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University of Kentucky – College of Agriculture

Lexington KY

Kentucky Fruit Facts

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Fruit Facts can be found on the web at: http://www.ca.uky.edu/fruitf

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Fruit Crop News

John Strang, Extension Horticulturist

Summer has arrived and most of the fruit crops that were looking a little chlorotic from the excessive soil moisture have greened up. The heat has pulled the moisture out of the soil and many of us are starting to look favorably on a decent rain storm.

The earliest maturing apples are being harvested and peach and blackberry harvests are in full swing. Fruit quality looks good. Birds seem to be particularly pesky this year in our blackberry plots in Lexington.

Apple growers should be watching for European red and two spot mites on their trees as well as maintaining control for sooty blotch, fly speck and summer rots.

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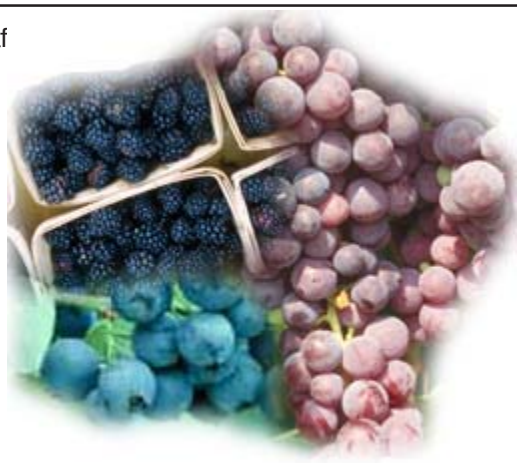

Japanese beetles are showing up in great numbers in Western Kentucky and are a little later than normal.

Grape growers that are producing fruit this season should be spraying to control black rot, downy mildew, powdery mildew, and bunch rot as well as watching and controlling Japanese beetles, leafhoppers, and grape berry moth. We are seeing a number of growers that are having problems with anthracnose, powdery mildew and black rot on their fruit. If 5% of the vines showed evidence of grape root borer last season a spray of Losrban 4E applied as a band to the soil surface beneath the vines is warranted. The spray should not contact the fruit or foliage and the pre-harvest restriction is 35 days. This is also the time to do some leaf pulling around grape clusters on the shady side of the row if the foliage is particularly thick.

The excessive rains of this spring have put our preemergence herbicides to the test and many fruit plantings are showing weed and grass growth. Some preemergence materials can still be applied. Growers using glyphosate for post-emergence weed control should be careful not to let this spray contact root sprouts or foliage as some of this can be taken down to the roots.

Upcoming Meetings

Jul. 15 Commercial Apple IPM Meeting, Princeton Research and Education Center, Princeton, KY. Contact Joe Masabni 270/365-7541 ext. 247. See program and directions in the June Fruit Facts Newsletter.

Jul. 17 Small Fruit (Blackberries and Blueberries) Workshop, Robinson Station, Jackson, KY. 10:00 a.m. - 3:00 p.m. Contact Terry Jones 606/666-2438 ext. 234 to preregister. See program below.

Jul. 22 Fruit and Vegetable Twilight Tour, Horticultural Research Farm, Lexington, KY. Tour fruit, vegetable and ornamental research plots. 6:00 p.m. until dark. Contact John Strang 859-257-5685.

Oct. 18 Kentucky Vineyard Society Fall Meeting, Tentative meeting date.

Oct. 25 Kentucky Nut Growers Association Fall Meeting, Scott County Extension Office, Georgetown, KY. 9:30 a.m.- 3:00 p.m. Contact Hugh Ligon 270/827-9044.

Nov. 15 New Crops Opportunity Conference, Sheraton Suites Hotel, Lexington. 9:00 a.m.- 5:00 p.m. Contact Christy Cassady 859/257-2859.

Jan. 5-6, 2004 Kentucky Annual Fruit and Vegetable Conference and Trade Show, Holiday Inn North, Lexington, KY. Contact John Strang 859/257-5685.

