Southeastern Regional Peach Newsletter

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Editors Note

In general, we are having enough rain throughout the southeast this year, which as always, is our blessing and our curse in the peach industry. The crop continues to look pretty good, and we can be thankful for that.

This quarter's newsletter addresses a couple of diseases which are somewhat unique to specific areas of the Southeast, Phomopsis and rust. In addition, we make additional comments on bacterial spot and control issues.

Phillip M. Brannen
Editor

Focal Points – New Information for the Peach Industry

❋ **Stinger™ herbicide registered for post-emergence broadleaf control.** Wayne Mitchem (NC State) reports that Stinger herbicide was recently approved for use in stone fruit for **post-emergence** broadleaf weed control. The use rate is 1/3 to 2/3 pt/Acre and the pre-harvest interval is 30 days. Stinger can be applied in a minimum application volume of 10 gallons per acre. It may also be tank mixed with other stone fruit herbicides.

Stinger controls the following weed species: Clover (both annual and perennial species), cocklebur, dandelion, curly dock, common groundsel, horseweed, jimsonweed, prickly lettuce, nightshade (various species), ragweed, sicklepod, thistle (various species), and vetch.

Stinger will be very useful in managing specific problem weeds like clover species, curly dock, and common groundsel that 2,4-D does not effectively control. Another weed it effectively controls is horseweed, which is poorly controlled by growers lacking hooded equipment necessary for glyphosate use in stone fruit plantings that depend heavily on paraquat.

If you would like to review the complete Stinger label or the supplemental stone fruit label visit the following web site (http://www.cdms.net/ldat/ld02P048.pdf).

Plant Pathology Updates

Earliest Bacterial Spot Symptoms

Dave Ritchie,
North Carolina State University

(Editors note: The following information was submitted by Dave Ritchie. This is mainly information which will be of value to researchers and extension personnel, but the "black tip" symptoms can be identified by producers early in the season. When identified, leaf and fruit infections are not far behind. The following is a description of these early symptoms and isolation techniques for the bacterium. This canker symptom was actually identified this spring, indicating the early state of the inoculum production in North Carolina. Inoculum was prevalent at even earlier dates in GA, SC, AL, FL and other lower latitudes).

This twig (Figure 1) was collected on 2 April, it was exhibiting wilting and a black-colored canker which extended downward from the terminal bud (blow this up to about 150%, and the canker should be more visible). This is what is described in the literature as the "black tip" symptom.

In the early season, the first symptom of bacteriosis is dieback from the terminal bud, especially viewed across the top of the trees. Other things also can cause dieback, so one needs to check cankers closely, as well as possibly culturing the bacteria.

Figure 1. Black tip symptoms on peach.

Results of isolation from the terminal bud and end of the twig are shown below (Figure 2) – essentially a pure culture of *X. arboricola* pv. *pruni* (obtained through use of SPA medium).

<u>SPA Medium Recipe</u>
100 ml of distilled water
2.0 g sucrose
0.50 g peptone
0.05 g dibasic potassium phosphate
0.025 g magnesium sulfate
1.5 g agar
prior to autoclaving adjust pH to 7.2-7.4 with 40% sodium hydroxide.

Figure 2. Bacterial colonies as observed on SPA medium.

At 28C, colonies are most distinctive at 48-60 hr. They are mucoid, with a lemon-yellow color on this medium. I do not like the available selective media. Bacteria grow too slowly, and they do not exhibit the distinctive colony color and morphology. If the sample is fresh and Xap is present, it will outgrow any other microbes in this 60 hr period.

Additional Warnings Relative to Use of Mycoshield Alternatives

William A. Watson,
Clemson University

(Editors note: The following information was sent to producers in South Carolina. It describes the relative risks of utilizing some of the alternatives for Mycoshield. If one is running out of Mycoshield for bacterial spot susceptible peaches, this information should be read carefully).

Dear Peach Producer,

Many of you have called regarding the short or non-existent supply of oxytetracycline (Mycoshield) and your alternatives for bacterial spot control. Dr. Dave Ritchie and Dr. Phil Brannen, specialists with North Carolina and Georgia, respectively, have written an excellent article in the *Southeastern Peach Newsletter* **(see previous issue)** on alternative materials for bacterial spot control.

