

All Berries: Irrigation – VERY dry conditions persist. While we don't want to encourage certain crops to grow vigorously into the fall (especially blueberries) these plants do need to be watered to maintain overall vigor and so that bud formation isn't interrupted due to stress. In most areas of our region there has been almost no rainfall for 4-6 weeks. Growers should be irrigating ~ 1"/week (depending on soil type

amounts may be higher) especially when temperatures are high.

Voles and Moles – High populations of these critters this year. Good weed control aids our natural predators (at least with vole hunting) but this year there is an abundance! ProZap Zinc Phosphide Pellets and ZP Rodent Bait AG are labelled for control-ling these pests.

Cover Crops – Despite the fact that it feels like July, the last day to plant Winter Rye for a cover crop is fast approaching. Seeding rate should be 80-100 lb/acre and ideally it should be planted no later than early October, but success is weather dependent and I know plenty of growers that have planted winter rye in late October and have been lucky enough to get excellent growth before winter set in.

SWD – Fall Raspberries and Day Neutral Strawberries are still at high risk for infestation. Given the high humidity and daytime and most importantly, nighttime temperatures, continued weekly spraying is critical to prevent infestation. For the current list of NY products for berry crops, click here. There is a separate page for each berry crop, and the materials and specific details are different for each one, so please read carefully.

Strawberries:

June bearing strawberries – monitor for leaf spot diseases. Apply cover spray if disease lesions are on 10% or more of the leaves. If the weather pattern persists you may need to continue this through mid-October.

of Contents

Table



continued on next page

VOLUME 5, ISSUEI2

ΡΔGF

Have seen some collapse probably associated with Verticillium in new plantings. Site selection and cultivar choices need to be though through before planting.

Day Neutral strawberry production has been excellent throughout eastern NY. Some locations report that demand



Scale on blueberry fruit. Photo courtesy of Michigan State University

hasn't kept pace with production, but other locations are saying that consumers are LOVING this fall fruit.

Start to reduce fertilizer slowly. You should be between 5-7# of actual N/acre/week now – you can drop the Nitrogen down about 1#/week through October until you are feeding about 2#/week by early November.

Stay on top of scouting DN's during the first part of October. You are still looking for mites, tarnished plant bug,

thrips, and certainly SWD. See article in this newsletter about cyclamen mites - these have been seen in several DN plantings.

Blueberries:

Voles and moles can kill plants – make sure to apply rodenticide.

NO fertilizer needed for blueberries after July 4th. And irrigation should be decreased so that the plants can go into dormancy – but do water sparingly if there is no natural rainfall.

Scale has become a real problem in many plantings. Next season just before bud break is the right time. Molt-X, Brigade, SuffOil-X can be used on all scale. Triple Crown and Esteem are only labelled for Lecanium scale.

Brambles:

Many fall raspberries have just hit peak production – very late season in areas north of Capital District.

Continue to spray and monitor for SWD in fall raspberries. A real threat this year.

Managing Voles in Highbush Blueberries Alan T. Eaton, University of New Hampshire/ Edited by Laura McDermott

Two species of small rodents regularly damage orchard trees and blueberries in New Hampshire. Orchardists frequently call them mice, but they are voles. The pine vole, Microtus pinetorum, primarily attacks roots and lives underground, while the meadow vole, Microtus pennsylvanicus, is active above ground. Both species eat bark in winter and can girdle trees and bushes above ground level. Populations of these pests can fluctuate greatly from year to year.



Entrance to pine vole tunnel in blueberry planting. Courtesy of Cornell blog

derground and spends very little time above ground. In the winter it spends a lot of time above ground, but under the snow. They prefer woodland and grassland habitats, but are also found in rocky areas, marshes and swamps. They feed almost exclusively in their tunnels and eat fruit, tubers, roots and the bark along roots of certain trees such as apple. In orchards, the extensive burrow systems reach from the tree bases to the drip line, and

This can result in severe injury in peak years. In winter, fruit and live grass are unavailable as food, so they turn to eating bark. With good snow cover, the voles are hidden from view of predators, so damage can be especially bad.

