Southeastern Regional Peach Newsletter

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In this issue…

Editor's Note

Merry Christmas! I will keep the Editor's note short this time, as I still need to buy a few gifts yet, to include my wife's, and I bet you are busy as well.

As we close out 2005, let me say thanks again to all the contributors to this newsletter. Without a regional effort by producers, agents, researchers, specialists and industry personnel, we would certainly not be doing as well as we are at this point in time. This newsletter is just another example of the spirit of cooperation which I often observe when working with this commodity, so thanks again to all who participate and utilize this online resource.

This newsletter includes weed control information for the late fall and winter months, an update on a new irrigation web tool for peach, information on new regs for South Carolina, water pH and pesticide applications, sites for economic data on peaches, and an update on the EPA reregistration process for copper.

Enjoy!

Phillip M. Brannen
Editor

Focal Points – New Information for the Peach Industry

Coppers are under scrutiny by EPA.
Needless to say, peach production in the Southeast requires application of copper materials, particularly on the varieties which generally have issues with bacterial spot.

Currently, the copper reregistration process is taking place with EPA. Therefore, a task force has been established to help EPA with the review, and **all states are being asked to participate by submitting information on copper usage by commodity; it is an imperative that all southeastern peach-producing states weigh in on this decision, as it is a major one for peach production in the Southeast.** The head of the Copper Task Force is Ron Landis of Landis International, which is basically a consulting company for the copper manufacturers (16 companies). Again, at this stage, the task force has been in an information gathering process for EPA (use patterns, number of uses, actual rates, etc.). The EPA will use this information to develop a preliminary risk assessment. In fact, they have already done so, and the Copper Task Force has seen the draft, but they cannot relay anything that is in the draft at this time. The "official" risk assessment will come out in February, and there will then be a 60-day comment period. The risk assessment will tell us which crops or uses are being targeted for reductions in use, etc. After the 60-day comment period, the EPA will start the process of negotiating risk mitigation methods, such as buffer strips from waterways, etc. I think any concerns can probably be mitigated to a point, but we will have to see the details. In the end, they will tell us the rates, timings, number of applications, etc. that we can have for peach.

The major concern for copper is water and aquatic impacts. Since copper is bound in the soil, we will have little aquatic impact unless there is spray drift into lakes and streams or unless we have severe erosion. In my discussions with EPA, they were very concerned about potential aerial application of copper, which we do not conduct, but they did not panic over airblast applications. As peach pathologists and producers, we just need to be aware of the process, and we need to participate fully in the process.

(click here for a copy of the initial letter from the Copper Sulfate Task Force)

(click here for a copy of a letter recently submitted to EPA from Georgia relative copper use on peach)

Weed Science Updates

Controlling winter annual broadleaf weeds

Wayne Mitchem
North Carolina State University

All of you are well aware of the relationship between winter annual broadleaf weeds and cat-facing insects. Entomologists have clearly documented the increased populations of cat-facing insects in orchards where winter annual broadleaf weeds are allowed to grow on the orchard floor.

Controlling winter annual broadleaf weeds is much easier than controlling summer annual weeds. The ideal approach is to use a preemergence herbicide in the herbicide strip in late fall and then follow up with a postemergence herbicide program in the row middles several weeks prior to peach tree bloom. The preemergence herbicide in the herbicide strip not only eliminates broadleaf weeds that are problematic from the cat-facing insect standpoint, but it also maintains a bare soil surface under the trees through bloom – allowing for maximum radiant heating in the spring.

Once winter annual broadleaf weeds are dealt with in the herbicide strip, they still have to be controlled in the row middle. In areas where a cool-season perennial grass sod is established, the long-time standard for the row middles has been 2,4-D amine. In addition to 2,4-D amine, growers also have clopyralid (Stinger or Clopyr) as another option. Clopyralid is not as broad spectrum as 2,4-D, but it is effective on certain weeds that 2,4-D amine tends to have difficulty controlling, like common groundsel, white clover, and curly dock. Clopyralid can be applied over the top of established grasses without concern for injury, and it can be tank mixed with 2,4-D amine.

