

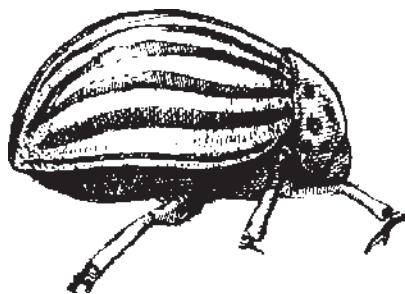
PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JUNE 29, 2005

Pest Notes

Gerald M. Ghidui, Ph.D., Specialist in Vegetable Entomology



✓ **Corn (sweet):** IPM Specialist Kris Holmstrom reports heavy populations of **corn thrips** on sweet corn in the northern areas of New Jersey. Thrips are often found on corn, but usually in lower numbers. They cause silvering of the leaves, and sometimes desiccation of leaves and husks. However, with the frequent rains and warm temperatures for fast growth, treatments are generally not recommended for thrips.

✓ **Eggplant:** **Colorado potato beetles** are still a problem in some eggplant fields. These pests become difficult to manage as the plant grows because of the size of the plants and the coverage needed to obtain adequate control. Make sure to cover the entire plant with your spray material as larvae often feed on lower leaves and at the base of the plant, as well as on leaf undersides. A higher volume, higher gallonage is more likely to result in improved coverage of eggplant. Remember that the neonicotinoids (Actara, Assail, Provado) are no longer recommended at this time (past mid-June) to reduce the potential of the development of insecticide resistance by the beetle to these materials), and that other alternatives should be used. Effective alternatives include the Bt's (for larvae only), any of a number of neem-based products (again primarily for the larvae), cryolite, SpinTor, Thionex, and Vydate.

✓ **Pepper:** IPM Specialist Joe Mahar, with County Ag Agent Wes Kline, have been keeping growers up-to-date on the **pepper weevil** infestation in peppers. Pepper weevils *only* overwinter in the very southern regions (Florida, Texas, California), and cannot survive further north during the winters. Thus this pest has to be brought into the area from other sources (it is possible, but improbable, that it overwintered in a heated, protected area such as a year-round greenhouse – but not likely). Because they come from southern states, adults, larvae or eggs could be brought to this area fairly early in the season, and it soon becomes established for the season.

Under warm temperatures, there could be a 2-3 week life cycle, and each female can deposit a total of 200 eggs or more. This shows how fast a population can build up.

Pepper weevils also survive and develop on black nightshade, eggplant, and most peppers, including chili peppers. Weevils can fly, but often walk from plant to plant.

Several materials are labeled for control of pepper weevil, including Vydate, cryolite, permethrin, Asana, Actara and Assail. Florida reports strong resistance to the pyrethroids and does not use them against pepper

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Pepper Weevil Found in Southern NJ

Joseph Ingerson-Mahar, Vegetable IPM Coordinator

Four farms so far have been found with one or more **pepper weevils**, most of them being caught on pheromone traps used to detect the presence of the weevils. As in previous articles on pepper weevils the most prudent step is for farmers having significant acreage of peppers to purchase pepper weevil traps from an IPM supplier such as Gemplers or Great Lakes IPM or similar business. The traps are recommended to be used at one trap per 2 ½ acres. However, that trapping density isn't needed unless pepper weevils are found. Once found, trapping should continue for the duration of the summer. While Assail and Actara and other insecticides may eliminate the population there may be reinfestation from solanaceous weeds such as nightshade outside of the field.

The weevils are 3/16 inch long with their slender beak making up about 1/3 of the beetles' length. On traps the beak is often tucked under the body and so makes the weevil appear much smaller. The overall length of the weevil on the traps is about 1/8 inch. So far only very few of the weevils have had the beak extended when on the trap. Their color is grey or brownish grey.

There have been concerns for other solanaceous crops including tomatoes and eggplant being attacked by the weevil. While the adults may feed on these other crops they do not reproduce on these plants and so are not at risk from pepper weevil.