Pesticide Calculations – Still a Challenge for Grape Growers

By Joseph Masabni

Once the grape planting has been established, pest control becomes a primary concern. The problem is deciding how to prepare the correct spray mixture in order to apply the right amount to control the problem and not apply too much and injure the plant, keeping in mind that none of the pesticides are inexpensive. For tree fruits, most labels list the recommended rates both as amount / acre and amount / 100 gal. of water. However, for small fruits such as grapes, most labels still list the recommended rates only as the amount / acre. This article deals with pesticide calculations specifically for small fruit growers who have difficulty converting the amount / acre to amount / gallon of water. The following example is intended to help explain the subject of pesticide calculations.

A grape grower has about 1 acre of grapes that were planted in 2001. His vineyard is planted with rows 10 ft apart with vines 6 ft apart within rows. The grower recently finished pruning the vines and, as expected, the vines are quite open for pesticide penetration. At the time the grower contacted me, the vines had about 4-6” of new growth, and the vine foliage cover was about 1 ft in width.

He has a pull-behind sprayer with vertical booms and 4 nozzles on each boom. The grower determined that he needed 25 gal of water to cover his 1 acre of grapes to the point of runoff for his early season sprays. He wants to know whether his calculations for the following pesticides are correct: Mancozeb 6 tbsp / 25 gal, Sevin 40 tbsp / 25 gal, and Abound 3.4 fl.oz. / 25 gal.

The current sprayer will not have the same cover and penetration as an air-blast sprayer. Therefore, a grower has to spray to the point of runoff to assure full vine coverage. How much water should be used to achieve full coverage?

In general, it is estimated that about 1 gal of water will cover a spray volume of 1000 cu. ft. Logically, by determining the volume that the vines occupy, we can determine how much water to use. Keep in mind that the spray volume will increase as the vines grow and as the leaves occupy more space. In other words, a grower might use 25 gal for his first spray when the vines are just beginning growth, but use 50 gal for his last spray when the vines are at full foliage.

The 2003 Midwest Commercial Small Fruit and Grape Spray Guide (ID-94) includes a detailed discussion on spray volume calculation on page “iv”. The following is an example of

how this calculation is performed. For the vineyard design of this example, the tree-row volume (TRV) calculations are as follows:

TRV = (Plant Height) X (cross-row width) X (number of feet of row/acre)
TRV = (6 ft) X (1 ft) X (43,560 sq. ft per acre / 10 ft) = 26,136 cu.ft. per acre

To calculate the number of gallons needed per acre, we need the vine density factor. The density factor ranges from 0.7 – 1 gal. of water per 1000 cu. ft. of TRV. A density factor of 0.7 is selected for plants that are extremely open with light visible through the entire canopy, such as observed early in the season, as is in this example. On the other hand, a density factor of 1 is used for unpruned vines, extremely dense vines, or vines towards the end of the season with no light visible anywhere through the canopy. More information on density factors can be found on page iii in ID-94.

The number of gallons of water per acre needed for a complete coverage of these vines is:

Gal. of water = (TRV) X (density factor) = (26,136 cu.ft. per acre) X (0.7 gal. of water / 1000 cu.ft.) = 18.29 gal. / acre.

According to the calculations above, the grower needs only 18.29 gal of water per acre. This volume of water is what a grower using an air-blast sprayer would need per acre of spray. It is important to remember that the tree row volume calculations are beneficial to growers using air-blast sprayers. However, when spraying to runoff, this calculation is useful to check on one's practice, but can become complicated for a new grower. As mentioned earlier, the grower determined that 25 gal. of water will cover his 1 acre to the point of runoff. The actual volume of 25 gal. is close to the calculated volume of 18 gal. Now that we know that 25 gal of water are adequate for spraying his grapes early in the season, we can now determine the amount of pesticides needed. It is generally accepted that 100 gal/acre is the standard volume of water needed per acre for complete coverage to the point of runoff. Thus, the recommended label rates in amount of product per acre are usually implied to the equivalent of 100 gal/acre.