Basically, these materials are zinc-containing compounds (such as Ziram) or Captan + Syllit (Dodine). Syllit was used initially under the brand name Cyprex. The following recommendations should be observed when using Captan + Syllit (Dodine)**: Do not use with emulsifiable insecticides or sulfur.** Do not concentrate the final spray solution of these materials beyond that recommended by the label.

Older spray recommendations for using basic zinc included the following precautions: "Tank mix with sulfur only. Do not use within two weeks of captan." The reason for this precaution was that use of these products could result in phytotoxicity.

The mention of brand names is for informational purposes only and should not be considered an endorsement of the product. If you would like to read the aforementioned newsletter, it is available on the following website http://newsletters.caes.uga.edu/SRPN/.

Sincerely,

William Anthony Watson
County Extension Agent –
Commercial Horticulture

Rust: the Occasional Disease of Peaches which can have Major Consequences

Phillip M. Brannen,
University of Georgia

In 2002, several South Georgia producers experienced defoliation of peach trees as a result of rust, caused by *Tranzschelia discolor*. This defoliation subsequently resulted in a late fall flush of growth, as the tree attempted to compensate for the loss of foliage – not good. Defoliation results in reduced vigor and productivity in subsequent growing seasons.

The Peach Production Handbook states that "in Georgia, peach rust is seldom serious enough to need special control measures." Likewise, the Compendium of Stone Fruit Diseases indicates that peach leaf rust does not "cause significant early defoliation" in southern Georgia. However, though this may generally be true, 2002 proved that the exception to the rule can occur with regard to peach rust, and complacency will cost you. The following information should help producers in these regions to identify and address the disease.

The degree of damage associated with peach rust is directly related to the timing of the initial infection (i.e. early infections will result in more damage). Leaf infections in southern Georgia can occur in late June to early August, as symptoms generally appear mid- to late August through September. Initial leaf symptoms are observed as pale-yellow, angular spots on both the upper and lower leaf surfaces (Figures 3-5). Over time, these spots become a brighter yellow, and the lower leaf-surface spots eventually turn orange, erupting in fungal spore masses –sori (Figure 6). The spores generally observed in GA and FL are called urediniospores (Figure 7).

Peach orchards should be scouted for rust, starting as early as late July. If rust symptoms are observed, fungicidal sprays are advised. Wettable sulfur, liquid lime sulfur, sulfur dust, tebuconazole (Elite), and azoxystrobin (Abound) are all either registered for control of rust or have activity against rust when applied during their normal spray window for other diseases. Propiconazole (Orbit, Break, or Propimax) will have activity on rust, but this chemical is limited to in-season use, not the after-harvest August – September applications we would require. It is recommended in California for in-season use, but rust occurs earlier in California.

In conclusion, peach rust can be a serious problem in South Georgia and Florida from time to time. Scouting for the disease is necessary, and the timeframe for scouting is from late July through September. If the disease is observed, then application of fungicides is necessary to prevent early defoliation.

Adaskaveg, J.E., Soto-Estrada, A., Forster, H., Thompson, D., Hasey, J., Manji, B.T., and Teviotdale, B. 2000. Peach rust caused by *Tranzschelia discolor* in California. (**http://www.anrcatalog.ucdavis.edu/pdf/8011.pdf**).

Bertrand, P.F. 1995. Rust. Pages 23-24 in: Compendium of Stone Fruit Diseases. J. M. Ogawa, E. I. Zehr, G. W. Bird, D. F. Ritchie, K. Uriu, and JH. K. Uyemoto, eds. APS Press, St. Paul, MN.

Chang, L. and Pusey, L. 1989. Other fungus diseases. Pages 120-121 in: Peach Production Handbook. S. C. Myers, ed. Handbook No. 1, University of Georgia Cooperative Extension Service, Athens.

Teviotdale, B.L., Gubler, W.D., and Adaskaveg, J.E. 2002. UC Pest Management Guidelines: peach rust (**http://www.ipm.ucdavis.edu/PMG/r602100611.html**).