So far we have no idea how these weevils managed to come back again after the hard winter. It seems unlikely that they would have been transported into the area. However, there has never been an intense sampling effort as this year and it is possible that pepper weevils have been more common than we thought and occasionally conditions are right for a severe infestation to develop as last year showed. □

Strawberry Update

Peter Probasco, Salem County Agricultural Agent

Now that the season is over, it is time to renovate old fields and plan for ordering new plants or tips. In our variety trial we tested 23 varieties and Chandler was the leading variety in yield again. We have some experimental varieties that were close and hopefully they will be released soon. The Ovation variety is the best variety to add to the mix now so that you have some berries one week later. Ovation is a very good tasting variety and yields slightly less than Chandler. It makes a very big plant on plastic so I would space the plants 16 inches apart. That would require 14,520 plants/A on 5 ft. centers with double rows. When strawberry plants are too tight the fruit size can go down and you get more gray mold. Get your orders in for tips or plugs because the new varieties go fast. □

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weevil. They further report that the most effective control was obtained with Actara or Assail. Both of these are of the neonicotinoid insecticide class (similar to Admire, Platinum, etc., in chemical structure). Growers have asked if they should alternate materials to reduce resistance problems, and the answer is no – the pest is not a permanent pest, and will likely not gain resistance within one season here in New Jersey. However, resistant weevils may come from the south, so it is possible that pyrethroids may be less effective than expected against this pest in New Jersey. Make sure to get at least 2 or more sprays on, about 1 week apart, and monitor the field over the next week or so to determine effectiveness of the spray program. It is very important to prevent the establishment of the population in your peppers, as once it is firmly established it is very devastating and difficult to control.

✓ **Potato:** Monitor fields closely for the development of **potato leafhopper** populations in potatoes. Populations of these pests tend to develop very quickly, and generally remain unnoticed until damage is obvious. At-plant applications of insecticides are likely at the point of becoming inactive at this time, and may not control potato leafhopper, so it is important to monitor the fields and detect early infestations. Many materials are currently labeled, and include the pyrethroids (Asana, Baythroid, permethrin), dimethoate (the old name of Cygon), Guthion, Imidan, Lannate, Thionex, and Vydate. Remember to avoid the use of the neonicotinoids (Actara, Assail, Provado) to reduce potential resistance problems with the Colorado potato beetles.

✓ **Pumpkin:** For those seeding pumpkins, remember to use treated seed for control of **seed maggots** if you have had problems in the past. After seeding, it is not possible to control these pests, and growers have lost 20-40% or more of their plants to maggot damage. Consult the *2005 NJ Commercial Vegetable Production Recommendations* for more information on seed treatments for maggots and other soil insect pests.

Also, Burlington County Agent Ray Samulis reports **black cutworms** in pumpkin fields. If plants are suddenly wilting, or have been cut off at the base, dig around the soil at the base of the plant and look for cutworms. Cutworms often attack several plants in a row, so growers may see 2, 3 or more cut plants or wilted plants in succession within a row. Direct a foliar spray at the base of the plants using any of several labeled pyrethroids (Asana, bifenthrin, permethrin). Cutworm baits may also be available containing carbaryl. □

IPM Update

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program

Sweet Corn

Warm evening temperatures over the past week have resulted in increased adult **European corn borer (ECB)** activity in parts of the northern and central counties (see ECB map). Despite this rebound in adult numbers, the population overall is declining from previous highs of 2-3 weeks ago. No data is available from Gloucester County this week. Adult ECB activity in the southern counties is low at this time, with many traps averaging less than one moth per night. Larval injury in sweet corn plantings will increase for some time yet. Be sure to check all whorl and pretassel stage sweet corn plantings for signs of ECB damage. Check 5 consecutive plants each in 10 random locations. Look for the "shot-hole" type injury on leaves and discolored sections in the emerging tassels. Consider treating when 12% or more of samples plants show fresh feeding signs. Additionally, be sure to treat these early sweet corn plantings as they go to full tassel and first silk. This application will help eliminate remaining ECB larvae before they can re-enter the plant near the developing ear. If local light traps continue to catch ECB adults and silking stage corn is present, consider treating weekly to prevent infestations by larvae that have been deposited on or near the ears themselves. **These silk stage sprays should be applied even if there are no corn earworm (CEW) being caught to generate a schedule.**