For Mancozeb, the label rate of 2 lb/acre at 100 gal/acre rate is equivalent to 0.5 lb or 40 tbsp of Mancozeb for 25 gal. For Sevin, the label rate of 2.5 lb/acre at100 gal/acre is equivalent to 41 tbsp / 25 gal. This is close to what the grower actually used. For Abound, the label rate of 11 fl.oz./acre at 100 gal./acre is equivalent to 2.75 fl.oz. / 25 gal.

Typically Mancozeb is applied alone or in combination with a fungicide with kick-back activity such as Nova and with an insecticide such as Sevin if an insecticide is needed. Abound is not mixed with other fungicides, but may be mixed with an insecticide.

Pesticide calculations remain a difficult task for new and experienced growers alike. With experience, you will know how much water you need at various stages of growth or times of the year, and can adjust the amount of pesticides accordingly. Careful planning of what you spray and regular sprayer calibration will ensure you are using the labeled rate of any pesticide and keeping spray costs down.

Gallmaker and Girdler Apparent in Some Vineyards

by Ric Bessin

Both the damage caused by grape cane gallmaker and grape cane girdler have appeared in some vineyards. While the damage is very noticeable, neither will significantly harm grape yields on established vines.

The grape cane girdler prunes the tips of some vines and causes them to wilt. Girdles are usually beyond the fruit clusters and do not cause significant yield loss. Look for broken off, pencil-sized canes with a grub in the pith of each broken off section, or wilted canes with a series of punctures. Pruning canes a few inches below the lower girdled area is usually sufficient control for this pest.

The grape cane gallmaker produces noticeable red galls on new shoot growth just above nodes. While these are commonly found in vineyards, the majority of the galls are beyond

the fruit clusters and usually cause no serious yield loss. Canes with galls are capable of producing a crop the following year.

General Information About Fungicide Effectiveness

By Chris Smigell, Extension Associate

Numerous factors affect how well a fungicide works - spray equipment, the amount of the targeted pest on the plants, timing of the spray relative to when infections took place, the weather during and after spraying, and the mode of action of each fungicide, and others. Let's just focus on the last two items.

WEATHER

Sunlight can degrade some fungicides, but this effect takes several days, and is generally not a grower concern. Rainfall can wash off some fungicides. As a general rule, **rain will wash off any fungicide if it has not had two hours to dry after application.** The table below gives directions on when a fungicide needs to be reapplied.

MODE OF ACTION

Protectant fungicides - mostly remain on the leaf and shoot surfaces. For protectant types to work, they must contact fungus spores before they have a chance to germinate and infect plant tissue. Thus, protectants need to be in place on plant tissue, **including new growth,** before moisture and fungus spores arrive, and infections get started.

Systemic fungicides - are more readily able to pass into plant tissues, and can then move around slightly, or even be translocated to distant plant parts. These stop existing infections, where the fungus is already moving inside plant tissue. Some of these infections may have occurred as many as four days previously, but may still be stopped by certain fungicides. This is what we refer to as the **kickback activity** of a fungicide. Some systemic fungicides also have protectant ability.

Not much is known about how well kickback activity works in grape vines, for different fungicides, and different diseases. However, this table will give you some information to work with in deciding whether to spray.

Guidelines for Fungicide Reapplication after Rainfall*

Rainfall Total**	Action
Less than 1 inch	Keep normal spray schedule
1-2 inches	Reduce days left to next scheduled spray by one-half
More than 2 inches	Reapply spray now
Abound, Flint, Sovran, Nova, Procure, Rubiga	Reapplications not necessary

*Source: J.W. Travis, Penn State University Newsletter, vol. 21, no.7.

