Southeastern Regional Peach Newsletter

Volume 4, No. 3 September 2004

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Editors Note

The 2004 peach season is over, and it is again time to plan for yet another season. This was generally a high production year, but prices were not as desired, and that is probably an understatement. This is the first year that I have personally worked in the peach arena in which peaches were allowed to fall to the ground in some locations – due to market conditions. Unlike 2003, disease control was generally excellent, due to drier early-season conditions, but this may have added to the problem of an excess of fruit in the market. I had the pleasure of having an undergraduate business school major work with me over the summer; the 2004 season allowed him a first-hand glimpse of "supply and demand" in the marketplace – making an impression like no classroom could ever make. If "a picture is worth a thousand words," then the photos below may well sum up the season – a sad sight indeed. All of us are hoping for better in the 2005 marketplace.

This issue contains information on weed control, information on odd symptoms of a rare disease and nutrient issues observed in 2004, as well as weed control tips for the fall and an update on carcinogenic chemicals.

Phillip M. Brannen
Editor

Focal Points – New Information for the Peach Industry

Julyprince, Scarletprince, and RubyQueen released. Two new peach varieties are now available. The Agricultural Research Service, U.S. Department of Agriculture, has recently announced the release of **Julyprince** peach. Julyprince, previously tested as BY93P3427, is being released to provide an attractive, very firm peach, which ripens slightly after Redglobe. Julyprince is well-adapted to the Southeastern climate. It has performed well in South Carolina and Georgia, and it is suggested for trial wherever Redglobe is grown. Also, USDA-ARS has announced the release of the plum cultivar **Ruby Queen**, a high-quality, late-ripening fruit that is well-adapted to the humid climate of the southeastern United States. Ruby Queen has performed well in central Georgia, New Jersey (cooperator Jerry Frecon, Rutgers) and New York (cooperators Bob Andersen and Jay Freer, Cornell), and it is recommended for trial in areas with similar climates. **Scarletprince** peach is being released to provide an attractive, very firm peach which ripens with Redglobe; it is well adapted for the Southeastern climate. Additional information can be found in the following PDF files (**JULYPRINCE**, **RUBYQUEEN, and SCARLETPRINCE**).

Regulatory Update

New EPA List of Carcinogenic Chemicals

Bob Bellinger,
Clemson University

A number of years ago the EPA had on it's website a listing of chemicals and their rating for potential human carcinogenicity. That list was removed (also several years ago), and it was subsequently said to be available only as paper copy. The EPA revised it's human carcinogenicity classification scheme and produced a fourth iteration of a categorization system for ranking the human carcinogenic potential of chemicals (1999). In July 2004, EPA once again produced a public listing of pesticide active ingredients with their rating in terms of their perceived ability to cause cancer in humans. It is now available as a PDF on the web (URL below).

EPA's 22 page document briefly discusses the history of EPA's efforts in determining potential carcinogenicity of pesticides and explains it's "new" (1999) classification system. The document provides it's older systems (1976; 1986 - this one used letters and had five main categories; 1996 - this one had only three categories) with descriptors as a reference, but it notes that none are comparable. In it's newer (1999) system, pesticide active ingredients, including those that are registered, submitted for registration, reregistration, or those in special review, are all classified (see the document for explanation of each category). The new categories are:

- Not likely to be carcinogenic to humans
- Data are inadequate for an assessment of human carcinogenic potential
- Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential

- Likely to be carcinogenic to humans
- Carcinogenic to humans

The first three pages of this document are a brief explanation / background of EPA's efforts at determining carcinogenicity in pesticides. Pages 4-6 are descriptors and definitions of several classification systems EPA has used in reviewing pesticides. The list encompasses pages 7-21 of the document. Page 22 contains two footnotes.

What makes this listing very complicated and somewhat frustrating is that the EPA uses several of it's systems - that is, the new (1999) system AND the 1986 and 1996 systems - in this one list. EPA leaves us to view the list, noting (page 3) that the various systems are not comparable and that "The designation for any substance must be considered in the context of the system in which it was reviewed."

To help with the list,
- column one is the chemical name of the pesticide active ingredient [ref: http://www.epa.gov/pesticides/regulating/registering/index.htm].

- The second column is it's CAS No. This is a numerical identifier for the chemical using the CAS chemical indentification system [ref: http://www.cas.org/EO/regsys.html].

- The third column, "PC Code" is the EPA Pesticide Chemical Code, their own substance identifier system [ref: http://www.epa.gov/opppmsd1/foia/reviews/clearedPCcode01.htm]

- Column four is the 'Cancer Classification', again, using multiple EPA classification schemes.

