October 15, 2010 | Volume 14 | Issue 17

Ohio Fruit ICM News

Enology Workshop

OSU South Centers at Piketon
The Ohio State University Extension

Commercial winemakers looking to expand their business or serious amateur winemakers interested in making the leap to a commercial winery have the opportunity to attend an Ohio State University Extension enology workshop on Nov. 18.

The workshop will be held at OSU South Centers at Piketon, 1864 Shyville Road, Piketon, from 6 p.m. until 8 p.m. Registration is $5 per person. The event is part of the OSU South Centers Third Thursday Horticulture Business Training series.

Todd Steiner, OSU Extension enology program manager and outreach specialist, will present a session on producing quality red table wines.

"The presentation will provide an overview of several critical parameters in the production of premium red table wines from harvest to bottling," said Steiner.

The presentation will cover such topics as crop levels, enzyme usage, fermentation management options, and preparing wines for bottling.

Dave Scurlock, OSU Extension viticulture outreach specialist, will provide a session on the various red wine varieties for Ohio. In addition, Scurlock will discuss cultural practices to enhance quality, including training systems and disease and weed management.

To register for the event or for more information, contact Julie Strawser-Moose at 740-289-2071, or e-mail moose.14@osu.edu.

Inside This Issue

If you have articles for the newsletter that you would like to have considered to be included in upcoming issues, please submit to either Howard Siegrist at siegrist.1@cfaes.osu.edu or Melissa Swearingen at swearingen.34@cfaes.osu.edu

THE OHIO STATE UNIVERSITY EXTENSION

EMPOWERMENT THROUGH EDUCATION

Phase-Out and Cancellation of Endosulfan
Article from the Kentucky Fruit Facts Newsletter
University of Kentucky Cooperative Extension Service

The US EPA announced that they will cancel all uses of endosulfan (brand names include Endosulfan, Thionex, and [previously] Thiodan on June 9, 2010. The EPA published a five-year phase-out schedule based on the impact of the cancellation on various crops and the availability of alternatives at the end of July. It looks like most uses will be canceled on July 31, 2012, so it would be best to start thinking about using up excess supplies. For the fruit and nut crops use on plums, prunes, annual strawberries, tart cherries and walnuts will be cancelled July 31, 2012; pears on July 31, 2013; apples and blueberries on July 31, 2015; and matted row strawberries July 31, 2016. More crop-specific information can be found at http://www.epa.gov/pesticides/reregistration/endosulfan/ .

Central Ohio Poison Control Number
(800) 222-1222
TTY # is (614) 228-2272

2010 Upcoming Events:

October 21, 2010. Pumpkin Twilight Tour. The event will take place at OSU South Centers at Piketon, 1864 Shyville Road, Piketon, OH from 6:00 p.m. to 8:00 p.m.. Registration fee is $5.00 per person. To RSVP, contact Julie Strawser-Moose (moose.14@osu.edu) or call 740-289-2071 ext. 223.

November 8-10, 2010. Southeast Strawberry Expo, Wyndham Hotel, Virginia Beach, VA. Workshops and farm tour on Nov. 8, educational sessions and trade show on Nov. 9-10 For more information, visit www.ncstrawberry.com or contact the NC Strawberry Association, 919-542-4037, info@ncstrawberry.com . Exhibitor inquiries welcome.

December 7-9, 2010. Great Lakes Fruit Vegetable and Farm Market EXPO, DeVos Place Convention Center, Grand Rapids, Michigan. For more information: **http://www.glexpo.com** .

Apple Variety Reactions to the Sooty Blotch and Flyspeck Disease Complex

John Hartman, Extension Plant Pathologist
University of Kentucky Cooperative Extension Service

Figure 2. Apple sooty blotch disease appearing on the fruit surface.

