the spears are infested with eggs. Since adults also feed on the spears, a treatment is recommended if 5% of the plants are infested with adults

Cabbage

Continue to scout for diamondback and imported cabbageworm larvae. A treatment should be applied when 5% of the plants are infested and before larvae move to the hearts of the plants.

Melons

As soon as plants are set in the field, be sure to scout for aphids and cucumber beetles. When sampling for aphids be sure to watch for beneficial insects as well since they can help to crash aphid populations. As a general guideline, a treatment should be applied for aphids when 20% of the plants are infested, with at least 5 aphids per leaf.

Potatoes

Low levels of the first emerged Colorado potato beetle adults can be found in fields where at-planting insecticides were not applied. A treatment should not be needed for adults until

you find 25 beetles per 50 plants and defoliation has reached the 10% level.

Sweet Corn

Be sure to scout emerged fields for cutworms and flea beetles. 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 mid-day when beetles are active. A treatment will be needed if 5% of the plants are infested with beetles.

Growing Brussels Sprouts - Gordon Johnson, Extension Vegetable & Fruit Specialist;
gcjohn@udel.edu

Consumer trends show an increase in consumption of Brussels sprouts offering potential market opportunities for Delaware growers. Brussels sprouts have been grown successfully on a commercial level in Delaware in past years. Most East Coast production currently is centered on Long Island in New York.

Brussels sprouts are in the cole crop group (*Brassica oleracea* var. *gemmifer*) and are closely related to cabbage, cauliflower, broccoli, kohlrabi, collards and kale. Brussels sprouts require a long growing season and are best grown as a summer planted and fall harvested crop in Delaware. Sprouts that are produced during hot periods will be bitter, therefore spring planting is not recommended.

Recommended varieties for our region include Dimitri (105 days) and Jade Cross E (85-97 days, our standard). Varieties for trial include Royal Marvel (85 days), Churchill (90 days), and Franklin (100 days). Nautic (120 days) and Diablo (110 days) are late varieties for extended fall harvest.

Brussels sprouts can be grown as transplants in 72-128 cell flats or can be field seeded in transplant beds for bare root transplants. Transplants should be started in May or early June and then field transplanted from the third week in June to the second week in July. Long season varieties should be planted by the end of June. Use shorter maturing varieties for later plantings. Brussels sprouts are transplanted in the field at a spacing of 36" between rows and 15-24" in the row. Double rows on white plastic mulch with drip irrigation is an option.

Brussels sprouts require 100-150 lbs/A of nitrogen split with 50-75 lbs/A at planting and the remainder as sidedressings. Apply 25-40 lbs/A of sulfur with nitrogen preplant applications and include 1.5-3.0 lbs/A of boron per acre and 0.2 lbs/A of molybdenum per acre as micronutrients.

Irrigation is required, with particular attention needed in summer months to achieve the equivalent of 1 inch of water per week during July, August, and September.

Herbicides for weed control in Brussels sprouts are limited compared to other cole crops - trifluralin, bensulide, DCPA, and napropamide are available for use. Broadleaf weed control will be limited and cultivation or hand hoeing may be necessary. Insect pests are similar to other cole crops and include caterpillars (imported cabbage worm, diamondback moth, cabbage looper, armyworms), aphids, thrips, and harlequin bug. Diseases include black rot, Alternaria leaf spot, and downy mildew.

The sprouts that are harvested are buds that grow to resemble miniature cabbage heads. They are produced in leaf axils along the main stem, which can grow up to 4 feet in height. To encourage sprout development, cut off the terminal bud of the plant (top the plant) when sprouts begin forming, which will be in September on Delmarva. Sprouts will take about

30 days from topping to harvest. Plants that are not topped will develop sprouts more slowly but will also produce over a longer season. Remove leaves on the lower part of the stem as the sprouts enlarge.



Brussels sprouts plants in the field with enlarging sprouts and lower leaves removed.

Sprouts for local sales can be harvested at a diameter of $\frac{3}{4}$ inch; whereas sprouts for wholesale markets should be allowed to get about $1\frac{1}{2}$ inch in diameter before harvesting. Sprouts are cut or snapped off of the stem and are often directly harvested into pint or quart containers or bags. Potential harvest period for our region is the end of September through November or a heavy freeze. Sales into December are possible, especially with supplemental row covers. Brussels sprouts are very cold tolerant (hardy down to 20°F) and flavor will improve (they will be less bitter) in the colder part of the harvest season. Yields will be 2-3 lbs/plant.