In orchards where row middles are not planted in an established grass sod or a small grain cover crop, glyphosate has been the postemergence herbicide of choice for winter annual broadleaf weed control. Glyphosate is very good on chickweed and many other winter annual weeds, but it tends to be weak on cutleaf eveningprimrose (see Figure 1). A timely application of 2,4-D amine alone or with glyphosate will provide excellent cutleaf eveningprimrose control. The ideal size to control cutleaf eveningprimrose with 2,4-D amine is when it is 2-3” in diameter. Some growers have used paraquat in the row middles for winter annual broadleaf weed control. Although paraquat provides a quick burndown, winter annual broadleaf weeds are very capable of re-growing after application (see Figure 2), and therefore glyphosate or glyphosate + 2,4-D amine is a better option in orchards where row middles are planted in a small grain cover or perennial grass sod.

Figure 1. Cutleaf eveningprimrose.

Figure 2. Horseweed regrowth after treatment with paraquat.

Regulatory Update

New South Carolina pesticide regulations: who is affected?

Bob Bellinger
Clemson University

You may have heard that there are new pesticide regulations about to take effect in South Carolina. “How will they affect me as a grower?” you are likely to ask. The new South Carolina pesticide regulations are the “Rules and Regulations for the Enforcement of the South Carolina Pesticide Control Act” rewritten (August 2005). These new regulations will be enforced beginning January 2006.

Who is affected by the new regulations? Largely, the new regulations affect Commercial and Non-commercial pesticide applicators in South Carolina. Private Applicators – farmers, growers, producers – are really not directly affected by the changes in the regulations. One small change for Private Applicators is that the minimum age to obtain a license has been raised to 18. A provision for the Director of Regulatory Services to allow licensing for individuals younger than the minimum age in hardship situations on a case by case basis is retained in the new regulations.

The two major changes for Commercial and Non-commercial applicators are 1) mandatory certification in the Turf and Ornamentals, Aquatic (weeds), and Public Health (mosquitoes) pest control categories, and 2) the requirement for Commercial and Non-commercial applicators to keep records on ALL of their pesticide applications, not just Restricted Use Pesticides. There also there are some changes for dealers, but a very large part of the new regulations is directed at requirements and specifications for chemical treatments for termites and other wood-destroying organisms.

Effects of water pH on the stability of pesticides

Bob Bellinger
Clemson University

Vic Bethea (Clemson Extension) asked about some info on **pH and pesticides**. Clyde Gorsuch and Randy Griffin at one point had a hard copy item on this, but I could not locate it and it does not seem to have gotten onto the web. Here is a quick and dirty listing of links I screened for usefulness. There does not seem to be too much copy-catting in the first several items (below). Most of the links I provide below have lists of specific materials and how they fare (half-lives) under different water pHs. A couple of these also give help on how to test pH, adjust pH, and at least one gives info on other aspects of water quality and their effects on pesticides.

If you have any other info, links that you wish to share, etc. please send them to me and I will get them out. It may be useful for me to put these on our web site if folks think it is worth it.

So here are some refs on line that may be useful.

Effects of Water pH on the Stability of Pesticides
http://muextension.missouri.edu/explorepdf/agguides/pests/IPM1017.pdf

Effects of Water pH on the Stability of Pesticides
http://extension.usu.edu/files/agpubs/pesti14.pdf

About Pesticides: Enhancing Effectiveness
http://www.agf.gov.bc.ca/pesticides/a_7.htm

Water pH Effect on Pesticide Sprays
http://www.gov.pe.ca/af/agweb/index.php3?number=74103&lang=E

GREENHOUSE MANAGEMENT >EFFECTS OF PH ON PESTICIDES AND GROWTH REGULATORS
http://www.umass.edu/umext/floriculture/fact_sheets/greenhouse_management/ph_pesticides.htm