Kentucky apples are being harvested now and later varieties will continue to ripen through autumn. Some growers may notice that their apple fruits are covered with a black sooty substance or tiny black specks. These superficial dark smudges and spots are diseases caused by fungi. Sooty blotch (Figure 2) and flyspeck (Figure 3) diseases are caused by a complex of fungi involving up to perhaps 60 different species including *Schizothyrium pomi, Peltaster fructicola, Leptodontidium elatius,* and *Geastrumia polystigmatis.* Apple growers seeing some sooty blotch and flyspeck on early-harvested apples should expect to see more as the harvest sea- son progresses according to a research article published in the July 2010 issue of Plant Health Progress. (This journal is available to U.K. employees through the Plant Management Network at APSnet.org.) The article, "Relative Susceptibility of Selected Apple Cultivars to Sooty Blotch and Flyspeck" by Alan Biggs et. al. was based on research done in Massachusetts, New York and Virginia over a period of several years. The researchers evaluated apples from two sets of plantings established in the 1990's involving 45 different apple cultivars and lines. In general, sooty blotch and flyspeck (SBFS) incidence for different cultivars varied mainly by harvest date. Cultivars that were harvested later in the fall had the highest SBFS disease incidence although orchard location was also important.

Figure 3. Apple flyspeck disease, appearing as tiny black dots, and sooty blotch, both on the fruit surface (C. Kaiser photo).

The first group of apples (listed in order of increasing SBFS disease) included the early maturing apples Sansa, Pristine, Sunrise, and Ginger Gold; mid-season apples Arlet, Honeycrisp, NY75414, Golden Supreme, Pioneer Mac, Creston, Gala Supreme, Yatake, and Senshu; and late-season apples Cameo, Suncrisp, Orin, Enterprise, Fortune, Golden Delicious, Shizuka, Braeburn, Fuji Red Sport, and GoldRush. Average SBFS disease incidence over several years and locations was low in the early apples and up to 69% in the late apples.

The second group of apples (also listed in order of increasing SBFS disease) included the early season apples Zestar, Silken, and NJ109; early mid-season apples NY79507-72, Crimson Crisp, Rogers McIntosh, September Wonder Fuji, NY 79507-49, and CQR10T17; late mid-season apples NJ90, BC 8S-26-50, NY65707- 19, Princess, Runkel, Scarlet O-Hara, and Hampshire; and late season apples Pinova, Ambrosia, Sundance, Delblush, Golden Delicious, Cripps Pink, and Chinook. In this group, average SBFS disease incidence was low in the early apples but nearly 100 % in some of the late apples.

Minimally managed apples in Kentucky typically are covered with SBFS in most seasons. These signs are more visible on yellow fruit than on red or dark-colored fruit. Prolonged periods of moisture and high humidity favor appearance of SBFS, and symptoms appear earlier in seasons with wet spring and summer weather than under drier conditions. Thus, it is possible that earlier maturing cultivars may avoid disease by being exposed to fewer hours of wetting and high relative humidity, environmental factors favorable for growth of SBFS fungi. Generally, the longer fruit remain on trees without fungicide protection, the more likely it is that SBFS fungi can develop and produce signs. Growers applying fungicide sprays late in the season, i.e., close to harvest, are usually attempting to manage SBFS. Apple orchards located on a northeast-facing slope surrounded by woods will show more SBFS incidence than orchards located on open land. The fact that maturation date and location had the greatest impacts on SBFS incidence suggests that cultivar resistance is unlikely to contribute very much to integrated management approaches for SBFS. Thus, in addition to orchard site selection, this study emphasizes that SBFS management with fungicides cannot end in late summer, but must be continued throughout the harvest season, with particular attention paid to late season cultivars.

Apple and Pear Black Rot

John Hartman, Extension Plant Pathologist
University of Kentucky Cooperative Extension Service