Figure 3. Rust symptoms on the upper leaf surface (angular yellow spots).

Figure 4. Rust symptoms on the lower surface of the leaf (orange, raised pustules).

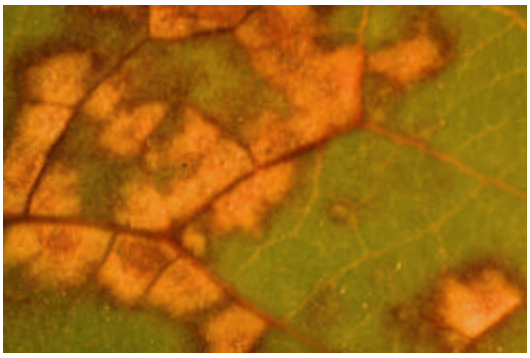

Figure 5. Close-up of rust symptoms on the upper leaf surface (angular spots).

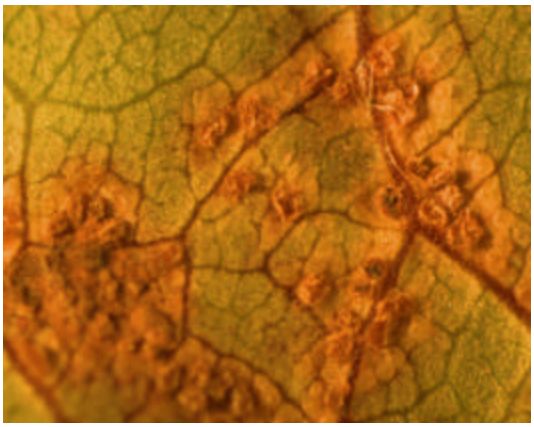

Figure 6. Close-up of rust symptoms on the lower leaf surface (erupting spores in pustules [sori]).

Figure 7. Urediniospores of rust, which are isolated from the underside of the leaf.

Constriction Canker Management in Peach

Guido Schnabel,
Clemson University

Norman Lalancette,
Rutgers University

Some growers in the southeastern United States have observed an increase in twig dieback in recent years. In most cases the dieback is due to constriction canker, a disease caused by the fungal plant pathogen, *Phomopsis amygdali*. Although fungicides reliably control other fungal diseases such as peach scab and brown rot, no silver bullet is currently available for management of constriction canker. This makes it a frustrating disease for commercial growers and university scientists. Recent research has explored a number of disease management options, such as fungicide efficacy, application timing, and sanitation. The results of these studies are summarized in this article to serve as a guide for constriction canker management.

The disease. Constriction canker was first observed in New Jersey orchards in 1934, and was subsequently reported in Maryland, Delaware, Virginia, New York, Massachusetts, and Rhode Island during the 1940's and 1950's. In the southeastern United States, the disease was first observed in Alabama in the early 1990's and was later reported in Georgia and South Carolina. The disease causes a twig dieback and can cause severe damage to the tree in highly susceptible varieties. Shoot death results in direct fruit loss because infected shoots are fruit-bearing for the current growing season. In a recent study from New Jersey, constriction canker was shown to cause 20 to 30% crop loss in severely infected orchards.

Disease epidemiology and disease symptoms. The fungal pathogen infects through leaf scars in the fall and through buds, bud scale scars, blossoms, and fruit scars in the spring. Of these infection sites, fall leaf scars are considered most important. The resulting cankers are centered around twig nodes (Figure 8). They are first reddish brown, become sunken and turn tan to silver in appearance as they mature. By early summer, the cankers will have killed the shoots, resulting in the characteristic shoot blight (Figure 9). The pathogen produces fruiting structures on the cankers, called pycnidia, which provide inoculum for subsequent infection of twigs in the fall and spring. Moist conditions favor production of spores (conidia) from these pycnidia (Figures 10 and 11).

Control strategies. Management of constriction canker is limited to the integration of cultural controls. Although only a few control options (see below) are available, each of them contributes to an overall reduction in disease.