The highest average nightly ECB blacklight catches are:

Clinton	5	Croton	2	New Egypt	2
Little York	4	Eldora	2	Pennington	2
Califon	3	Hopewell	2	Phillipsburg	2
Denville	3	Long Valley	2	Sergeantsville	2

A few **CEW** adults have been caught in the central and southern counties over the past week (see CEW map). These individuals do not represent the start of a large population increase, but do pose a local threat to silking sweet corn. It is important to scout sweet corn plantings weekly. CEW eggs may be deposited in tassels if there are no silks available at the time of egg laying. While these particular larvae are not a threat to the planting prior to silking, the presence of CEW larvae in tassels indicates that adults have been active in the field.

The highest average nightly CEW blacklight catches are:

Woodstown	2	East Vineland	1	Jones Island	1
Allentown	1	Fishing Creek	1	Matawan	1
Burlington	1	Hammonton	1	New Egypt	1
Centerton	1	Indian Mills	1	Pedricktown	1

Very low level **corn leaf rust** infections have been found in the northern counties on tasseling sweet corn. This disease is favored by cool, damp weather and can be a problem for sweet corn plantings if infections start in the seedling or young whorl stages. While scouting for

ECB, note the presence of reddish powdery pustules on the surface of older leaves. Consider a fungicide application if this disease is first observed on very young corn. Initial infections in the pre-tassel or later stages are not typically a problem.

Peppers

ECB eggmasses are still being found in pepper plantings throughout the northern counties. This pest poses a threat to small plants as well as developing fruit at this time. Look at 2 leaves each on 5 consecutive plants in 10 random locations in the field. Consider treating if 2 or more ECB eggmasses are found in the sample. For growers in the southern counties, where there are enlarging fruit on the plants, consider weekly insecticide applications as long as local blacklight trap catches exceed 1 per night consistently.

Cole Crops

Increasing numbers of **diamondback moth larvae (DBM)** and **imported cabbage worms (ICW)** have been found on broccoli, cabbage and similar crops this week. It is important to check fields weekly to prevent serious injury by these pests. When scouting, be sure to include the inner most leaves in the sample as this is often where larvae feed. Consider treating if greater than 20% of heading type cole crops are infested prior to head formation and if greater than 5% are infested when heads are present. For leafy greens, consider treating if 10% or more plants are infested at any time.

Pumpkins

Recently emerged pumpkin plants are at risk from **striped cucumber beetle** feeding at this time. These yellow and black beetles feed heavily on the seed leaves of small plants and can transmit **bacterial wilt**. This disease can be limiting if it is acquired when the plants are very small. Check 5 consecutive plants each in 10 random locations in the field. Consider treating if beetles are found in more than half the sites and a systemic insecticide has not been used at planting. In some cases, the newly emerged plants may not have taken up an in-furrow applied insecticide and feeding may persist for a day or so.

Dr. Andy Wyenandt has reported more than one occurrence of **cucurbit downy mildew** on cucumbers in Cumberland County over the past two weeks. These infections may possibly serve as inoculum for further downy mildew incidents both locally and in cucurbit fields to the north as warm, wet weather dominates. Typical fungicide schedules for the prevention of **powdery mildew** in pumpkins are not necessary until the lesions are found (often after fruit have begun to develop). However, the presence of downy mildew locally would necessitate the initiation of a fungicide program on all cucurbits immediately. Downy mildew symptoms often begin as sharp yellow spots on the upper surface of leaves. Observation of the lower leaf surface will

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typically show that the lesion is associated with veins. As the infection progresses, dark spores will be apparent on the lower leaf surface during periods of high humidity. Under warm, wet conditions, rapid defoliation of leaves can occur if regular control is not undertaken. For labeled fungicides, consult the 2005 Commercial Vegetable Production Recommendations.