A good apple or pear crop can be ruined due to decay caused by parasitic fungi. Several of the fungi that cause fruit rot disease can begin their infections at bloom or shortly thereafter. The fungi may invade killed fruitlets, infect sepals, or exist in a latent phase in healthy fruit, only to begin decaying them when they reach full size. Apple and pear fruit rots can occur both in the orchard and in storage after harvest. Decayed fruit represent a significant loss to growers because much of the investment in the crop is made before the fruits show any indication of decay. Recent observations in the U.K. plant disease diagnostic laboratory suggest that the black rot fungus successfully invaded apple and pear flowers or young fruitlets causing black rot (Figure 4). Black rot is caused by the fungus *Botryosphaeria obtusa*. The fungus infects blossoms, leaves, twigs, branches, and fruits. On leaves, the fungus causes frogeye leaf spot (Figure 5). Black rot inoculum originates from colonized dead wood within the tree or from mummified fruit and fruitlets. Fruit with black rot infections at the calyx end usually result from sepal infections that occurred early in the season (Figure 6). These infections, which may happen as soon as the flower bud scales loosen, typically develop into blossom end rot. If black rot infections appear on the sides of growing fruit in summer, the source of inoculum can often be traced to one or more killed fruitlets located above the infection site within the tree canopy. Late fruit infections occur through cracks in the cuticle, wounds and lenticels. Black rot fruit infections are favored by temperatures about 70 degrees F with prolonged wetness. The black rot fungus can also be one of several different fungi that may be present in fruit with moldy core. Infected fruits eventually shrivel and dry down to pycnidia-covered mummies (Figure 7) which remain attached to the tree, serving as inoculum sources in the spring of the following year.

Figure 4. Black rot disease causing decay of pear and apple fruits (P. Bachi photo).

Figure 5. Apple leaf with frogeye leaf spot caused by the black rot fungus.

Figure 6. Calyx-end black rot occurring on the apple blossom end. Note presence of fungal pycnidia on the rotted fruit surface (Clemson Univ photo).

Growers finding black rot in their orchards now will want to review their disease management practices in order to have better results next year.

•Remove from the tree or pick up off the ground overwintering fruit mummies and destroy them.
• Prune out dead and diseased branches and remove from the orchard or chop up twig and branch prunings in late winter before the growing season begins.
• Maintain an effective spray schedule. See the U.K. Extension publication ID-92, 2010 Midwest Tree Fruit Spray Guide, available at County Extension Offices statewide.

- Fungicides containing active ingredients such as thiophanate-methyl, captan, mancozeb, azoxystrobin, or kresoxym methyl most likely have good effectiveness against black rot.

Figure 7. Apple fruit mummy (C. Kaiser photo).

Dwarfing Rootstocks for Peach

Jim Schupp, Rob Crassweller, Edwin Winzeler and Don Smith, Penn State Department of Horticulture
University of Kentucky Cooperative Extension Service

Orchard intensification is a proven method to increase the production of high quality fruit and hasten grower return on investment in apple; however the primary peach production system is low density open vase. This system has not changed significantly in over 150 years. A key missing factor needed for peach orchard intensification is an efficient size-controlling rootstock. Tree size control in peach orchards has potential to increase labor efficiency in this labor-intensive fruit crop, and to increase the usefulness of new labor efficient technologies, such as labor platforms and mechanical thinners. We began rootstock trials at the Fruit Research and Extension Center (FREC) mainly to explore the potential for dwarfing effects, but rootstocks can impact orchard performance in other ways too. These include factors such as adaptation to climate (cold hardiness), adaptation to soil types (tolerance to wet soils), disease and nematode resistance, or productivity (increased precocity, yield or fruit size). These important factors are not limited to dwarfing root stocks, so several non-dwarfing rootstocks were also included in these trials.

Pennsylvania participated in a 2002 NC-140 trial of Redhaven on eight different rootstocks. This planting had to be removed in 2006 after only 5 seasons of growth; however one dwarf and one semi-dwarf rootstock in this trial showed early promise and have been included in new trials. Further study of these and other new rootstocks is again underway to determine how well these trees survive and perform under our conditions, and what the final tree size of each will be at full maturity.

Four plantings were established in 2008, and one in 2009 to evaluate a number of potential size controlling rootstocks using regionally important varieties. The rootstocks under consideration purportedly range in tree size from standard to semi-dwarf through fully dwarf (Table 1), and thus may provide growers with a range of size control options, as is the situation with apple. The 2008 trials include nine rootstocks with the variety Johnboy. The trial plantings were established at the FREC in Biglerville, the Horticulture R search Farm (HRF) at Rock Springs, and at grower sites in Franklin and Adams Counties. One of the commercial sites is a high density perpendicular V planting, while all others are conventional open vase systems at wider spacing. The Rock Springs location was selected to provide a challenging site for cold hardiness evaluation.