1. Choose less susceptible cultivars

One way to reduce disease is to plant resistant varieties, but to our knowledge, there are no Phomopsis-resistant varieties available. There is evidence that some varieties are more susceptible than others. A survey among peach growers from South Carolina revealed that the following varieties are highly susceptible: Contender, Cresthaven, Empress, Springcest, Redhaven, Red Globe and the Baby Gold series. In New Jersey, high levels of infection have been observed in Encore, Biscoe, Jerseyglo, Autumnglo, Cresthaven, and Redhaven. Factors such as drought stress or the use of excess nitrogen may impact the susceptibility of varieties.

2. Prune cankers from tree canopies

Pruning is an effective method of reducing fall infections because dead wood colonized by this fungus is an important source of inoculum. **If done PRIOR TO LEAF FALL, as a part of the summer pruning routine, the incidence of constriction canker can be reduced by 40%.** A study from Georgia reported that this reduction in disease was obtained even with shoot debris remaining under the canopy. Ideally, pruning should be performed during late summer, when the maximum number of shoots show blight symptoms, thus making them easier to find and remove. However, since this timing coincides with harvest, an alternative approach would be to initially prune after thinning, followed by a second follow-up pruning immediately after harvest.

If gummosis problems also exist, debris should be removed from the orchard and either burned or taken to an isolated location away from the orchard. Alternatively, prunings can be raked to the middle and chopped with a flail mower. Flail mowers produce smaller pieces that decompose faster and support less growth and spore production by the fungus than prunings chopped with a conventional bush hog.

3. Orchard replacement

Constriction canker is found most frequently at high levels in older, established orchards. Given the yield loss from canker and the lack of highly cost-effective controls, removal of these less productive blocks may be the best economic alternative. In this case, the block should be replaced with a less susceptible cultivar. Regular scouting and pruning out cankers as they appear should be practiced to keep infection levels low. Observations in younger replacement peach blocks in New Jersey revealed very little re-infection by the pathogen after several years of growth. Removal and burning of the original infected trees may have helped remove the inoculum source. Furthermore, the lack of adjacent infected blocks probably played an important role in preventing subsequent spread into the new orchards.

Research on fungicide control. Fungicide efficacy data for canker control is available from field and lab trials. Here is an efficacy ranking based on those data:

Efficacy	**Fungicide** [x]
most effective:	Chlorothalonil > captan > thiram > ferbam
effective:	DMI fungicides (such as Indar, Orbit, Elite) > benzimidazoles (Topsin-M) > strobilurins (such as Abound, Flint)
not effective:	Sulfur

[x] ">" stands for "more effective than"

Although some of the above fungicides are registered for one or two applications in the late fall or early spring (for leaf curl control), NONE ARE REGISTERED FOR MULTIPLE CONSECUTIVE APPLICATIONS during these time periods. At this time, no data are available which indicate how many fungicide applications during these periods would provide significant levels of control. However, **a recent study showed that the disease cannot be effectively controlled even after the best fungicides (chlorothalonil and captan) were applied throughout the leaf abscission period. Therefore, cultural control is still the best option for constriction canker management.**

Relevant literature. Most of the information gathered for this article was obtained from the following references.

Lalancette, N. and Polk, D. F. 2000. Estimating yield and economic loss from constriction canker of peach. Plant Dis. 84: 941-946.

Lalancette, N. and Robison, D. M. 2002. Effect of fungicides, application timing, and canker removal on incidence and severity of constriction canker of peach. Plant Dis. 86. 721-728.

Uddin, W. and Stevenson, K. L. 1998: Seasonal development of Phomopsis shoot blight of peach and effects of selective pruning and shoot debris management on disease incidence. Plant Dis. 82:565-568.

Figure 8. Constriction cankers on 'Jerseyglo' peach. Young cankers (top and bottom) and older canker (middle) are centered about the leaf node. Note slight constriction of twig diameter on bottom canker.

Figure 9. Shoot blight phase of constriction canker on 'Biscoe' peach. Low growing shoots located near the inside of the tree canopy appear to be infected at a higher frequency than shoots at other canopy positions. In addition to loss of fruit for the current growing season, shoot death exasperates tree pruning and training efforts to generate future fruiting wood.