- The last (fifth), column is the EPA report that determined the carcinogenicity of the substance. OPP is the EPA Office of Pesticide Programs.

- Two footnotes help with what group reviewed the chemicals and with acronyms in the list.

EPA notes that it intends to keep the list updated.

Chemicals Evaluated for Carcinogenic Potential
http://www.pestmanagement.rutgers.edu/NJinPAS/postings/EPAcancerevalchem704.pdf

Additional sites of interest:
Clemson University Pesticide Information Program
http://entweb.clemson.edu/pesticid/index.htm

South Carolina Agromedicine Program (MUSC)
http://www.musc.edu/oem/ahome.html

EPA Pesticides Health & Safety
http://www.epa.gov/pesticides/health/index.htm

Weed Science Update

Fall Weed Management

Wayne Mitchem,
North Carolina State University

Pre-emergence herbicide program. I know this season is complete and it may be hard to start thinking about next season, but it is time to start preparing the orchard floor for next year. October through November is the optimum time to apply a fall pre-emergence (PRE) herbicide for winter annual weed control in the herbicide strip. The fall PRE herbicide will maintain a clean herbicide strip through bloom, allowing for maximum radiant heat benefit. Additionally, that portion of the orchard floor is free of winter annual broadleaf weeds that are hosts to cat-facing insects. Only the drive middles would require treatment with a post-emergence herbicide (prior to bloom) for winter annual broadleaf weed control as a means of reducing cat-facing insect pressure. Karmex or simazine are economical and effective choices for a fall PRE herbicide.

Cutleaf Eveningprimrose

Cutleaf eveningprimrose is a common weed in peach orchards across the Southeast. It is also one that is not controlled with glyphosate. Paraquat will control only seedling cutleaf eveningprimrose. Simazine, when applied in the fall, will provide residual cutleaf eveningprimrose control. A December or early January application of 2,4-D amine (once trees are dormant) will control cutleaf eveningprimrose in the rosette stage (2-4" diameter).

Figure 1. Seedling cutleaf eveningprimrose.

Figure 2. Cutleaf eveningprimrose in the rosette stage.

Chateau Status

The Chateau label for non-bearing stone fruit orchards is not yet approved. It is my understanding that the label is proceeding and is in the comment phase at the EPA. Once the comment phase ends, the label is expected. It is the expectation of the company that Chateau will be available for use in newly planted peach orchards next year. When the label is granted, I will make that information available.

Plant Pathology Updates

Red spots on peach: scale or red spot disorder?

Guido Schnabel
Clemson University

Desmond Layne
Clemson University

If you have ever seen red spots on peaches in SC, the usual culprit is scale. The scale insect sucks sap from the fruit (and growing shoots), causing red spots that often have a tiny white spot in the middle. At times, it may be possible to actually see the scale insect on the fruit when using a hand-lens. If there are symptoms on fruit, it usually indicates a high infestation that is accompanied by symptoms on adjacent shoots, including the presence of scales and perhaps signs of stress including wilting and premature leaf drop. If two dormant oil applications are made the previous winter, scale injury to fruit is unlikely.

A few growers in Anderson and Saluda counties (South Carolina) had red spots on peach fruit this year (Figure 3), despite dormant applications of superior oil. At one site, red spots occurred on Calred peaches that were not typical of scale injury. Some differences included the fact that spots were smaller (1-3 mm), and they did not have a white center. The symptoms first appeared as very small red spots (1 mm or less) on green fruit – before the yellow background or red blush color developed. As peaches grew, ripened, and developed their normal red blush, the spots largely disappeared because almost the entire surface of the peach became red (Calred is an almost solid red variety when fully ripe). The red spots on these fruit were not typical of either bacterial spot or scab. There was no evidence of any skin damage associated with the spots, nor was there any evidence of damage below the skin. In addition, there was no evidence of scale damage or stress to the shoots of the affected trees. The disorder only appeared on late-ripening varieties, and it was also observed on Cresthaven, Georgia Bell, and Summer Pearl.

The spots were most likely what we call a Red Spot Disorder. The disorder was first reported in the early 1990's by Drs. Zehr and Miller, Clemson University, but research did not come to any firm conclusion as to what caused the spot development. Some evidence suggested that the fungal pathogen Alternaria may be associated with the disease. Applications of fungicides helped to reduce the disorder incidence significantly in a 1995 spray test, supporting the idea that it may be a pathological problem. The experiment indicated that two to three applications of Ziram 76W at 2 lb per acre reduced red spot incidence from 47% to only 4%. The sprays were applied three times at 2-week intervals beginning three weeks after pit hardening (late May to mid June). This experiment was conducted in a commercial peach orchard in Orangeburg, SC.