The 2009 NC-140 project tests Redhaven on 16 rootstocks. This trial is planted at several locations throughout North America. The trees in both years were planted and maintained with support provided by the State Horticultural Association of Pennsylvania and Penn State's Agricultural Experiment Station.

Seven of the rootstocks are peaches. Lovell and Bailey are included as local standards, and Guardian is included in the NC-140 trial as the southeastern U.S. standard, where it is used for its tolerance to peach tree short life complex. All three of these rootstocks are propagated as open pollinated seedlings. Two HBOK selections from California exhibit tree size control, while little is known about tree size from two new "KV" selections from Ralph Scorza's breeding program in Kearneysville, WV. Four rootstocks are plum; one being a selection of Prunus Americana with potential for dwarfing from Bailey's nursery in MN. The other three are European plum from Italy. Penta, now named Empyrean®2, performed well in earlier trials. Both Penta and Tetra reportedly provide some tree size control and are tolerant of heavy wet soils.

Twelve of the rootstocks are Prunus hybrids that contribute traits that peach rootstocks lack, such as tolerance or adaptability to cold winter temperatures, poor soil drainage, or soil alkalinity, as well as tree size control and/or disease resistance. Bright's Hybrid#5, E pyrean®1, Atlas and Viking are examples of high vigor rootstocks with broad tolerance to poor soils and with good disease resistance that are selected for replant sites where standard rootstocks fail to thrive.

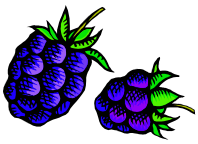
There is much interest in the northeastern and mid-Atlantic U.S. about the Kyrmsk series of rootstocks from Russia. These rootstocks are reportedly very tolerant of cold winter temperatures and heavy soils, while Krymsk 1 and 2 offer a good degree of dwarfing. California rootstocks, Controller 5 and 9 are reportedly 50% and 90% the size of peach seedling trees respectively. Over the next 10 years these rootstocks will be evaluated for survival, adaptation to the climate, tree size control, yield, fruit size and quality and freedom from physiological defects, such as graft incompatibility or root suckers.

Early Fall Weed Control in Berry Crops

Laura McDermott, CCE Capital district Vegetable & Small Fruit Program
Cornell University

Strawberries: For first year strawberries, you can use DCPA (Dacthal) at 12 lb/A, or 8 lb/A if you have sandy soil. Don't expect a lot from this material, but if you are really struggling with weed issues, it might give you some relief. Dacthal can also be used in fruiting berries, but you have some better choices in Sinbar or napropamide (Devrinol) for winter annuals. Both of these products are limited as to the amount you can apply in one year. Sinbar has a limit of 8 oz/A/ growing season and Devrinol is limited to 8 lb/A/growing season. From grower reports in the Capital District, Sinbar is the most effective material of these three, but it does have some drawbacks. Most notably it needs to be watered in and it should not be used on low organic matter soils. Additionally, some berries show sensitivity to Sinbar. The ones listed in the Cornell Berry Guidelines are: Guardian, Darrow, Micmac, Tribute and Tristar. Honeoye has been reported as sensitive as well and there is a possibility that Sinbar increases root rot in that variety. Glooscap, Kent and Cavendish are also mentioned as being sensitive in the Midwest Small Fruit Pest Management handbook.

If you have problems with thistle, then apply clopyralid (Stinger) right after the thistles have dropped their seed. Make sure to have the Special Local Need label in your possession when you apply Stinger on strawberries.



Brambles: Chemical weed control in brambles is tricky. These plants are very touchy; it is so easy to burn and stunt them with improperly applied herbicides. Handle your strawberry and blueberry weed control first and then in later September and into October concentrate on brambles. For weed control in the fall of the planting year, you can use simazine (Princep) at the low rate (2.2 lbs or 2 qt/A depending upon the formulation), but wait until October to apply.

For fruiting canes you have more choices. Sinbar, Devrinol, norflurazon (Solicam), oryzalin (Surflan) and Princep are all labeled for autumn use. If you are using Sinbar, apply the recommended rate of product with at least 20 gallons of water per acre. Spray underneath well established bushes, but be prepared for some leaf burn.