Snap Beans

Potato leaf hopper (PLH) adults have been observed on various crops in the northern counties. This pest is most likely throughout the state now, and is capable of causing severe stunting and yield reduction in snap beans. As populations increase in fields, and PLH begins reproducing in the crop, chlorosis and deformation of leaves may become apparent. If these symptoms appear, crop damage has already occurred. Insecticide applications directed at ECB often control PLH too, but ECB numbers do not currently warrant applications. Therefore, it is critical to monitor for PLH. A sweep net is helpful for PLH detection. Consider treating if adults and nymphs exceed 100 per 20 sweeps prior to bloom, or 250 per 20 sweeps at bloom, or 250+ during pod development. If a sweep net is not available, consider treating if nymphs are found in random samples covering all areas of the field.

Tomatoes

As the weather warms, and fruit enlarge and begin to ripen, it is a good idea to begin monitoring for **thrips** populations in the field. These small insects cause what is referred to as "gold fleck" on tomato fruit if they build up in the crop as fruit enlarge. Check fields weekly for increases in thrips populations. Tap flower clusters over an index or similar card. If the small, yellow colored flower thrips shake out onto the card at more than half of the sites inspected, or thrips populations have been increasing, consider treating to minimize the cosmetic feeding injury to fruit.

The period from late June through the first half of July is typically the time when adult **brown stinkbugs** (*Euschistus spp.*) are active and laying eggs on host crops like tomatoes. These insects will feed directly on fruit, causing a pale, diffuse blotch on green fruit that turns bright yellow as the fruit matures. More damaging is the injury caused by the nymphs as they begin to hatch and slowly disperse in the planting. Adult stinkbugs are difficult to detect in tomatoes because they hide or drop to the ground when approached. The nymphs may be easier to spot, as they remain in a group for some time after egg hatch. Check 5 consecutive plants each in 10 random locations in the planting. Look at two complete leaves and two fruit per plant. If adult stinkbugs or

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Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged above normal north, near normal central and below normal south, averaging 71 degrees north, 71 degrees central and 71 degrees south. Extremes were 96 degrees at Canoe Brook on the 27th, and 43 degrees at Canoe Brook on the 24th. Weekly rainfall averaged 0.38 inches north, 0.45 inches central, and 0.24 inches south. The heaviest 24 hour total reported was 1.14 inches at Toms River on the 22nd to 23rd. Estimated soil moisture, in percent of field capacity, this past week averaged 67 percent north, 61 percent central and 35 percent south. Four inch soil temperatures averaged 71 degrees north, 72 degrees central and 75 degrees south.

Weather Summary for the Week Ending 8 am Monday 6/27/ 5											
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON	
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC	
BELVIDERE BRIDGE	.00	11.63	-3.23	92	51	71.	1	845	35	54	
CANOE BROOK	.67	13.16	-2.83	96	43	72.	2	1022	244	71	
CHARLOTTEBURG	.48	14.98	-1.18	91	48	69.	2	819	214	60	
FLEMINGTON	.21	15.14	-.13	92	52	73.	2	946	139	58	
NEWTON	.53	12.91	-1.65	91	54	70.	2	879	198	64	
FREEHOLD	.57	15.57	.57	92	50	72.	1	959	62	65	
LONG BRANCH *	.10	14.10	-.97	87	52	71.	0	921	92	47	
NEW BRUNSWICK	.22	12.68	-1.96	94	51	73.	0	999	47	64	
TOMS RIVER	1.15	15.04	.13	91	46	70.	-1	873	49	61	
TRENTON	.19	12.27	-1.36	92	52	72.	-1	1004	1	35	
CAPE MAY COURT HOUSE	.25	12.75	-.49	81	46	67.	-5	743	-161	26	
DOWNTOWN	.12	11.68	-1.82	90	48	70.	-3	920	-102	30	
GLASSBORO	.34	13.75	-.86	91	56	74.	1	1098	97	42	
HAMMONTON	.31	12.15	-2.07	92	46	71.	-2	972	-22	29	
POMONA	.21	12.99	.09	89	46	71.	0	879	-110	30	
SEABROOK	.23	12.73	-.21	89	52	73.	0	1126	97	33	
SOUTH HARRISON	.25	13.69	-.90	89	54	72	NA	1035	NA	NA	