An alternative method of harvest is to cut entire stems once the majority of sprouts have sized, remove the leaves, and sell as sprouts on the stalk. This is a popular method for roadside stands and other direct markets and requires much less labor.

Brussels sprouts can be room cooled, forced air cooled, hydrocooled, vacuum cooled, or top iced. They should be brought to a temperature of 32-34°F and kept at high humidity (90-95%) for storage or transportation and benefit from top icing. Brussels sprouts have a relatively long shelf of 3-5 weeks if properly stored.



Brussels sprouts for sale on the stalk

Mites (Two Types) Found in Strawberries -

Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

While visiting some strawberry fields this past week I ran into a few areas that had **two spotted spider mite** (TSSM) feeding. These were mostly in fields that had been using row cover. Spider mites *Tetranychus urticae* are well adapted to high-temperatures and can complete their life cycle in as little as 7 days when temperatures are $>80^{\circ}\text{F}$. The temperatures under row covers in the early part of our season were much above normal and rainfall was below normal, leaving conditions hot and dry, which permitted spider mites (if present) to develop quickly. Warm dry conditions, along with the nitrogen content of leaves, greatly influence TSSM reproduction rate. Applying excessive nitrogen favors spider mite outbreaks.

The two spotted spider mite overwinters in the soil as mated adult females, which are an orange-red color (with two dark spots) (Fig. 1) rather than the typical mid-summer color of pale green or light yellow. When they emerge from the soil in the spring, they begin to feed and lay eggs.



Figure 1. Overwintered female TSSM

Possible thresholds for TSSM are when 25% of leaves are infested or when there are 10 to 20 mites per leaflet. None of the fields I was in needed any treatments, but did need to be watched. If we have the wet weather and seasonable temperatures they are predicting for later in the week and next week this will greatly reduce the threat of TSSM. However, if warranted there are many excellent miticides available for two spotted spider mite control in strawberry that are listed in [The Mid-Atlantic Vegetable Production Recommendations Guide](#).

The second mite species I found surprised me a bit as I have only seen it in strawberry one other time and that was a number of years ago. This was the **Cyclamen mite** *Steneotarsonemus pallidus*, which is extremely hard to see, even with magnification. The leaves I looked at in a couple of matted-row strawberry fields I thought were just cold damaged (most were), but looking at the undersides of some the leaves showed sand grain-like particles and some stippling marks. Upon inspection with a 20X hand lens and later with a dissecting scope I found cyclamen mites. These mites are microscopic, semi-transparent, oval and white to yellowish-brown. Eggs are oval, translucent and large, about half the size of an adult. Adults overwinter in the crowns of strawberry plants and females lay eggs along the midribs of the unfolding strawberry leaves.

In general, infested plants show weak growth and yellow, crinkled leaves. Younger leaves will not reach their normal size and are often crinkled and at times hairier than normal. As with two spotted spider mite feeding, there are often white stippling marks on the older leaves

with the older growth becoming distorted, curled and off-color (Fig. 2). If feeding damage is heavy enough flower buds can drop. Fruit that develops from infested buds are small and dry. Whole plants may have a bronze cast, which occurs due to fluids injected by the mites (Fig. 3).



Figure 2. Heavy cyclamen mite feeding on top and lighter feeding on bottom



Figure 3. Cyclamen mite damage later in the season

I do not think the cyclamen mites pose any real problem for our strawberry fields, possibly for a few plants, but not a field. Because the mites are so small and located down in the crown they are extremely difficult to control even when chemicals can get to them. My guess is we have these mites in many of our matted-row strawberry fields and at times in our plasticulture fields every year, but no one has looked for them or seen much tell-tale damage from them. I only mention it now because it was a bit of a surprise to find them and it is something growers should be aware of potentially being in their field.

Mites, especially the TSSM and at times broad mites which are tarsonemid mites like cyclamen mites, seem to be becoming a more consistent problem in many of our vegetable crops over the last 10 years or so. Not sure of the reason, just have noticed them occurring more regularly than before and something we all need to keep an eye on.