For primocane berries, you can only use Sinbar in the fall. Other materials all have caveats surrounding their use including seasonal limits on Solicam and Princep and cautionary statements for light soils (Solicam) or highly organic soils (Surflan). You also need to water in Devrinol.

Blueberries: First year blueberries may benefit from a low rate of Princep applied in late October, but most weed problems can be addressed in November. For fruiting blueberries you can apply Sinbar after harvest or choose from Devrinol, Solicam, Surflan or Princep. Similar caveats apply for these materials as were mentioned in the bramble section. Truthfully blueberries rarely need to have weeds addressed at this early fall time, as the products used in late fall (Callisto, Chateau, Kerb and Casoron) do a very effective job in combination with a good mulch program.

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We gratefully acknowledge the continued help and financial support of our local county commissioners. We appreciate their input and participation in our programming efforts.

Vole Management in Berry Plantings

Cathy Heidenreich, Berry Extension Support Specialist
Department of Horticulture, Geneva, NY
Cornell University

Vole feeding on apple. Photo courtesy P. Curtis.

Voles, also known as meadow or field mice, can do a lot of damage to bushberry and caneberry plants during winter months from feeding on plant roots to girdling canes and gnawing on crowns below the snow cover. Population monitoring and management can help reduce losses incurred to blueberries, raspberries and blackberries and other berry crops by these small mammals.

Vole Life History and Identification: Twenty-three species of voles occur in the United States. Most range in size from 5 to 9 inches in length, and 1 to 2 ounces in weight. They are generally gray-brown in color with grayish underparts. Compact is the term that best describes voles, which are stocky rodents with short legs and tails. These features, combined with small eyes and partially hidden ears make them ultimate tunnelers.

Home range for voles is usually ¼ acre or less but this varies with food supply, population density, and other factors. Voles spend their days underground creating systems of subterranean tunnels and runways. These tunnels are used to feed on plant roots, store food, and raise young. Tunnels have numerous surface entrances and a single burrow system may provide habitat for several adults and young.

Nocturnally active also, voles travel and feed at night along surface runways above ground. Runways consist of 1 inch wide depressions or matted trails in grass and ground cover that have characteristically close clipped vegetation and contain feces and bits of chewed debris. *(Right: Vole tunnel system. Photo courtesy I. Merwin.)*

Vole tunnel system. Photo courtesy I.

Voles do not hibernate, reproducing for most of the year with peaks occurring in the spring and fall. Highly prolific, voles produce 1 to 5 litters per year with litters ranging in size from 3-11 young; average litter size is 3 to 6. Females are reproductively mature in 35 to 40 days. Young voles reach maturity within 21 days.

Vole lifespan is relatively short, ranging from 2 to 16 months. Populations tend to be cyclic with peaks occurring every 2 to 5 years. Cold winters can greatly reduce vole population numbers. Numbers are also affected by other climatic conditions and food supply.

Voles feed on a wide variety of plants but most commonly feed on grasses and forages. Other plant food sources include seeds, tubers, bulbs, and rhizomes. They are also known to occasionally feed on insects, snails, and animal remains.

The preferred habitat for most voles is an area with heavy cover (grasses, grass-like plants, leaf debris or litter). When populations are high they may spill over from these habitats into fruit plantings, wind breaks, and cultivated fields.

The two types of voles most common to our area are the Meadow vole (*Microtus pennsylvanicus*) and the Pine or Woodland vole (*M. pinetorum*). The Meadow vole is the most common species found in the northern US and Canada. Ranging in size from 5.5 to 7.5 inches in length the meadow vole has gray to yellow brown fur with blacktipped hairs. Northern subspecies of this mammal may have reddish fur overtones. Meadow vole underparts are gray, sometimes washed with silver or buff; its tail is bi-colored. Preferred habitats for *M. pennsylvanicus* are wet meadows and grasslands.