SPRAY SOLUTION pH
http://floriculture.osu.edu/archive/apr04/SpraySolutionPH.html

Insecticides*
http://floriculture.osu.edu/archive/apr04/InsecticidesPHZ.html

Fungicides*
http://floriculture.osu.edu/archive/apr04/FungicidesPHZ.html

Plant Growth Regulators*
http://floriculture.osu.edu/archive/apr04/PGRspHZ.html

Herbicides*
http://floriculture.osu.edu/archive/apr04/HerbicidesPHZ.html

TESTING THE WATERS
http://floriculture.osu.edu/archive/apr04/HerbicidesPHZ.html

Water Quality and Pesticide Performance
http://scarab.msu.montana.edu/extension/MT_PAT/Info/watereffects.htm 1. Acidity and Alkalinity, 2. Minerals Dissolved in Water, 3. Suspended Soil Particles or "Dirty Water"

and...

The Effect of Water pH on Insecticides
http://www.ag.ndsu.nodak.edu/aginfo/entomology/entupdates/ICG_05/e1143w5.htm

EFFECT OF WATER pH ON THE CHEMICAL STABILITY OF PESTICIDES
http://www.ag.unr.edu/wsj/Wayne/Water%20pH%20FS%2002-36.pdf

On the web: selected US and world economic reports that include stone fruits

Compiled by Bob Bellinger
Clemson University

Stone Fruit Situation and Outlook for Selected Countries (August 2005) (PDF)
http://www.fas.usda.gov/htp/Hort_Circular/2005/08-05/_08-03-05_%20Stone%20Fruit%20Situation%20and%20Outlook.pdf

The U.S. and World Situation: Stone Fruits
As a PowerPoint presentation-
http://www.fas.usda.gov/htp/Hort_Circular/2005/Charts%20Circluar/2005%20Stone%20Fruits.ppt

As a PDF-
http://www.fas.usda.gov/htp/Hort_Circular/2005/Charts%20Circluar/2005%20Stone%20Fruits.pdf

May 2005 FAS Guide to World Horticultural: U.S. Specialty Crops Trade Issues Edition (PDF)
http://www.fas.usda.gov/htp/Hort_Circular/2005/05-05/Trade%20Issues%20Circular%202005%20_Publication%20Version%20_.pdf

Stone Fruit (Apricots, Cherries, Nectarines, Peaches and Plums**).** Horticultural & Tropical Products Division, FAS, USDA. Reports, publications, more.
http://www.fas.usda.gov/htp/horticulture/stone_fruit.html

Includes **U.S. Stone Fruit Situation**. October 2005.
http://www.fas.usda.gov/htp/Commodity_Pages/Fruits/2005%20Stone%20Fruits.pdf

Horticulture Update

Peach irrigation web site update

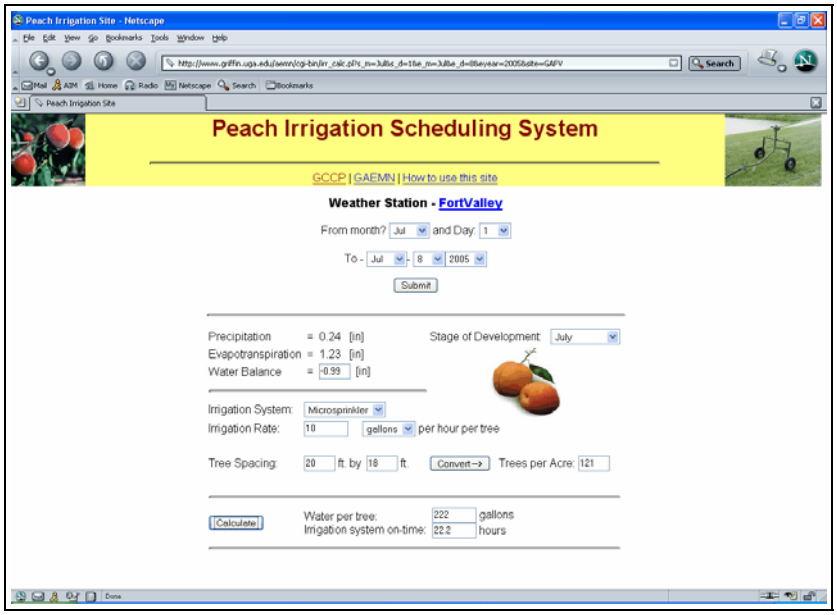
Mark Rieger
University of Georgia

Question - what important orchard task takes only about one minute per week?
Answer - calculating how much irrigation water your orchard needs.