Agronomic Crops

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

Alfalfa

Be sure to check for alfalfa weevil adults and larvae within a week of cutting, especially if populations were above threshold before cutting. Feeding from both stages can hold back re-growth. After cutting, there needs to be enough "stubble" left to control the weevils with a cutting. A stubble treatment will be needed if you find 2 or more weevils per stem and the population levels remain steady.

Field Corn

Be sure to watch for both cutworms and slugs feeding in newly emerged corn fields. As a general guideline, a treatment is recommended for cutworms if you find 10% leaf feeding or 3% cut plants. If cutworms are feeding below the soil surface, it will be important to treat as late in the day as possible, direct sprays to the base of the plants and use at least 30 gallons of water per acre. For cutworms, fields should be sampled through the 5-leaf stage for damage. If

slugs are damaging plants, you will be able to see "slime trails" on the leaves.

Small Grains

Similar to last week, we can find cereal leaf beetle, grass sawfly and true armyworm larvae in barley and wheat throughout the state.

Cereal Leaf Beetle - In areas where cereal leaf beetles have been a problem in the past, we are starting see an increase in populations and some fields are approaching the threshold level of 25 eggs and/or larvae per 100 tillers. Research from Virginia and North Carolina indicates that the greatest damage from cereal leaf beetle can occur between flowering and the soft dough stage.

True Armyworm - Although armyworm can attack both wheat and barley, they can quickly cause significant losses in barley. Armyworms begin head clipping only when all vegetation is consumed and the last succulent part of the plant is the stem just below the grain head. Larvae can feed on the kernel tips of wheat, resulting in premature ripening and lower test weight. On, barley, significant stem clipping can occur in a short time.

Grass Sawfly - Barley and wheat are both damaged by sawflies. During years of high population pressure, barley may experience more damage. Sawfly larvae prefer to feed on the stems and are potentially more damaging than armyworms. Larvae begin to climb and feed on stems when the larvae are half grown and the grain is in the tiller to head stage. Stem clipping often occurs before leaf feeding is complete and/or the grain reaches physiological maturity.

Stinkbugs - The first native brown stink bugs (not brown marmorated stink bugs) can also be found in barley and wheat. Information from states to our south indicates that wheat may be susceptible to native stink bug feeding at the milk and soft dough stages. Thresholds in the south for native stink bugs in wheat range from one per head to one per 5 to 10 heads. Currently, these detections are being found mainly along field edges.

Aphids - As barley heads are fully emerged and wheat is not far behind, be sure to watch for aphids moving into the heads. In the spring, direct damage to small grains is usually confined

to English grain aphids feeding in the heads of small grains. The most significant damage occurs when large numbers of aphids feed on the grain head causing shriveled or blasted heads. The English grain aphid has been the predominant aphid found in fields this spring. At grain head emergence, a treatment may be necessary once populations exceed 15-25 per head. Lady beetle adults and larvae, syrphid fly maggots, lacewing larvae, damsel bugs, and parasitic wasps often help to keep aphid populations in check. A ratio of one predator to every 50 to 100 aphids is often sufficient to achieve biological control. However, if the weather remains cool, aphids reproduce rapidly whereas their natural enemies reproduce slowly and lag behind.

Small Grain Disease Update - Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu

Barley is headed out in the majority of fields. If you planted untreated seed, you may notice black heads (Figure 1). The heads, when touched, will produce a black "dust." This is covered smut, a fungal disease, and the black material is actually a mass of fungal spores. The fungus infests the seed and infects the germinating seedling, growing within tissues undetected. The fungus then invades the developing head and replaces kernels with masses of spores. Covered smut can be controlled by planting certified, disease free seeds and/or treating with a fungicide seed treatment. Chemicals such as Raxil and others work well.



Figure 1. Covered smut in barley.

We are seeing a few interesting things in wheat. In some fields, symptoms that may be attributed to soil borne viruses have been observed in several fields (Figure 2). Soilborne mosaic and spindle streak virus both are transmitted by protists that exist and persist in soils. When temperatures are cool and soil is damp the organisms can infect roots and transmit the virus. The virus then reproduces within plant tissues and can cause stunting, chlorosis, and physical deformities, as well as yield loss. Symptoms can look like nutrient deficiency in many cases, and symptoms vary with variety, making confirmation based on visual symptoms difficult. In addition, both viruses degrade rapidly, resulting in false negatives in viral tests. Yield loss is dependent on symptom development in upper leaves, particularly in the flag leaf, but also the leaves immediately below the flag leaf. Symptoms typically dissipate when temperatures warm up. Cool temperatures forecasted in the next week may favor symptom development. Unfortunately there are no control options at the current time for symptomatic fields. More information on the viruses can be found here: <http://www.apsnet.org/edcenter/intropp/lessons/viruses/Pages/SoilborneWheatMosaic.aspx>



Figure 2. Wheat foliage with putative soilborne virus symptoms.