*SOME CUMULATIVE VALUES ESTIMATED DUE TO MISSING PAST DATA
 WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week* 268 (Ending 6/13/05) This Week 227 (Ending 6/20/05)
 * February total base 40 equals 32 units

Second Confirmed Case of Downy Mildew on Cucurbit Crops

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology

Late last week the second case of **Downy mildew** on cucurbit crops was confirmed in Cumberland County. Downy mildew was found in organic cucumbers grown approximately 1 mile from the first reported case a few weeks ago. Unfortunately, this means that Downy mildew is on the move in New Jersey. *Control of Downy mildew begins with a preventative fungicide maintenance program. Once Downy mildew infects a field it is critical to keep the fungus from sporulating. Heavy sporulation (i.e. of the purplish-black spores) on the underside of the leaves will quickly lead to further disease development. Thus far, the Downy mildew pathovar seems to be extremely aggressive on cucumber versus other cucurbit crops. However, this may change as the season progresses and as more Downy mildew hits our region.*

There are a number of fungicides labeled for control of Downy mildew and many will help control of important diseases in cucurbits. *Growers who have not begun weekly maintenance programs should do so in cucurbit crops.* The best Downy mildew control (NCSU recommends) is Tanos (cymoxanil, 27) plus a protectant (i.e. Bravo) rotated with Previcur Flex (propamocarb, 28) plus a mancozeb (M2). Curzate has the same a.i. as Tanos and Gavel (zoxamide + mancozeb, 22 + M2) also labeled for Downy mildew. Growers should avoid using the strobilurins (Cabrio, Pristine, Amistar, Flint, Group 11) for Downy mildew control only since resistance may come into question. Use the strobilurin fungicides in fungicide maintenance programs for Powdery mildew control. The next question would be what to spray for and when. Well, that's the tough question. Right now, growers should be on their normal protectant program. If Downy mildew is suspected in the immediate area or symptoms show up, fungicide maintenance programs should immediately switch to Tanos/Bravo alternated with Previcur Flex/Mancozeb on a short schedule (3 to 5 days) as a precautionary and/or *until sporulation is controlled.* Once Powdery mildew season begins, and Downy mildew is not present, judiciously use a strobilurin fungicide (Amistar or Flint, 11) plus a protectant fungicide (M) alternated with Nova or Procure (3) + a protectant fungicide. If Downy mildew and Powdery mildew are present, growers should focus on Downy mildew control first, then PM control. Remember Cabrio and Pristine (both Group 11) are labeled for both Downy mildew and Powdery mildew, but there is a good chance resistance may be present or quickly develop to these fungicides. Please make sure to keep an eye on strobilurin (Group 11) efficacy. Should you suspect that Group 11 efficacy is failing or not giving adequate control of Downy or Powdery mildew please contact your county agent. For information on control of Downy and Powdery mildew and specific fungicide rates please see the *2005 New Jersey Commercial Vegetable Production Recommendations Guide.*

Tracking cucurbit Downy mildew via the web.

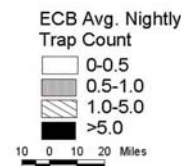
Cucurbit growers can track the progress of Downy mildew in New Jersey as well as the entire east coast by visiting North Carolina State University's cucurbit Downy mildew forecasting center at <http://www.ces.ncsu.edu/depts/pp/cucurbit/>. Once on the website click CURRENT FORECASTS then scroll to bottom of page and click on Cumberland County to get New Jersey's forecast or one of the other sources to confirm where Downy mildew is moving in the southern US. □

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nymphs are found in more than one sample, or if fruit injury is increasing in field samples or in picked baskets, consider applying a labeled insecticide.