Pine Vole

The pine vole is a fossorial species. That means it lives un-

many tunnels are only one to three inches deep in the soil. The tunnels are usually shallow near the drip line and are deeper towards the trunk. They're usually one to 1 1/2 inches wide. Tunnels often parallel large roots, and gnawing by the rodents sometimes causes rows of suckers to sprout.

Soils that are the most favorable for this species are sandy, with sufficient silt, clay, or other cementing agent content

to keep tunnels from collapsing. Thick layers of surface litter seem to be favorable as well. Tunnels almost never cross the compacted driveways.

The species is gregarious. The breeding season goes from mid-February to mid-November, and usually there is one litter of two to four young per year.

Meadow Vole

The meadow vole occurs in orchards, open woodland, grassy marshes and meadows, wooded swamps and along streams and lakes. Unlike the pine vole, it is active primarily above the ground and builds networks of runways in the grass and surface debris. Sometimes it burrows into the ground, but such tunnels are usually close to the trunk. Thick growth of grass or other plants is favorable for this animal. It feeds on grasses, sedges, legumes, seeds, grain, tubers, and dropped fruit. When more favorable foods are scarce, it eats the bark and cambium layer of trees. Much of the typical girdling by this animal is done un-



Surface tunnels caused by meadow voles. Image from Maine.gov



Pine vole (top, with short tail) and meadow vole (bottom, with long tail). Photo: Alan T. Eaton

der the cover of snow, and injury can occur on any part of the trunk or branches which are covered by snow. Young trees are especially vulnerable to girdling. Besides apple, meadow voles attack peach, plum, quince, pear, cherry, blackberry, raspberry, rose, grape, blueberry, juniper, dogwood and other ornamental and

This species is gregarious and very prolific. The breeding season lasts all year, and females usually have four to eight litters per year, with an average of four or five young per litter. With such a high reproductive rate, meadow vole populations can rebound quickly from heavy mortality (for example, from rodenticide application).

Identification

Adult meadow voles are about seven inches long with a tail that extends another 1¼ to 2 ½ inches. They are chestnut brown with gray underparts. Their ears are furred and project slightly above the fur on the head. The eyes are prominent. The fur is coarse. Blueberries that sustain heavy root feeding show poor growth and production. Examination of their root systems shows that many of the fine roots are missing.

Measuring the Vole Population

Visual checking or probing can give you a rough idea of the vole population. Sites heavily populated by pine vole are easy find by probing the soil with your fingers, looking for tunnels. Small tunnel openings surrounded by small soil piles are another clue. As you walk on the soil under the tree canopy, the soil can feel spongy (from the burrows underneath). You can see meadow vole runs most easily in taller grass, by kneeling down and parting the grass. Active runs look like tiny one to two inch wide paths through the grass. Active runs often have grass clippings (remains of meals) in them during the growing season, and you might spot a dropping or two at any time of year. Droppings are roughly one mm wide, three to four mm long (1/16 inch wide, 1/8 to 3/16 inches long. If the orchard usually has

Adult pine voles are smaller, with a body length of 4 ¼ to 5 ¼ inches. The tail is 6/8 to 1 inch long. The eyes are some-

what sunken, and the ears are nearly buried in the fur. The fur is less coarse than that of meadow vole, and is a lighter brown color.

Damage to Highbush Blueberries

Most highbush blueberry plantings are mulched with organic materials, and often the plant rows are several inches above the drive rows. Meadow vole girdling is uncommon in our highbush blueberries, except in situations with severe weeds in the rows. Underground in-row tunneling

> is quite common, especially in situations with pine needle or sawdust mulch. Root zone tunneling seems to be less common in situations where coarse bark or shredded wood mulch is heavily applied. That might be misleading... the coarse mulch may just make it harder for us to detect tunneling. Research shows that pine voles can exist on a diet of 100% blueberry roots. A diet of apple roots must be supplemented by roots of various forbs, for pine voles to survive.

VOLUME 5, ISSUE 12

tall orchard floor vegetation, expect that meadow voles are there.In a site that is well-mowed, meadow voles are most likely along the borders with adjacent grasslands, or brushy woodlands and stone walls.