As I mentioned previously, **stripe rust** was confirmed in areas of the Eastern part of Maryland between Easton and Denton last week, and we confirmed it at very low levels at research plots in Middletown and Harbeson, Delaware early this week. The disease is also present at moderate levels in a few fields in the south central portion of Maryland, where wheat is just starting to head out (Figure 3). Remember that stripe rust is a cool weather pathogen, and can reproduce rapidly under the appropriate conditions on susceptible varieties (7 days from

infection to new spores). If cool weather and rains persist, there is a chance that you could see elevated levels of stripe rust in some areas.

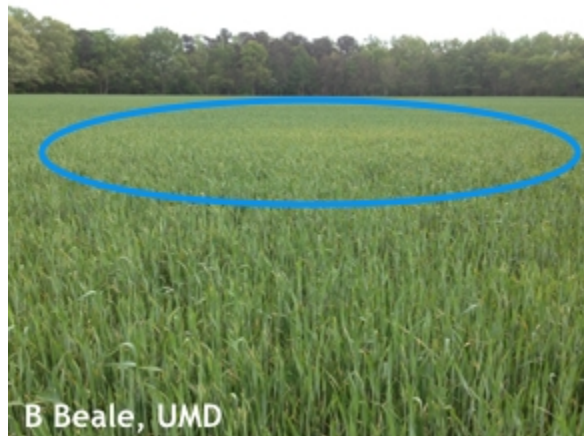


Figure 3. Top- the blue circle denotes an area of a wheat field infected with moderate levels of stripe rust. Bottom, a close up of affected plants within this area.

The next thing you will be thinking about is flowering and if you will need a fungicide to potentially suppress Fusarium head blight (FHB). Fungicides including Caramba, Proline, and Prosaro are recommended for FHB management, and also will provide control of our other major diseases, provided that they have not infected the flag leaf or glumes prior to application. The flowering stage is very challenging to determine. You have 5-6 days from the start of flowering (when you see roughly 50% of your main tillers flowering from the center of the head) to make an application of the aforementioned fungicides without dropoff in efficacy. If you are not clear on how to determine flowering, see Pierce's video here:

https://www.youtube.com/watch?v=ybZVW_YbhxY&feature=youtu.be. Remember that flowering also includes secondary tillers, which flower a

couple days after the main tiller, which is one reason efficacy of these fungicides for suppressing DON and FHB is only around 45-50%. Keep an eye on the fusarium head scab prediction center (www.wheatscab.psu.edu) for updates. Make sure to check it around noon for the report including the previous evening's weather data.

The Fungicide Efficacy for Control of Wheat Diseases Table developed by North Central Regional Committee on Management of Small Grain Diseases is included at the end of this issue of WCU for your reference.

Announcements

Free Webinars in May, Sponsored by the Mid-Atlantic Women in Agriculture

5/11: Creating a Farm Marketing Kit - A marketing kit is an essential tool for any business. Learn how to develop a compelling package to attract your target market and leverage your worth. This webinar will cover the elements of a successful marketing kit and includes examples to help you develop an effective brand and complementary materials that reflect your unique voice and style.

5/25: Why Value-Added Products Fail - Value-Added products can increase your enterprise profit picture, but only if it's a marketable product that fits your resources and farm mission. This presentation explores what works and what doesn't when developing and marketing value-added farm products. And, helps you answer the question, 'Just because I can produce a value-added product; should I?'

To register:

<http://www.eventbrite.com/e/wednesday-webinars-registration-11452674257>

Webinars begin at noon EST. Duration is approximately 1 hour. For optimal performance we suggest using Internet Explorer as your web browser and connecting via Ethernet connection instead of wireless (wireless will work, but a hard line is more stable)

See website for more information and other upcoming topics: <https://extension.umd.edu/womeninag/webinars>

If you do not have access to high speed internet and would like to participate in one of the above webinars, contact Tracy Wootten at wootten@udel.edu.