Next season, we will roll out an improved version of a web site that calculates the amount of water your trees need given a few simple inputs, and about a minute of your time. Some of you may be familiar with the site already (pictured below).

The site utilizes UGA's network of 60^{+} weather stations scattered throughout the state. Every day, each of these stations calculates potential evapotranspiration, or PET, which tells you the potential amount of water used by a reference crop, like pasture grass. Reference crop PET is generally 0.25" per day in the mid summer, and less than 0.05" per day during this time of the year. Since all crops are different, PET is useful only if you know how much your crop uses *relative* to the reference crop. In fact, we have a good estimate of what this is for peach orchards thanks to recent research in California, and ongoing research at UGA. The improved version of the web site will use data from Ayars and coworkers at the USDA Water Management Research Lab in Parlier, California. They grew O'Henry trees in large containers mounted on high capacity scales. The container is placed in-ground, and it is surrounded by other trees just as it would be in an orchard setting. The daily weight loss of a container equals the amount of water lost through tree transpiration and soil evaporation. They found that peaches use about 20% of the reference crop PET at full bloom, gradually increasing to 106% during final swell as the canopy enlarges. These values are programmed into the new web site.

The weighing technique, called lysimetry, is also being used at the research farm near Athens, GA, to determine water use in young peach trees. We have found that 1-year-old trees use only about 1 gallon of water per day, even during the hottest part of the summer. Next season, we'll capture data from 2-year-old trees, and in 2007, 3-year-old trees, and so on. Combining our data with the California data should draw a complete picture of how much water peach trees use as they age, and help us refine the web site even further.



Give the site a try, and e-mail me with your comments (mrieger@uga.edu). Follow these steps, and see if it takes only a minute!

1. From the home page (www.griffin.uga.edu/aemn/peaches), select the weather station nearest you and enter the date of your last substantial irrigation or rainfall event, and hit the "submit" button. [By "substantial" I mean enough to fill the root zone with water].
2. The next screen returns the PET, rainfall, and water balance for the period, and has a few more fill in boxes. Note that if rain exceeds PET in the period you select, you don't need to irrigate, so ignore the output the site generates.
3. Select the "stage of development" from the pull down menu [now, it's month of the year, but the new site will use "full bloom", "shuck split", "pit hardening" and so forth].
4. Select the irrigation system from the pull down menu.
5. Enter your irrigation rate and the units (gal/hr or inch/hr).
6. Enter your tree spacing and hit "convert" to calculate trees/acre.
7. Hit the "calculate" button at the bottom to get irrigation amount needed per tree, and system on-time to supply that amount.

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Learning for Life

Because there are 15 separate compounds, incorporated by multiple manufacturers into a range of end-use products for use on essentially all crops and for direct application to aquatic environments, a comprehensive review of the labels was not made by the EPA. Application rates used in their risk assessment are based upon a review of representative labels for $CuSO_4$ and $Cu(OH)_2$ for agricultural crops. These representative labels indicate a wide range of use rates (0.3 to 32 lbs Cu/A for crops and 0.25 to 3.4 ppm dissolved copper for aquatic uses) with the highest rates on orchard crops. There is no guidance referencing the frequency of applications and total number of applications permitted on a yearly basis. The highest label rates located were used in the assessment, in accordance with EFED's standard assessment protocol. The highest application rates were significantly greater (in some cases almost twice) than that of the other labeled rates, and EFED also evaluated average application rates, as supplied by the Biological and Economic Analysis Division (BEAD). Four applications of Cu at 7 day intervals were assumed for terrestrial crops. Assessment of aquatic applications was based on the label recommended target concentrations and, similar to the agricultural uses some labels had significantly higher application rates than others.