Figure 10. Tendrils of conidia held together by mucilage (cirri) exuding from pycnidia of *Phomopsis amygdali* on peach.

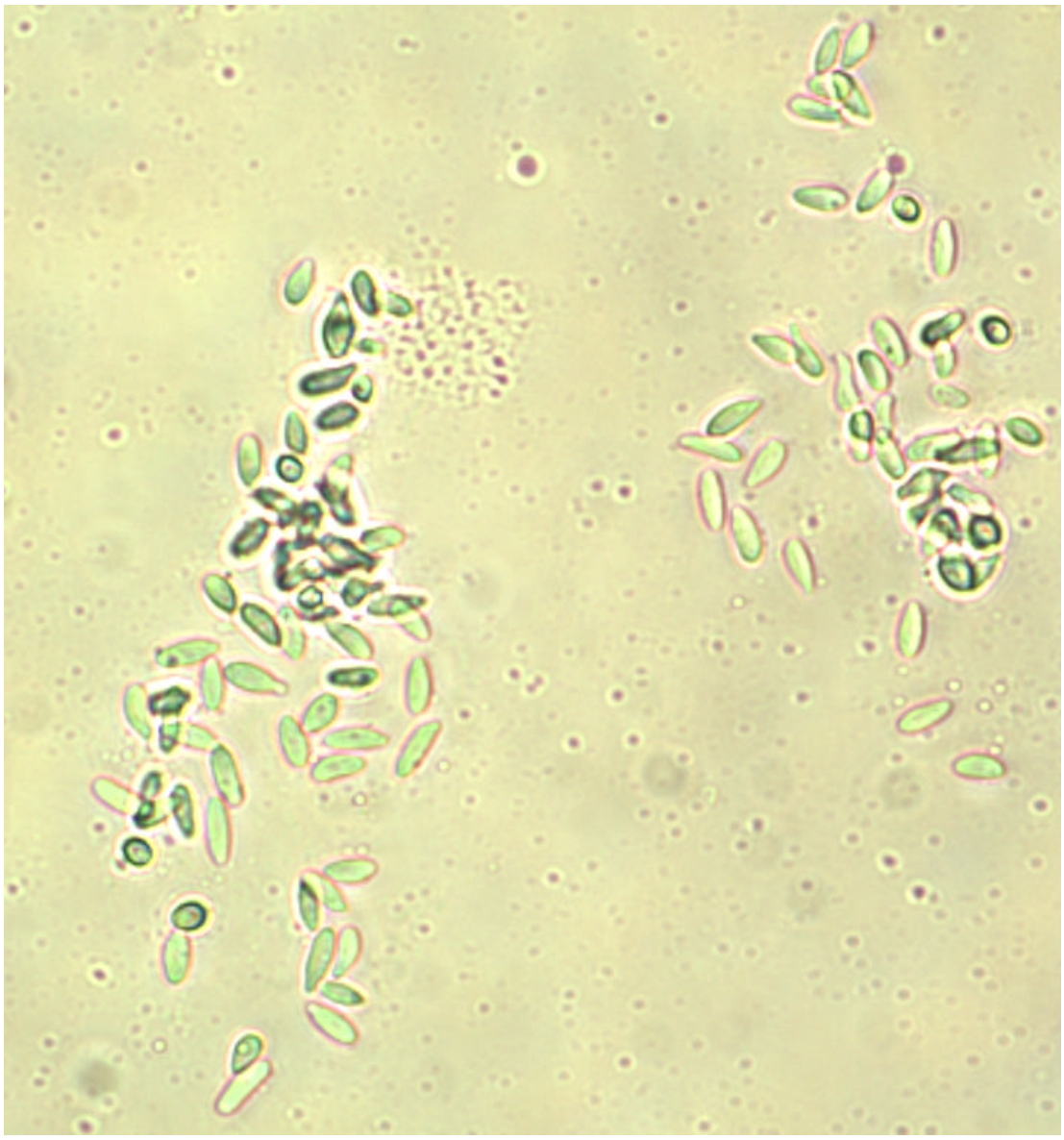

Figure 11. Conidia of Phomopsis (400X). Shapes can range from ovoid to fusiform.

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