

PEACH: *Prunus persica* (L.), Batsch, 'Flameprince'

Evaluation of Insecticides for Control of San Jose Scale in Alabama Peaches, 2015*

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Peach | *Prunus persica*

San Jose scale | *Quadraspidiotus perniciosus*

San Jose scale (SJS) attacks the tree (limbs and trunk) as well as the fruit of peach trees, causing poor fruit quality and potential tree death if left untreated. Recently, SJS infestations have increased in Alabama due to restriction of organophosphate (OP) insecticides, increased reliance on Pyrethroids, and a string of warm falls and mild winters. This study was conducted at the Chilton Research and Extension Center in Clanton, Alabama, on a 2-acre mature stand of "Flameprince" peach trees, planted at 20×15 ft spacing with 12 total rows and 20 trees per row. Three insecticide treatments and an untreated check were evaluated. Each plot consisted of three rows of four trees each (12 trees total), and replicated 5 times giving a total of 60 trees per treatment. A completely randomized design (CRD) was used, as the field crew did not follow directions given prior to the researcher's arrival at the test site. All treatments were applied on 14 Apr 2015, with an air-blast sprayer mounted on a tractor and calibrated to deliver 150 gallons per acre. To assess the treatment performance, two trees in the innermost rows in each plot were randomly selected and tagged, from which two twigs of ~3 cm diameter were randomly selected on opposite sides of the tree canopy as sampling sites. The relative abundance of crawlers in the various treatments was measured by using electric black sticky-tape traps. Post-treatment evaluations were made every week starting from 3 Jun 2015 until harvest (3, 10, 17, 24 Jun; 1, 8, 15, 22, 30 Jul). At harvest, 125 (25 fruits per tree) were randomly harvested from the

tagged trees and assessed for scale insect damage. Percent fruit damage was calculated using a simple ratio of number of fruits showing damage to the total number of fruit evaluated. Data were analyzed using repeated measure ANOVA and mean values were separated with Tukey–Kramer HSD ($P < 0.05$).

The numbers of crawlers recorded weekly in many cases was not significantly different among the treatments, especially during the early stages of fruit development (Table 1), though the numbers were numerically different among treatments and untreated control plots after 8 Jul. However, all treatments significantly reduced the incidence of SJS compared with untreated control on 15 Jul. At harvest, none of the treatments provided acceptable control of scale damage on fruits. Several lessons were learned during this trial: (1) not timing the treatment application to coincide with crawler activity could be one of the key reasons for the failure of insecticide treatments for SJS; (2) because the scales seldom distribute uniformly throughout a tree and infest only a few trees in an orchard block, the crawler data was highly variable among the replicates which resulted in higher standard deviation and no statistical differences among treatments; (3) due to the lack of uniformity in the distribution of scales in the orchard, the use of CRD is not appropriate. The randomized complete block (RCB) design minimizes the variation and increases the chances of identifying statistical differences among treatments; (4) more than one application of insecticides may be necessary to target second and third generation crawlers.

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Table 1

| | | <i>Quadraspidiotus perniciosus</i> crawlers/tree | | | | | | | | |
|-----------------------|----------------|--|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|
| Treatment/formulation | Rate/acre | 3-WAT1 03-Jun | 4-WAT1 10-Jun | 5-WAT1 17-Jun | 6-WAT1 24-Jun | 7-WAT1 01-Jul | 8-WAT1 08-Jul | 9-WAT1 15-Jul | 10-WAT1 22-Jul | 11-WAT1 30-Jul |
| Centuar 30WDG | 2.15 lbs | – | 1.5 | 1.8 | 1.2 | 1.4 | 1.53 | 1.73 b | 0.66 | 0.6 |
| Esteem 35WP | 4 oz | 1.5 | 1 | 2.6 | 2 | 0.53 | 1.8 | 1.93 b | 0.8 | 0.66 |
| Movento 2SC | 9 oz | 5.8 | 14.5 | 3.8 | 1.26 | 0.8 | 3.2 | 3.6 b | 1.73 | 1.33 |
| Untreated check | – | 0.4 | 1.4 | 2.2 | 3.33 | 1.53 | 68.93 | 62 a | 11.66 | 4.2 |
| | <i>F</i> value | 2.1772 | 1.8693 | 0.4645 | 0.6797 | 1.3643 | 1.2391 | 3.5198 | 1.3457 | 1.4417 |
| | <i>Pr>F</i> | 0.1305 | 0.1755 | 0.7111 | 0.5771 | 0.2894 | 0.3283 | 0.0394 | 0.2948 | 0.2677 |