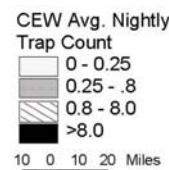
Check fields for signs of **two spotted spider mite (TSSM)** feeding. This injury first appears as whitish pin-spots or "stipple" on the surface of older leaves. As the mites increase and continue to feed, the leaves may turn yellow, and the injury will progress up the plant onto younger leaves. Often TSSM infestations first start near field edges where the mites have been feeding on weeds or other hosts like eggplant. If TSSM is localized in a field, spot treatments may be effective.

Distribution of Adult European Corn Borer for the Week Ending June 29, 2005



Data collected and processed by: Kris Holmstrom, Marilyn Hughes
Rutgers Cooperative Extension & Center for Remote Sensing

Distribution of Adult Corn Earworm for the Week Ending June 29, 2005



Data collected and processed by: Kris Holmstrom, Marilyn Hughes
Rutgers Cooperative Extension & Center for Remote Sensing

Vegetable Disease Update

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology and Wesley Kline, Ph.D.,
Cumberland County Agricultural Agent

✓ **Powdery mildew – Cucurbits** – Powdery mildew typically occurs from mid-July until the end of the season. Unlike Downy mildew, the diagnostic characteristics of Powdery mildew are *pure white 'fuzzy' growth on both the upper and lower leaf surface, petioles and stems.* Symptoms typically begin on older, lower leaves and can develop and spread rapidly under dry, humid conditions. Control of Powdery mildew begins with regular scouting for symptoms and weekly fungicide applications. Fungicide resistance management of the fungus which causes Powdery mildew is critical. Fungicides with a high risk for resistance development such as the strobilurins (Cabrio, Pristine, Flint, Amistar, Tanos, Group 11) should be tank mixed with a protectant fungicide such as Bravo (M4) or Sulfur (M1) and rotated with fungicides of a different chemistry such as Bravo (chlorothalonil, M4 + Nova or Procure (Group 3). Group 3 fungicides are also high-risk and should never be applied alone. Growers need to read and follow restrictions on labels carefully. For more information on control of Powdery mildew and other important diseases of cucurbits please see the *2005 New Jersey Commercial Vegetable Production Recommendations Guide.*

✓ **Cucumber/Pickles – Angular leaf spot** symptoms are distinct and easily diagnosed. Small water-soaked lesions develop on leaves and expand until they are delimited by larger secondary veins in leaves resulting in angular lesions. After time these lesions turn brown and infected tissue drops-off resulting in 'shotholes'. Angular leaf spot can be spread by splashing rain, insects, on the hands of workers and on farm machinery. Working in the field when the foliage is wet favors the spread of the disease. The disease can also be spread by blowing wind and in irrigation water. Best management of Angular leaf spot begins with clean-seed and planting in fields that has been out of cucurbit production for at least 2 years. Cultivating when foliage and soil are wet and irrigating with pond water should be avoided. There are cucurbit varieties with resistance. Add label rate of fixed copper + mancozeb to fungicide maintenance program and repeat applications every 7 days.

✓ **Cucurbits – Choanephora** - also known as Choanephora wet rot or blossom end rot is a disease which affects blossoms and young developing fruit. Infected female flowers may turn brown, 'mushy' and fall off prior to fruit set. Blossom infection can lead to fruit infection. Young fruit may turn a yellowish-brown with masses of dense, white fungal growth with black 'pin-point' spores developing on infected fruit. Long periods of wet weather with excessive rainfall and high relative humidity favor the development and spread of

Choanephora fruit rot. Unfortunately, control of Choanephora is difficult due to the constant development of new flowers and fruit, canopy production by the plant, and the ability of the fungus to survive saprophytically.