There is one indicator of population size that we use to judge population reduction, after applying rodenticide. We place 30 to 50 apples across the orchard floor, under the tree canopies. I usually mark mine with wire flags, so I can easily find & count them. After two or three days in the orchard, I remove them, and count how many got chewed. Ten days to two weeks after applying a rodenticide, repeat the procedure and compare the numbers that got chewed before and after treatment. This gives you a rough idea of activity, and is simple to do. It works much better if you remove drops from the orchard first. In a blueberry planting where pine voles are suspected, this method can work if the apples are placed over tunnels: probe to find a tunnel, remove some overlying debris, and place an apple there.

Management

Voles can be controlled by using a combination of habitat management and rodenticides. Keep weeds controlled within the row and mow alleyways short – especially as winter approaches. Encourage predators by hanging nest boxes for bird predators and using rodenticides properly so you don't unintentionally harm mammalian predators like foxes.

Rodenticides like ProZap Zinc Phosphide Pellets and ZP Rodent Bait AG are effective and useful but follow the label directions. The best and longest term control will combine both poison and habitat management.

For the complete fact sheet on this topic, visit <u>https://</u> <u>extension.unh.edu/resources/files/</u> <u>Resource003424_Rep4893.pdf</u>

For Your Information:

Berry Farm Worker Training Manuals Available

Cornell Cooperative Extension of Ulster County announces a new series of manuals for berry and grape producers. The manuals are designed for farmworker training and general reference, written in English with Spanish translations and including detailed illustrations.

Click on each title to view sample pages: <u>Bramble Harvest</u> (8 pages) <u>Methods of Pruning Grape Vines</u> (12 pages) <u>Pruner Sterilization: Preventing the Spread of Crown Gall of Grape</u> (8 pages) <u>Pruning Floricane (Summer) Raspberries and Pruning Primocane (Fall) Raspberries</u> (12 pages)<u>Spotted Wing Drosophi-</u> <u>Ia (SWD) Monitoring in Raspberries</u> (16 pages)

Copies are just \$6 - \$8 each and are available for purchase by mail using the order form here.

For assistance with ordering, contact Carrie at 845-340-3990 x311 or email cad266@cornell.edu.

If you have questions about the manuals, contact Jim O'Connell at 845-340-3990 x390 or email imo98@cornell.edu.

Manuals funded by NE SARE. Translations provided by the Cornell Farmworker Program.

Cornell Fruit Resources Website – a brand new look!

Cornell Berry, Tree Fruit and Grape webpages have been reworked and presented in an easier to use and more mobile friendly platform. Check them out by clicking on this link – and save it to your favorites.

https://fruit.cornell.edu/



VOLUME 5, ISSUE 12

Managing Cyclamen Mite in Strawberries Pam Fisher - Berry Crop Specialist/OMAFRA

Editor's note: Cyclamen mite has been occasionally found in strawberry plantings throughout eastern NY. This pest can build up on older strawberry plantings but can also be found in new plantings of June Bearers and Day Neutrals.

Cyclamen mite it is a tiny oval white-amber colored mite that feeds on the newest strawberry leaves while they are still folded up near the crown. Leaves become



Figure 1: Strawberry leaves crinkled and roughened by cyclamen mite. Note the healthy leaf in the bottom left

• In spring as new growth begins, apply an insecticide for cyclamen mite. You can choose Thionex, or Agri-Mek. Agri-Mek is absorbed into the leaf, and works best when leaves are fresh and new. DO not include a surfactant or oil when using Agri-Mek on strawberries.

• Consider purchasing beneficial mites such as Amblysieus sp. insects and releasing them into the field when hot spots develop. Check with your supplier

distorted and the plant can be quite stunted. New growth is leathery and off color.

Control of cyclamen mite is difficult, partly because they are active in the new growth in the crown, where it is difficult to get good spray coverage. It is often a chronic problem, so growers should plan a strategy for control that extends into next year.

• After mowing, as new leaves begin to grow but before they expand and shield the crown from sprays, apply an insecticide such as Thionex. The rate for cyclamen mite is higher than the rate for tarnished plant bug. (Maximum 2 applications per year for tarnished plants bug or cyclamen mite.)

• Walk your fields in late summer and fall and look for signs of crinkled leaves. Flag these patches.

about a suitable interval between insecticide application and releasing beneficial mites.

Reduce use of pyrethroid insecticides in strawberries, such as Ripcord Matador, Decis, etc. These insecticides are hard on beneficial mites that help keep cyclamen mite in check.