Farm Succession Planning Education Series Financial Planning: Creating a Retirement Paycheck

Thursday, May 5, 2016 7:00 - 9:00 p.m.
University of Delaware Paradee Center
169 Transportation Circle, Dover, 19901

If you're pre-retirement and planning for your retirement, this session will help you learn how to calculate what you will need, provide some strategies for using your savings assets to create a "retirement paycheck", and offer resources to assist you in your planning. It's never too late...or early, to start!

Please RSVP by calling (302) 831-2506 by May 2.

For more information, contact Extension agents, Dan Severson at severson@udel.edu or 302-831-8860 or Laurie Wolinski at lgw@udel.edu or 302-831-2538.

New Castle Co. Beginning Farmer Series Fruit Production Workshop

Monday, May 16, 2016 6:00-8:00 p.m.
Milburn Orchards
1495 Appleton Road
Elkton, MD 21921

Participants who attend this workshop/tour will have an opportunity to visit Milburn Orchards with UD Fruit/Vegetable Specialist Dr. Gordon Johnson and New Castle County Extension Agents to learn more about tree and small fruit production opportunities. Learn about producing different fruits, fruit establishment, fruit management, and marketing opportunities.

Meet at the entrance to Milburn Orchards.

To register contact Carrie Murphy at 302-831-2506 or cjmurphy@udel.edu

It is the policy of the Delaware Cooperative Extension System that no person shall be subjected to discrimination on the grounds of race, color, sex, disability, age or national origin.

Sussex Co. Beginning Farmer Series Fruit Production Workshop

Monday, May 23, 2016 6:00-8:00 p.m.
Ernest Fruit Farm
15092 S. Union Church Road
Ellendale, DE 19941

This workshop will be hosted at the Ernest Fruit Farm by Jeremy and Emmalea Ernest. UD Fruit/Vegetable Specialist Dr. Gordon Johnson and Sussex County Agent Tracy Wootten will be on hand to lead the workshop. Learn about tree fruits and small fruits (berries, grapes) and how they grow. Other topics covered will include opportunities for producing fruits on small farms, fruit establishment, fruit management, fruit pests (diseases, insects), fruit harvesting and handling, and local marketing of fruits.

To register contact Tracy Wootten at 302-856-7303 or wootten@udel.edu

It is the policy of the Delaware Cooperative Extension System that no person shall be subjected to discrimination on the grounds of race, color, sex, disability, age or national origin.

Season Extension Workshop and Field Day

Friday May, 20, 2016 10:00 a.m. - 3:30 p.m.
Delaware State University
Smyrna Outreach & Research Center (SORC)
884 Smyrna-Leipsic Road, Smyrna, DE

Presented by DSU Cooperative Extension, Small Farms Program.

The focus of the workshop is spring, fall and overwintered vegetables, fruits and herbs; the EQIP Program and high tunnels; and farmers' perspective on high tunnel production.

SPEAKERS

Growing the Best Tomatoes, Peppers and Cucumbers Ever

Steve Bogash, Penn State Extension

Increasing the Availability of Delaware's Specialty Crops through High Tunnels

Gordon Johnson, University of Delaware

The State of High Tunnel Production in Delaware

Rose Ogutu, Delaware State University

RSVP by May, 16, 2016. To register for the free workshop or for more information, call Rose Ogutu at (302) 587-6397 or email rogutu@desu.edu

UD Small Grains Field Day

Thursday, May 26, 2016 3:00 - 5:00 p.m.
University of Delaware Warrington Irrigation Research Farm
Harbeson, DE

Join University of Delaware Cooperative Extension Specialists and Agents at the Warrington Irrigation Research Farm for a Small Grains Field Day. **Save the date** and stay tuned for more information.

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of April 21 to April 27, 2016

Readings Taken from Midnight to Midnight

Rainfall:

0.03 inch: April 22
0.24 inch: April 23
0.26 inch: April 27

Air Temperature:

Highs ranged from 85°F on April 26 to 61°F on April 27.
Lows ranged from 62°F on April 22 to 40°F on April 21.

Soil Temperature:

61.8°F average

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

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

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

Reference to commercial products or trade names does not imply endorsement by University of Delaware Cooperative Extension or bias against those not mentioned.