✓ **Peppers – Phytophthora blight** is beginning to appear in pepper fields. To control the crown rot phase apply mefenoxam (1 pt Ridomil Gold 4E/A or 1 qt Ultra Flourish 2E/A) through the drip system or in a 12-16 inch band over the row at 30-day intervals after transplanting for two applications. Additionally, as fruiting starts plants will become susceptible to the *fruit rot phase*, especially with warm and moist weather conditions. Protect the upper portion of the plant with fixed copper sprays or Ridomil Gold Copper sprays. Make 3 to 4 applications at a 10-14 day intervals. Do not apply the last application of mefenoxam through the drip if foliar applications of Ridomil Gold Copper have been started. See page F70 of the *2005 Commercial Vegetable Production Recommendations* for more details.

✓ **Potato – Black Leg** – The aerial phase of Black leg, also known as aerial stem rot, has shown up over the past week. Black leg is caused by *Erwinia* spp. which also cause 'soft rots'. The bacteria which lead to the aerial phase of Blackleg are soil-borne (originate from old crop debris) and spread by rainfall, overhead irrigation and wind. The aerial phase of Blackleg does not originate from decaying seed pieces. The bacterium can enter the plant through wounds created by cultivation or through stems damaged by blowing wind, sand or hail. Dense canopies, warm weather and prolonged periods of leaf wetness favor the spread of aerial Blackleg. Fortunately, the disease rarely extends below ground and only causes dieback of stems over time. Symptoms of the aerial phase of Blackleg first appear as an irregular, water-soaked 'green' decay on stems that turns light-brown to black over time. Hot, dry weather will cause infected areas to dry out and become brittle. To help suppress aerial Blackleg, avoid excessive overhead irrigation if possible. Do any cultivating when plants are dry, cultivating in the presence of dew or wet plants may help to spread the bacterium around.

✓ **Potato - Leak (*Pythium*) and Pink Rot (*Phytophthora*)** - Leak is a disease that usually enters the tubers through bruises occurring in conjunction with the harvesting of immature tubers during hot weather. Pink rot generally occurs in poorly drained areas. Apply one of the following fungicides with as much gallonage as possible. Make three applications of one of the following fungicides. The first application should be made at nickel size tubers. The second and third applications should occur 14 and 28 days later. Be sure to get some coverage of the soil surrounding plants for root uptake to occur.

Ridomil Gold Bravo, Fluoronil (mefenoxam + chlorothalonil, 4 + M4) at 2 lb 76WP/A, or
Ridomil Gold/Copper (mefenoxam + copper, 4 + M1) at 2 lb 70WP/A, or

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Ridomil Gold MZ(mefenoxam + mancozeb, 4 + M2) at 2.5 lb 68WP/A

An alternative application technique is to apply one of the following in a 6- to 8-inch band directly over the seed-piece prior to row closure.

Platinum Ridomil Gold (mefenoxam, 4) at 2.2 fl oz 1.6E/1000 feet of row, or

Ridomil Gold (mefenoxam, 4) at 0.42 fl oz 4E/1,000 feet of row, or

Ultra Flourish (mefenoxam, 4) at 0.84 fl oz 2E/1,000 feet of row.

✓ **Tomato/Pepper - Blossom End Rot** – Tomato and pepper fields may begin showing symptoms of Blossom end rot due to the prolonged, hot dry conditions and recent rains. During hot, dry periods keep soil moisture levels constant with properly timed irrigation. Calcium deficiency which is involved with Blossom end rot is taken up by roots through “mass flow” meaning calcium it is taken up by the plant with soil water through small root hairs. Prolonged dry weather followed by heavy rains can create situations in which the flow of calcium into the plant can become unbalanced resulting in fruit developing the disorder.

✓ **Tomato - Early Blight and Septoria leaf spot** - Apply the following fungicides on a 7-day schedule or according to Tom-Cast advised sprays using the alternation pattern described below to delay the potential development of resistant to FRAC Group 11 fungicides.