Figure 2: Cyclamen mite and eggs much magnified. They are difficult to see even under a dissecting scope.

Fall Herbicide Applications for Strawberries Bruce Bordelon, Purdue University

A number of pre and post emergent herbicides can be used on strawberries during late summer and fall to prevent weed germination, kill emerged weeds, and provide residual control through next spring. The key set of weeds you need to control during this period are fall germinating winter annuals such as chickweed, henbit, and shepherds purse. You may also need to prevent germination of wheat, oats, or rye seeds that come in the straw mulch you apply for winter protection. Carefully read the labels to minimize risk of damage to your strawberries. Below is a list of herbicides registered and comments about each.

Chateau (flumioxazin) is primarily a pre-emergent herbicide but has some post emergent activity against small susceptible weeds. Fall applications of Chateau should only be applied after the strawberries are completely dominant. If Chateau is applied to actively growing strawberries, injury can occur. Add 1% crop oil or 0.25% nonionic surfactant to improve post emergent control of small weeds.

Dacthal (DCPA) is a pre-emergent herbicide that can be used in new plantings, immediately after renovation or in

fall. It provides good control of many grasses and some broadleaves such as purslane and lambsquarter. It must be not require Poast applications for control. Poast is more applied before weeds emerge.

Devrinol (napropamide) is a pre emergence herbicide that can inhibit rooting of daughter plants so it should be applied after early forming daughter plants have rooted. Late forming (after late August) daughter plants do not contribute to yield and Devrinol can be applied before these runners root. Devrinol must be applied before winter annuals and small grains emerge. Devrinol provides excellent control of small grains and some winter annuals such as chickweed. Devrinol must be moved into the soil by cultivation or water (rainfall or irrigation) after application.

Prowl H20 (pendimethalin) is a pre-emergent herbicide that can be applied in fall after strawberries are completely dormant. Rainfall or irrigation following application provides best results.

Sinbar (terbacil) is primarily a pre-emergent herbicide but it has some post emergent activity against small susceptible weeds. Fall applications of Sinbar should only be applied after the strawberries are completely dominant. If Sinbar is applied to actively growing strawberries, injury can occur. Cultivars differ in tolerance to Sinbar. In general, less vigorous cultivars have greater injury. Applications are most effective when applied to the soil and activated by rainfall or irrigation. Sinbar provides excellent control of many winter annual weeds.

Poast (sethoxydim) is a post emergent, grass specific herbicide. The grasses must be actively growing, thus Poast should be applied in late summer or early fall before plants become dormant. Summer annual grasses, such as

foxtails and crabgrass, will be killed by fall frosts, and do effective against annual than perennial grasses. Poast can be used in the fall to suppress perennial grasses such as quackgrass, control early emerging small grains, and kill winter annual grasses such as wild oats and downy brome.

Select Max (clethodim) is a post emergent, grass specific herbicide that provides good control of most annual and perennial grasses. Like Poast, grasses should be actively growing for best results.

2,4-D amine, a post emergent broadleaf herbicide, can be applied when strawberries are dormant to control some winter annuals. 2,4-D provides good control of many mustards and shepherds purse, but is not very effective against chickweed. The herbicide should be applied to actively growing weeds. Be careful of 2,4-D drift causing injury to non-target plants. Check the label as only a few formulations are labeled for strawberries. 2,4-D is typically used during renovation rather than in fall.

Gramoxone Inteon (paraquat) can be applied as a directed spray between strawberry rows, using shields to prevent contact with strawberry plants. Gramoxone is a nonselective herbicide, so it will kill or severely injure strawberries it contacts. Gramoxone is a restricted use pesticide and is extremely toxic to humans. It provides excellent control of annual grass and broadleaf weeds. Gramoxone does not translocate in plants so it does not control perennial weeds. Weeds should be actively growing when Gramoxone is applied.

Source: Facts for Fancy Fruit, Vol. 15, Issue 10, Sept. 14, 2015

How Salt, a Coffee Filter, and a Microscope Could Aid in Managing Spotted-Wing Drosophila Andrew Porterfield

The red-eyed, spotted fly first appeared in the United States in strawberry, raspberry, and blackberry crops in Santa Cruz County, California, in 2008. Then the Southeast Asian invader Drosophila suzukii began showing up in crops in other areas of coastal California, eventually making its way to the far Pacific Northwest and then becoming a nationwide pest. D. suzukii's biology is still not completely known, but its ability to destroy crops is, as farms can suffer yield losses of up to 80 percent when it arrives.