Pine vole, common to the eastern US, is smaller than Meadow vole, ranging in size from 4 to 6 inches in length. These voles are brown in color with soft dense fur. Underparts are gray mixed with yellow to cinnamon. The tail is one colored or just slightly bi-colored. Pine vole's preferred habitats include deciduous and pine forests, abandoned fields, and orchards with heavy ground cover. *(Right: Pine Vole; right: Meadow vole. Photo courtesy Ian Merwin).*

Trapping is an effective way to positively identify vole species present in an area. A snap-type mouse trap is sufficient for this purpose. Bait the trap with a small piece of apple or a peanut butter oatmeal mixture. Some excavation may be needed to position traps in pine vole runs *(below left)*. Place a bent roof shingle over the trap to form a protective cover for the trap. Allow sufficient height between the trap and the shingle roof for the trap to spring without hitting.

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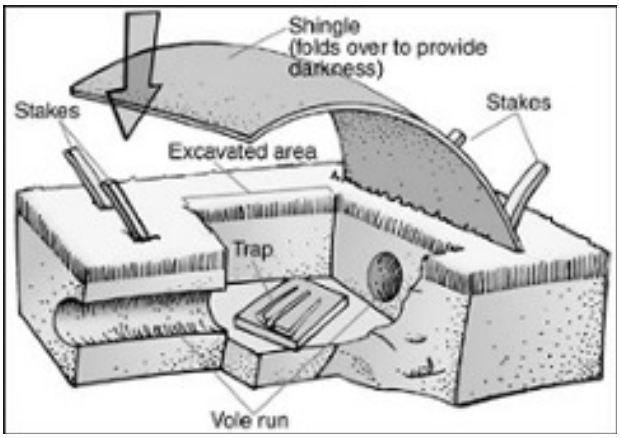
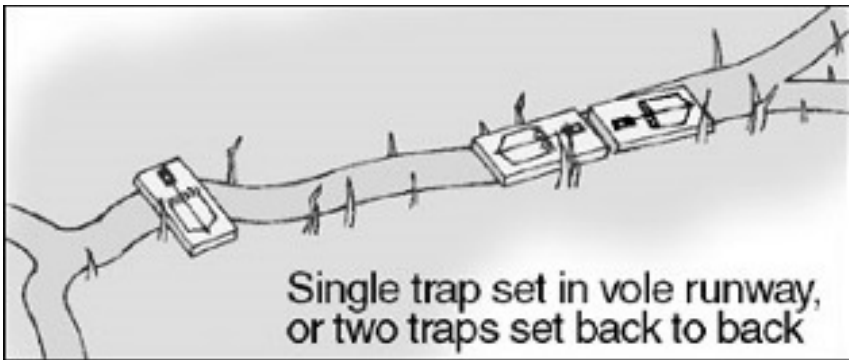
Cornell University

Meadow vole traps should be placed at right angles to surface runways or back to back inside runs.



Pine Vole trap (Pierce, 2003)



Meadow Vole trap (Pierce, 2003)

Recognizing Vole Damage to Berry Crops: Voles feed on berry crop roots but may also girdle berry root crowns and canes. Girdling typically occurs in fall and winter. Damage may also occur to irrigation systems through vole feeding.

Girdling alone is not solely indicative of vole damage to bush and caneberries. Rabbits and other rodents may also girdle berry canes. Rabbit girdling marks are larger than those of voles and not as distinct. Rabbits also clip off branch tips with clean cuts.

Vole girdling is typically 1/8" wide by 3/8" long and 1/16" deep. Marks occur at various angles and in irregular patches. This type of feeding, coupled with evidence of extensive burrowing, burrow entrances and surface runways may indicate Meadow vole damage. Pine vole spends most of its time and causes its damage *below* ground. In comparison, Meadow vole spends considerable time and causes most of its damage *above* ground. Extensive vole tunneling also creates air pockets in the root zone and may disrupt water movement through the planting.