**Rain amount may occur in one event, or be the total of several rain events on different days

Fungicide Activity and Days of Effectiveness

Fungicide	KickbackActivity (days)	Systemic?	Approximate days of effectiveness
Benlate		Yes	10-14
Captan	0 for black rot	No	14*
Flint, Abound, Sovran		Yes	7
Mancozeb	0 for black rot	No	14*
Nova	3-4 for black rot		7
Procure, Rubigan	2-3 for black rot	Yes	7
Ridomil	2-3 for d. mildew	yes	7

*Any plant tissue that has been produced since the last application will not be protected against infection.

Anthracnose Disease Can be Destructive to Grapes

John Hartman, U.K. Extension Plant Pathologist

Anthracnose disease reduces yields in some Kentucky vineyards. This disease, caused by the fungus *Elsinoe ampelina*, is favored by warm, humid, and rainy weather, however it was observed in spring when the weather was still fairly cool. Anthracnose reduces the quality and quantity of fruit and weakens the vine. Once the disease is established in a vineyard, it can be very destructive. European and hybrid grapes are thought to be more susceptible than American grapes and grape varieties such as 'Vidal' and 'Reliance' are known to be highly susceptible to anthracnose.

Symptoms can appear on fruit, fruit pedicels and peduncles (fruit stems), leaves, leaf petioles, tendrils, and young shoots, but lesions on shoots and berries are most common and distinctive. Symptoms on these plant parts are described here:

1. Young, succulent shoots - numerous small, circular, reddish spots which enlarge, become sunken, and develop gray centers with dark, slightly raised margins. When lesions coalesce, shoots become blighted. Infected areas may crack, causing shoots to be brittle.
2. Hail injury vs. anthracnose on shoots - hail injury appears only on one side of the shoot whereas anthracnose is more generally distributed.
3. Leaf petiole and fruit pedicel and peduncle symptoms - similar to shoot symptoms.
4. Leaf spots - circular with gray centers and dark margins. The center of the lesion often drops out, creating a shot-hole appearance. New leaves are more susceptible to infection than older leaves and when veins of young leaves are affected, the lesions prevent normal leaf development. Such leaves may become malformed or if lesions are numerous, leaves may become blighted.
5. Berry symptoms - small, reddish circular spots which enlarge to slightly sunken spots about 1/4 inch diameter. The spots have whitish gray centers with a reddish-brown to black margin. The fruit symptom resembles a bird's eye so the disease is sometimes called bird's eye rot. During wet weather, a pink mass of fungal spores emerge from the lesions. Fruit lesions may extend into the pulp and cause the fruit to crack.

How the disease develops. During wet weather in early spring, sclerotia (overwintering fungal survival structures) on infected shoots germinate to produce abundant spores (conidia). Conidia, the most important source of primary inoculum are spread by splashing rain and wind to new growing tissues. In addition, ascospores may also form on diseased canes and berries left on the ground or in the trellis from the previous year. In spring, when free moisture from rain or dew is present, conidia germinate and infect succulent tissue. The warmer the temperature, the faster disease develops, so spring rains with warm temperatures are ideal for disease development and spread. Infections may occur from before flowering to véraison. Once the disease is established, acervuli form and produce secondary inoculum on diseased areas. Thus, the disease continues to spread throughout the growing season.

Disease management.

6. To reduce primary inoculum, prune out and destroy (remove from the vineyard) diseased plant parts such as infected shoots, cluster stems, and berries during the dormant season.
7. Eliminate wild grapes near the vineyard. Being mainly rain splashed, the causal fungus spreads mostly from very local sources such as nearby fencerows and woodlots adjacent to the vineyard.
8. Grow less susceptible varieties such as American grapes like 'Concord' and 'Niagara.'
9. Use selective leaf removal, open training systems, and shoot positioning to open up the canopy to improve air circulation and reduce drying time of susceptible grape tissue.

10. Use fungicides to prevent infections starting with a dormant application of liquid lime sulfur, followed by applications of fungicides during the growing season.

For suggestions of fungicides to use and timing, commercial growers should consult U.K. Cooperative Extension bulletin ID-94, Kentucky Commercial Small Fruit and Grape Spray Guide.

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