Also known as the spotted-wing drosophila (SWD), D. suzukii has been controlled chemically, using sprays when

fruit is ripening. But control is challenging, since the fly has just a 10- to 14-day generation time, and females are highly fertile, which results in large and quick population increases. Consumer intolerance of infestation in fruit crops, as well as the fact that fly populations spike just as fruit ripens, have made farmers all but abandon nonchemical management methods.

Adding to these significant challenges is that monitoring for SWD using traditional baits and lures does not provide reliable predictions of infestation. Larval monitoring has been somewhat more effective, but visual assessments only pinpoint the largest larvae, missing entirely the

VOLUME 5, ISSUE 12

PAGE



Follow these steps to sample fruit for Drosophila suzukii larvae: (A) Collect 8–16 oz (237–473 ml) of ripe berries; (B) place berries in a 1 gallon resealable plastic bag and lightly crush berries; (C) add salt water to berries, place bag upright in a plastic bin, and incubate for 1 h; (D) pour salt water and berries into course filter funnel and rinse berries off to wash larvae into reusable coffee filter; (E) use microscope or other magnifier to view larvae in the coffee filter; and (F) count the number of larvae in the bottom of the filter. (Images originally published in Van Timmeren et al. 2017, Journal of Integrated Pest Management)

researchers write. "We expect this method to become an important component of rebuilding IPM [integrated pest management] programs in fruit crops affected by D. suzukii."

The researchers compared the saltwater/ filter method to visual observation (without filters) using salt and brown sugar solutions. Brown sugar and salt alone enhanced visual observations better than a tap water control (and there was no difference in effectiveness between sugar and salt). However, four times as many larvae could be seen using the saltwaterand-filter combination. Most important, first and second instar larvae were seen for the first time using the saltwater and filter. The saltwater/filter method was also faster, assessing fruits in 3.8 seconds versus tray-based methods, which took 6.5 seconds to assess. These times are significant for farmers and crop consultants who are tasked with determining the fate of fruit on very large farms and who

smaller larvae that most often trigger an infestation.

So far, solutions to spot smaller larvae have proven expensive, labor-intensive, and too slow. However, a simple combination of salt, coffee filters, and microscopy may provide an answer to this fast growing, and apparently fast -migrating, pest.

Rufus Isaacs, Ph.D., professor of Entomology at Michigan State University's Center for Integrated Plant Systems, and his colleagues at MSU and North Carolina State University found that mixing crushed berries in a salt solution, sifting the solution through a reusable coffee filter, and counting recovered SWD larvae with a 5-10X stereomicroscope can accurately identify numbers of larvae nearly two times faster than traditional tray methods.

This simple method may help researchers better understand the life cycles and feeding habits of the invasive pest and help farmers reduce chemical use and better target their control efforts. Because the new method also allows for first instar larvae to be detected, growers would benefit from an earlier "jump" on the insect's rapid growth.

"Growers can use this information to target insecticide sprays for curative control of small larvae, identify fields where the presence of larger larvae may indicate an unmarketable crop, or verify that no infestation exists," the could be facing an infestation that can ruin a crop in a manner of days. At agricultural scales, the seconds add up.

The researchers' study is published today in the openaccess Journal of Integrated Pest Management.



An improved method for finding and identifying larvae of spotted-wing drosophila in fruit allows for even the earliest larval stages to be found. Here, a Drosophila suzukii egg and small, medium, and large larvae are seen under a microscope after sifting using a reusable coffee filter. Scale is in millimeters. (Image originally published in Van Timmeren et al. 2017, Journal of Integrated Pest *Management*)

COVER CROPS AND SOIL HEALTH FIELD DAY



Join us for a day of cover crop and soil health presentations, field tours, and a farmer panel! This field day is presented by USDA-NRCS, Cornell Cooperative Extension ENYCHP, SARE & SUNY Cobleskill.