Management of Small Grain Diseases

Fungicide Efficacy for Control of Wheat Diseases (Draft Revised 3-30-16)

The North Central Regional Committee on Management of Small Grain Diseases (NCERA-184) has developed the following information on fungicide efficacy for control of certain foliar diseases of wheat for use by the grain production industry in the U.S. Efficacy ratings for each fungicide listed in the table were determined by field testing the materials over multiple years and locations by the members of the committee. Efficacy is based on proper application timing to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table. Table includes most widely marketed products, and is not intended to be a list of all labeled products.

Efficacy of fungicides for wheat disease control based on appropriate application timing

Fungicide(s)				Powdery mildew	Stagonospora leaf/glume blotch	Septoria leaf blotch	Tan spot	Stripe rust	Leaf rust	Stem rust	Head scab	Harvest Restriction
Class	Active ingredient	Product	Rate/A (fl. oz)									
Strobilurin	Picoxystrobin 22.5%	Aproach SC	6.0 – 12.0	G ¹	VG	VG ²	VG	E ³	VG	VG	NL	Feekes 10.5
	Fluoxastrobin 40.3%	Evito 480 SC	2.0 – 4.0	G	--	--	VG	--	VG	--	NL	Feekes 10.5 and 40 days
	Pyraclostrobin 23.6%	Headline SC	6.0 - 9.0	G	VG ²	VG ²	E	E ³	E	G	NL	Feekes 10.5
Triazole	Metconazole 8.6%	Caramba 0.75 SL	10.0 - 17.0	VG	VG	--	VG	E	E	E	G	30 days
	Propiconazole 41.8%	Tilt 3.6 EC ⁴	4.0	VG	VG	VG	VG	VG	VG	VG	P	Feekes 10.5
	Prothioconazole 41%	Proline 480 SC	5.0 - 5.7	--	VG	VG	VG	VG	VG	VG	G	30 days
	Tebuconazole 38.7%	Folicur 3.6 F ⁴	4.0	NL	NL	NL	NL	E	E	E	F	30 days
	Prothioconazole 19% Tebuconazole 19%	Prosaro 421 SC	6.5 - 8.2	G	VG	VG	VG	E	E	E	G	30 days
Mixed modes of action ⁵	Tebuconazole 22.6% Trifloxystrobin 22.6%	Absolute Maxx SC	5.0	G	VG	VG	VG	VG	E	VG	NL	35 days
	Fluoxastrobin 14.8% Flutriafol 19.3%	Fortix	4.0 - 6.0	--	--	VG	VG	E	VG	--	NL	Feekes 10.5 and 40 days
	Benzovindiflupyr 10.3% Propiconazole 11.7% Azoxystrobin 13.5%	Trivapro A EC + Trivapro B SE	4.0 + 10.5	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4
	Metconazole 7.4% Pyraclostrobin 12%	TwinLine 1.75 EC	7.0 – 9.0	G	VG	VG	E	E	E	VG	NL	Feekes 10.5
	Fluxapyroxad 14.3% Pyraclostrobin 28.6%	Priaxor	4.0 - 8.0	G	VG	VG	E	VG	VG	G	NL	Feekes 10.5
	Propiconazole 11.7% Azoxystrobin 13.5%	Quilt Xcel 2.2 SE ⁴	10.5 - 14.0	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5
	Prothioconazole 10.8% Trifloxystrobin 32.3%	Stratego YLD	4.0	G	VG	VG	VG	VG	VG	VG	NL	Feekes 10.5 35 days
	Cyproconazole 7.17% Picoxystrobin 17.94%	Aproach Prima SC	3.4-6.8	VG	VG	VG	VG	E	VG	--	NR	45 days

¹Efficacy categories: NL=Not Labeled; NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; -- = Insufficient data to make statement about efficacy of this product.

²Product efficacy may be reduced in areas with fungal populations that are resistant to strobilurin fungicides.

³Efficacy may be significantly reduced if solo strobilurin products are applied after stripe rust infection has occurred.

⁴Multiple generic products containing the same active ingredients also may be labeled in some states.

⁵Products with mixed modes of action generally combine triazole and strobilurin active ingredients. Priaxor and the Trivapro copack include carboxamide active ingredients.