Monitoring Vole Damage and Making Management Decisions: Monitoring may be done in spring, summer, and fall to track vole population changes. Fall monitoring however, is most often used in making management decisions. Monitoring should be done when temperatures are still above freezing during a period with little or no rainfall. Construct monitoring stations consisting of short pieces of PVC pipe or pieces of roofing shingle or other material to provide shelter. Place shelters over a tunnel entrance or section of runway. An apple wedge serves as bait under the shelter. Set out 4 to 8 monitoring stations per acre. Check apple wedges 24 hours after placement for evidence of feeding. If inclement weather is a factor, leave bait stations with wedges in place to allow ample time for night feeding. Score each station as positive or negative for feeding. In general, management is recommended when 40% or more of the bait stations show positive feeding damage after 24 hours. For more in-depth information on this technique see: *Integrated Pest Management for Blueberries - A Guide to Sampling and Decision Making for Key Blueberry Pests in Northwest Washington.* http://whatcom.wsu.edu/ipm/blue/ .

Vole Management Strategies: Cultural practices are effective in reducing vole populations in berry plantings. Weeds, ground cover and litter should be eliminated around bushes as much as possible. Grass alleyways should be mowed regularly, especially in spring and fall. Mulch used for weed management should not excessively cover bases of canes or crowns.

Voles are excellent swimmers. Unmanaged waterways, rights-of-way, and ditch banks provide excellent vole habitat. Manage these adjoining areas carefully to reduce vole numbers. Keeping surrounding vegetation to a minimum through mowing, spraying, or grazing may also reduce vole populations. Tillage of surrounding non-berry crop areas also helps reduce vole damage. Tilling removes cover, kills some voles outright, and destroys burrows.

In addition to cultural practices, some growers opt to use pelletized baits with rodenticides to further reduce vole populations. These products may be broadcast applied to whole plantings or applied by hand near entrance holes and in runways. Broadcast and hand applications, while easier to implement, have been found to be generally less effective than bait station use. Broadcast baits tend to degrade more quickly as they have full exposure to the environment. Moreover, their wide dispersal causes less frequent vole ingestion/exposure. This in turn may lead to bait-shyness through ingestion of sub-lethal doses of the bait.

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Cornell University

Rodenticide bait stations *(right)* protect bait from moisture and reduce the likelihood of bait consumption by non-target animals. Stations should be activated in fall if population numbers are high and maintained through spring if populations remain high during winter months. . *(Bait Station diagram, Pierce, 2003)*

They may be constructed from PVC pipe or other water repellent materials. Place bait stations at 10-ft intervals in infested areas. Repeat baiting again after 5 days. After 21 days, repeat the apple sign test to check efficacy of control measures.

Two types of rodenticide baits are currently available for vole population management: baits containing anticoagulant compounds such as chlorophacine provide protection throughout the winter, and zinc phosphide containing baits which are a onetime application for quick knock down of rodent populations.

Zinc phosphide baits such as Prozap zinc phosphide pellets or ZP Rodent bait Ag contain 2% zinc phosphide. These products are restricted use pesticides which may be purchased and applied only by certified applicators. They are acutely toxic to all vertebrates (humans, domestic animals, wildlife). Broadcast applications by cyclone seeder or hand (follow all label precautions!) of these products may only be made during the dormant season (after final harvest and before leaf emergence in the spring); PHI for bushberries and caneberries is 70 days. Hand applications should consist of throwing tablespoon amounts of bait into heavy cover along bushes, rock out crops, fence lines and runways. Never apply these materials to bare soil. Zinc phosphide baits should not be applied when ground is snow covered, or when rain or snow is forecast within 48 hours of application.

Zinc phosphide baits should reduce vole populations within 72 hours of treatment. After the vole population has been reduced, an application of anticoagulant bait will assist in reducing the number of voles re-populating the planting during winter months.

Anticoagulant baits , such as those containing chlorophacinone or diphacinone as active ingredients, are more toxic to voles than to other birds and mammals. These baits have a lower percentage active ingredient (0.005%) and require multiple feeding events by voles to be effective. Risk to non-target wildlife is minimal with these products when they are use according to label directions. These products may be broadcast or hand applied. For hand applications, place small quantities of bait in runways and cover with roofing shingle *(right)*. For broadcast applications, apply material with mechanical spreader to vegetative cover, avoiding application to bare ground. A second application is recommended 20-30 days after the initial application. As always, read and follow all label directions whenever apply rodenticides or other pesticide products. *(Roofing shingle cover over baited surface runway. Photo courtesy M. Fargione.)*