In summary, red spots on peaches may not always be associated with scale damage. If the red spots are only a few millimeters in diameter and lack a white center, you probably are dealing with the Red Spot Disorder. The good news is that a couple of Ziram applications in June will likely take care of the problem.

Figure 3. Red spot disorder symptoms on peach observed in South Carolina in 2004.

Low pH and Calcium Deficiency of Peach

Phil Brannen
University of Georgia

The "school of hard knocks" is often a very good teacher, but it hurts. I recently had the pleasure of establishing a new pathology block peach orchard through the help of the Georgia peach growers (finances) and the UGA Horticulture Farm employees (sweat, tears, and moral support). The orchard is actually developing very well at this time, but we have had one major rough spot along the way.

The orchard was planted the first of February, 2004 (O'Henry on Guardian rootstock). Previously, soil tests and nematode tests had been taken from several locations in the orchard site. The pH was consistently 6.2, so pH was not an issue – no liming required. Nematode samples indicated that there were damaging nematodes present, so we "zapped" them with Telone II. Weed control was near perfect, fertilizer was applied according to soil tests recommendations, irrigation was installed, proper pruning was conducted, and we were on our way to a beautiful research block. By the first of July, the orchard was looking absolutely great. With pride befitting the fall of man, I determined that peach production was

relatively simple – if you only followed the directions on the box. Enter stage left the "fall" which comes after the "pride."

Around the last of July, we started to notice that some trees were showing odd symptoms. Symptoms included cupped, bronzed leaves and extreme stunting. Roughly 1/10 of the trees were showing these symptoms, and there was no pattern to the spread of the symptoms. Initially, I thought this could be related to root rot issues, but we had applied Ridomil Gold recently to the plants, and there was no association with low areas in the orchard site. Having sacrificed one tree with severe symptoms, we observed a very healthy root system, but feeder roots were not prevalent.

As a young county agent in Alabama, I had learned the "magic" of a soil test, in that a soil test can often make sense out of otherwise baffling situations. In this case, I took soil samples from underneath symptomatic trees and nonsymtomatic trees. I also collected leaf/petioles for tissue analysis. As it turns out, these analyses allowed us to understand that these symptoms were related to calcium deficiency – a result of very low soil pH of ~5.2. Keep in mind that the pH of the soil had been 6.2 prior to planting. What went wrong?

I suspect there are at least of couple of reasons why we may have observed this serious shift in soil pH.

(1) Peaches perform best when placed in soil with a pH of 6-6.5. This pH should be established to a depth of 16 inches. Soil tests should be performed for soil in the top 8 inches of soil, as well as the depth from 8-16 inches. In our case, soil samples were not taken from this lower depth; land preparation may have moved low pH soil into the upper profile. Without regard, take soil samples from upper and lower profiles. In looking over various sources of information, this is often either not indicated, or it is somewhat ambiguous.
(2) Some fertilizers will acidify the soil, so this should be taken into consideration when selecting fertilizers. Sulfur also will acidify the soil, so fungicide applications with sulfur will also radically drop the pH.

Bottom line – proper pH is essential to the uptake of nutrients! It is difficult to undo that which is already done; once a tree is in the ground, it is not likely that you will substantially change the pH of the profile at the 8-16 inch depth with additional liming. Prior to land preparation, taking soil samples both from the upper "plow" layer and the subsoil layer is essential for peach production. Also, taking soil samples on a regular basis after planting is also an excellent idea.

Reference: Lockwood, D.W., Ferree, M.E, and Myers, S.C. Nutrition section of the Peach Production Handbook http://www.ent.uga.edu/Peach/peach_handbook/hbk.htm.

Figure 4. Panoramic view of new pathology block at the University of Georgia Horticulture Research Facility. Note the smaller tree (arrow), which is showing stunted growth associated with low pH and subsequent nutrient deficiencies, of which calcium is primary. No pattern was observed.

Figure 5. The tree on the left is showing severe calcium deficiency symptoms, while the tree on the right remains very healthy by all visual standards. The pH of the soil underneath both trees is ~5.2, which is surprising in light of the vastly different visual symptoms. However, numerous trees were starting to show mild symptoms.

Figure 6. Symptoms of calcium deficiency. Symptoms included a bronzing discoloration of the leaves, as well as a defined upward curling of the leaf margins.

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Editor, Phillip M. Brannen
Horticulture Assistant Editor, Kathy Taylor
Entomology Assistant Editor, Dan Horton
Weed Science Assistant Editor, Wayne Mitchem

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