Bravo, Echo, Equus, chlorothalonil, M4) at 2 to 3 pt 6F/A or OLF (also for gray leaf spot, black mold and soil rot), or mancozeb (Dithane, Manex II, Manzate, Penncozeb, M2) at 3 lb 80WP/A or OLF (also for gray leaf spot and leaf mold)

Alternate one of the above fungicides with one of the following:

Amistar, Quadris (azoxystrobin, 11) at 1.6 to 2.0 oz 80WDG/A or OLF (Also for buckeye rot and black mold. Do not apply near apples, see label for details.), or

Cabrio (pyraclostrobin, 11) at 8 to 12 oz 20EG/A, or Endura (boscalid, 7) at 2.5 to 3.5 oz 70W/A, or Flint (triflozystrobin, 11) at 4 oz 50 WDG/A, (Do not apply near Concord Grapes.) or

Tanos (famoxodone + cymoxanil, 11 + 27) at 8 oz 50W/A + protectant fungicide (also for buckeye rot suppression and gray leaf spot).

✓ **Tomato – Late blight** - *There have been no confirmed cases of Late blight in our region to date.* Apply one of the following *protectant fungicides* and repeat every 7 days or *follow a disease forecasting system to schedule fungicide applications:*

Bravo, Echo, Equus, chlorothalonil, M4) at 1 to 3 pt 6F/A or OLF, or

Gavel (zoxamide + mancozeb, M2 + 22) at 1.5 to 2 lb 75DF/A , or mancozeb (Dithane, Manex II, Manzate, Penncozeb, M2) at 3 lb 80WP/A or OLF.

Once late blight is detected in the area, switch to one of the following translaminar fungicides which

RCRE Asian Soybean Rust Webpage

Rutgers Cooperative Research & Extension’s web page on Asian Soybean Rust is now available at <http://www.rcre.rutgers.edu/soybeanrust>. □

can move into and through leaves:

Acrobat (dimethomorph, 15) at 6.4 oz 50WP/A *plus* a protectant fungicide, or

Previcur Flex (propamocarb HCL, 28) at 1.5 pt 6F/A *plus* a protectant fungicide, or

Tanos (famoxodone + cymoxanil, 11 + 27) at 8 oz 50W/A *plus* a protectant fungicide.

Return to the use of protectant fungicides when conditions no longer favor the development of late blight.

✓ **Tomato – Bacterial Canker** – Diagnostic symptoms of Bacterial canker include marginal leaf necrosis. The first symptoms of Bacterial canker include brownish-black lesions along the margins of infected leaves. Lesions become dry after a time and leaves become ‘ragged’ looking. Bacterial canker can easily spread through the field via staking, tying and pruning. Do not work (i.e. tie, stake or prune) when tomato foliage is wet. Fields or blocks of tomatoes showing symptoms should not be worked in prior to other fields. Bacterial canker can be spread between fields via hands, clothing and equipment. As fruit develop, white ‘bird’s eye’ spots may develop on green fruit making it unfit for market. Fungicides used to control Bacterial spot and speck may help to suppress spread of Bacterial canker.

✓ **Tomato – Bacterial spot and speck** – Symptoms of spot and speck include small, water-soaked spots with a ‘greasy’ appearance on infected leaves. These lesions will expand and will often form yellow ‘halos’ at the margins. Lesions may spread and form large, irregular necrotic areas on leaves. On mature plants infections are most evident on older leaves. Bacterial spot and speck will both *infect green fruit*. Bacterial spot development is favored by high moisture, relative humidity and warm temperatures (75 to 90 degrees) and bacterial speck is favored by cooler, moist conditions (65 to 75 degrees). Bacterial spot produces slightly raised water-soaked spots that with age become ‘scabby’ and be 1/4” in diameter. Bacterial speck produces much smaller lesions (1/16”) that are black and slightly sunken. Control of both spot and speck begins with proper crop rotation (2-3 years without tomatoes or peppers) and in the greenhouse with clean seed and/or transplants and proper greenhouse sanitation. Culturally, Avoid overhead irrigation and *do not work* in fields when plant surfaces are wet. Control of spot and speck should begin in the greenhouse and carry into the field soon after transplanting with a weekly spray program, especially if either has been a problem in the past. □

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