The copper-containing pesticides are registered for every conceivable crop, turf, ornamentals, and direct water uses and the use of these compounds is not limited to certified applicators so they are available to homeowners. The Agency concluded that the application of copper products may occur anywhere within the United States and its territories. The COPPER SULFATE TASK FORCE provided the Agency with a spread sheet listing of every label of which we were aware, but the task was so daunting that EFED focused the assessment on what appears to be the highest use crops and highest use areas. EFED stated that revision of labels, and/or a comprehensive analysis of permitted and actual uses would greatly assist EFED in estimating environmental concentrations.

The EPA recognizes the benefits that the copper pesticides bring to the user community such as resistance management, bactericidal uses, low human toxicity and exemptions from the requirement for tolerances while affording cost/effective fungicidal and aquatic herbicidal activity.

It is the objective of the COPPER SULFATE TASK FORCE membership to work with the EPA and the USDA to successfully resolve the remaining risk issues. Consultation with these Agencies leads us to believe that the most effective ways to mitigate exceedences are to develop use information that accurately reflects the rates and timings actually being used in the field and develop a comprehensive benefits assessment to balance the perceived risks. Although it has not been stated as an Agency objective, it has been intimated that a "Master Label" for each of the specific compounds may be the most efficient way to accomplish the former. Therefore, as a first step, we are providing an excel table with which we seek your assistance. We will soon follow this with a request for benefits information.

COPPER SULFATE TASK FORCE
P.O. Box 5209 ■ Valdosta, GA 31603-5209 ■ TEL. 229/245-7021 ■ FAX 229/245-8435

Table 1 - Copper Compounds Addressed in This RED					
Common Name	**Other Names**	**Formula***	**Molecular weight***	**Percent Cu***	**PC Code**
Copper sulfate pentahydrate	copper sulfate	$CuSO_4 \cdot 5H_2O$	249.65	25.4	PC024401
Basic copper sulfate	copper sulfate, tribasic	$3Cu(OH)_2 \cdot CuSO_4$	468.29	54.2	PC008101
Copper hydroxide	none	$Cu(OH)_2$	81.56	77.9	PC023401
Cuprous oxide		Cu_2O	143.08	88.8	PC025601
Copper carbonate	copper carbonate, basic	$Cu(OH)_2\ CuCO_3$	221.12	57.5	PC022901
Copper ammonium complex	copper tetraamine	$Cu(NH_3)_4^{2+}$	131.58	48.3	PC022702
Copper ammonium carbonate complex	none	$CuNH_3(HCO_3)_2$	190.54	33.3	PC022703
Basic copper chloride	copper chloride, basic; copper oxychloride	$3\ Cu(OH)_2 \cdot CuC1_2$	427.133	59.5	PC008001
Copper oxychloride	basic cupric chloride	$Cu_2C1(OH)_3$	213.57	59.5	PC023501
Copper oxychloride sulfate	none	$3Cu(OH)_2 \cdot CuC1_2 + 3Cu(OH)_2 \cdot CuSO_4$	879.43	57.8	PC023503
Copper salts of fatty and rosin acids	Cu Soap	Mixture of compounds	NA	NA	PC023104
Copper ethylenediamine	Cu-EDA	$C_2H_8N_2Cu$	123.54	51.43	PC024407
Copper triethanolamine complex	Cu-TEA	$C_6H_{15}O_3NCu^{+2}$	212.54	29.89	PC024403
Copper ethanolamine complex		$C_2H_7ONCu^{+2}$	124.54	51.01	PC024409
Copper octanoate	Cu Soap	$C_8H_{16}O_2Cu$	207.54	30.61	PC023306

*approximate formula, may vary slightly depending on manufacturing processes, molecular weight and percent copper calculated based on formula