References:

1. Burrows, C. L., MacConnell, C. B., Murray, T. A., and Schlamp, K.K. 2010. Integrated Pest Management for Blueberries - A Guide to Sampling and Decision Making for Key Blueberry Pests in Northwest Washington. http://whatcom.wsu.edu/ag/comhort/nooksack/ipmweb/blue/voles.html.
2. O'Brien, J.M. 1994. Voles. in: Prevention and Control of Wildlife Damage Handbook, Hygnstrom, S.E., Timm, R. M., and Larson, G. E. (eds.). http://icwdm.org/handbook/rodents/ro_b177.pdf.
3. Pierce, R. A. II. 2003. Controlling Voles in Horticulture Plantings and Orchards in Missouri. University of Missouri- Columbia Agricultural Guide G9445. http://extension.missouri.edu/explorepdf/agguides/wildlife/g09445.pdf.
4. Tobin, M.E. and Richmond, M.E. 1988. Meadow Vole and Pine Vole. NYS IPM Tree Fruit Fact Sheet 102GFSTF-M1. http://www.nysipm.cornell.edu/factsheets/treefruit/pests/vole/vole.asp.
5. Tobin, M.E. and Richmond, M.E. 1987. Bait Stations for Controlling Voles in Apple Orchards. Third Eastern Wildlife Damage Control Conference. http://digitalcommons.unl.edu/ewdcc3/61/.

Irrigation of Specialty Crops

Plant Water Relations and Cropping Efficiency

Penn State Extension In-Depth Fruit School

Monday, December 20, 2010, 8:30 a.m. - 3:30 p.m.

Penn State Fruit Research and Extension Center (FREC)
290 University Dr., Biglerville, PA
Space Limited—Please Register Early!

Morning Session

8:30—Registration
9:00—Introduction to Workshop, Dr. Jim Schupp
9:15—Meeting Water Challenges in a Changing Climate, Dr. Rob Crassweller
9:45—A Quick Course on Plant Water Relations, Dr. Mike Glenn
10:30—Break/Visit Irrigation Exhibits
10:45—Innovations in Irrigation Scheduling, Dr. Mike Glenn
11:15—Energy Efficiency in Irrigation Systems, Dr. Katie Ellis
11:45—Lunch

PENNSTATE

Special Guest Speakers:

- D. Michael Glenn, USDA-ARS Appalachian Fruit Research Station Director/Soil Scientist
- Michael Orzolek, Penn State Professor of Vegetable Crops

Rotating Concurrent Sessions

12:45—3:30 p.m.
Economics—Does Irrigation Pay?—L. Kime, J. Remcheck
Drip Irrigation Maintenance—J. Schupp, T. Saluda, F. Showers
Irrigation for Annual Crops/Filtering Water from Farm Ponds—M. Orzolek

Directions to FREC: From US Rt 15 take PA Rt 234 toward Heidlersburg. Follow PA Rt 234 for 6.6 miles. Turn right onto University Dr.

Registration Form for Irrigation Workshop

Registration Deadline: December 8, 2010

Name_____ Business_____

List additional persons attending _____

Address_____

City_____ State_____ Zip_____

Daytime Phone _____ Evening Phone_____

E-mail_____

Registration Fee: $50 per person

Total Enclosed: $50 x #_____ = $_____ **Please make checks payable to: PSCE Program Fund**

Please return registration form and payment to:
Penn State Cooperative Extension—Adams County
670 Old Harrisburg Rd, Ste 204, Gettysburg, PA 17325 Phone: 717-334-6271; Fax: 717-334-0166

To charge your Visa or MasterCard, fill in the information below and sign the second to last line. (Please make sure your credit card billing address and address above match.)

_____
Account Number Exp. Date

_____
Signature

_____
Cardholder Name

grow IRRIGATION EFFICIENCY IN SPECIALTY CROPS

Penn State encourages persons with disabilities to participate in its programs and activities. If you anticipate needing special accommodations or have questions about the physical access provided, please contact Adams County Extension, 717-334-6271 in advance of your participation or visit.