Topics to include:

- Understanding Soil Health, Soil Health Demos Aaron Ristow, Cornell
- Soil Health Field Evaluation and test pit Olga Vargas, NRCS
- "Life Underground?": A discussion of beneficial soildwelling invertebrates Carmen Greenwood, SUNY Cobleskill
- Cover Crop Selection and Management Thomas Bjorkman, Cornell
- Twenty Different Cover Crop Species and Mixes Demonstration Plots Paul Salon, NRCS
- Seven Inter-seeding demonstration plots John Wallace, Cornell
- Farmer Panel TBA

For More Information Please Contact: Chuck Bornt, CCE ENYCHP: 518-859-6213

Date: Thursday, October 12

| Registration: | 9:30 |
|----------------|---------------|
| Presentations: | 10:00 - 11:30 |
| Lunch: | 11:30 - 12:00 |
| Field Tour | |
| & Stations: | 12:00 - 2:00 |
| Farmer Panel: | 2:00 - 2:30 |

Location: Schoharie Valley Farms 495 N. Main Street Schoharie, NY 12157 *The pavilion at the little league fields

Cost: \$10/ person (Includes Lunch) Pre-registration is encouraged.

Registration online at:

https://enych.cce.cornell.edu/ event.php?id=821

Or call Abby at (518) 746-2553 to register by phone





Cornell University Cooperative Extension



United States Department of Agriculture is an equal opportunity provider, employer and lender

Calendar of Events

Mechanical Cultivation Equipment Demo Day Tuesday, October 3rd 1:00– 4:45pm 371 Big Island Road, Goshen NY

Come see the latest mechanical cultivation technology in action! A range of equipment will be showcased, including the first demonstration of a robotic cultivator in NY! In addition to the demonstrations, Ethan Grundberg, ENYCHP and Dr. Bryan Brown, NYS IPM will review how mechanical cultivation fits into an overall Integrated Weed Management strategy. Brown will also describe some of his research on stacking cultivation tools to increase effectiveness. This event is FREE with preregistration. 1.25 DEC credits available.

Human Resources Training Series: Whallonsburg Grange Hall, Essex NY

Your employees are your most valuable resource. Wages, salaries, and contract labor expenses represent more than 40 percent of the cost of production in labor intensive crops like fruits, vegetables, and nursery products. Can you afford to not improve your skills in managing employees effectively? This is a four part series. Attend all or one! \$25 per person per class, or \$60 per person for all four.

October 25, 1-4pm- Marketing your Farm as a great place to work!

October 25, 5-8pm- What is my job? Hiring, training and evaluating employees effectively

November 8, 1-4pm - Keeping good staff when money is tight & managing conflict in the workplace

November 8, 1-4pm- The compliance and safety workshop. Are you managing your risks as an employer?

- October 19, 2017 Farm Insurance Workshop 7:00 pm, CCE Albany County, 24 Martin Road, Voorheesville, NY 12186. Insurance Agent Michael Bruce will be discussing how you can develop an insurance package that will provide you protection at a price you can afford. The cost to attend the workshop is \$5.00 per person. Register online: http://bit.ly/2vlezgt. For more information, contact Tove Ford at mailto:cce-caahp@cornell.eduor 518-765-3518.
- December 5-7, 2017 Great Lakes Expo. Devos Place Conference Center and The Amway Grand Plaza Hotel, Grand Rapids, MI. Registration opens September 25, 2017. Go to <u>http://glexpo.com</u> for more details on program and registration.
- December 12-14, 2017 New England Vegetable & Fruit Conference. This is the premier fruit and vegetable conference in the New England with over 30 information sessions over 3 days, many Farmer-to-Farmer information sharing sessions each day, over 150 vendors in an expansive trade show, and networking opportunities with and expected 1,500 participants. This conference offers valuable information for growers of all levels of experience from prospective growers or new entry beginners to well seasoned experienced growers, different sized operations from homestead to large commercial farms, and a range of growing systems including organic, IPM, conventional, greenhouse/tunnels, and many others. This year's conference has incorporated some

Berry Specialist

Laura McDermott Phone: 518-791-5038 Email: lgm4@cornell.edu

Business Specialist

Liz Higgins Cell:518-949-3722 Email:emh56@cornell.edu

Food Safety Specialist

Erik Schellenberg Phone: 845-344-1234 Email: jk2642@cornell.edu

Editor: Laura McDermott

