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Rose Nursery Banker Plants

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Rose nursery plants typically require frequent chemical applications to control pests. Biological control agents and banker plants have been successfully used in greenhouse production, but have not been proven in outside nursery production. In order to reduce pesticide applications in the nursery setting, the use of banker plants and biological control agents in a rose nursery was explored in trials at the Mid Florida Research and Education Center in Apopka. Knock Out™ and 'Julia Child' rose plants in 3-gal pots were grown with either overhead or microirrigation. Half of the plants were sprayed with Talstar as needed; the other half received no chemical applications. Banker plants, ornamental pepper (*Capsicum annuum* 'Black Pearl') and field corn (*Zea mays*), were grown between blocks of eight crop plants. Biological controls *Amblyseius swirskii* mites, *Orius insidiosus,* and *Neoseiulus californicus* will be introduced onto the banker plants as needed to maintain populations. Rose leaves and buds were sampled every 2 weeks to determine pest and predator populations. More pests and fewer biological controls were found in the overhead irrigation plots; however, chilli thrips had not moved into the plots as of the time of writing. The plots will be continued for several more months and pests may be introduced to provide a better test of biological control.

Rose nursery plants typically require frequent chemical applications to control pests, both diseases and insects (Brown, 2007). Landscape roses such as Knock Out™ are supposed to require fewer chemical inputs for diseases, but still have problems with spider mites and chilli thrips. Biological control agents and banker plants have been successfully used in greenhouse production, but have not been proven in outside nursery production (Osborne et al., 2005). In order to reduce pesticide applications in the nursery setting, the use of banker plants and biological control agents in a rose nursery was explored in trials at the Mid Florida Research and Education Center in Apopka.

Materials and Methods

Thirty-two Knock Out™ roses and 32 'Julia Child' roses were planted in standard nursery potting mix in 3-gal pots and arranged in a four-block experiment with two treatments (treated with Talstar and without) with four plants of each cultivar in each replication (16 plants per block) spaced to canopy touching. This experiment was replicated with overhead and microjet irrigation. Cold repeatedly burned the top growth of the rose plants, so plants were cut back hard on 19 Mar. 2010 and the experiment reinitiated. Banker plants of potted ornamental pepper (*Capsicum annuum* 'Black Pearl') in 8-inch pots were set between the plants within a block and field corn (*Zea mays*) in 3-gal pots were placed between every block on 20 Apr. 2010. All plants (treatment and banker) were fertilized with controlled-release fertilizer at commercial rates and irrigated daily per commercial practice. Pepper banker plants were not inoculated. Corn banker plants were inoculated with Banks grass mite and were switched out with fresh plants as needed. Sampling began 3 May 2010. Talstar treatments were initiated on 3 June 2010. Some predatory insects naturally moved into the experimental site, but biological controls had not been introduced at the time of this presentation.

At initiation and every other week, the total number of flowers and flower buds were counted on two plants in each treatment. Three of the newest terminal leaves and one mature leaflet from the top, middle, and bottom were sampled from these two plants and a leaf of each type of banker plant at approximately 8 AM once every other week to determine the distribution of the pest within the plant. The total number and life stages of thrips, mites, and predators in samples were done without destructive sampling in situ. Anthracnose leaf spot so defoliated the 'Julia Child' plants within a month that they were removed from the experiment. Talstar treatments were initiated 30 May 2010. *Neoseiulus californicus* was introduced onto the pepper plants on 2 June 2010.

Results and Discussion

It is unfortunate that the 'Julia Child' rose had to be removed from the experiment. The yellow flower color of this rose may have been preferred by chilli thrips as yellow sticky traps are preferred (Chu et al., 2006). 'Julia Child' is also reported to be less susceptible to spider mites (B. Bodnaruk, personal communication, 2010).

Ornamental peppers were chosen as one of the banker plants after finding that they support predatory mites without any prey or flowers. Something in the plant, even without flowers, provides food for predatory mites. Corn plants support Banks grass mite [*Oligonychus pratensis* (Banks)] that is the prey for *A. swirskii* and *N. californicus* predatory mites.

At the time of writing, chilli thrips had not been found in the experimental field naturally and will need to be introduced. Aphids, mostly *Aphis gossypii* Glover, and a few spider mites, (*Tetranychus urticae* Koch) were the only pest insects found.

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Biological controls that naturally moved into the site included predatory mites (*Phytoseiulus macropolis*), six-spotted thrips (*Scolothrips sexmaculatus*), and gall midge (*Feltiela acarisuga*). Biological control counts were fewer under overhead irrigation and pests were higher under that regime. Generally it is believed that overhead irrigation and rainfall help to wash off pests, but these results indicate the opposite. As the experiment continues, more explanation may become evident. Further data are required to draw any conclusions about biological controls under nursery conditions.

Literature Cited

Arthurs, S., C.L. McKenzie, J. Chen, M. Dogramaci, M. Brennan, K. Houben, and L. Osborne. 2009. Evaluation of *Neoseiulus cucumeris* and *Amblyseius swirskii* (Acari: Phytoseiidae) as biological control agents of chilli thrips, *Scirtothrips dorsalis* (Thysanoptera: Thripidae) on pepper. Biolog. Control 49:91–96.

Brown, S.P. 2007. Growing roses in Florida, p. 1–4. EDIS. IFAS, Gainesville, FL.

Chu, C.-C., M.A. Ciomperlik, N.-T. Chang, M.L. Richards, and T.J. Henneberry. 2006. Developing and evaluating traps for monitoring *Scirtothrips dorsalis* (Thysanoptera: Thripidae). Florida Entomologist 89:47–55.

Dirksen, A.I. 2009. Host susceptibility and population dynamics of *Scirtothrips dorsalis* Hood (Thysanoptera: Thripidae) on select ornamental hosts in southern Florida. MS Thesis, University of Florida, Gainesville.

Funderburk, J.E., J. Stavisky, and S. Olson. 2000. Predation of *Frankliniella occidentalis* (Pergande) in field peppers by *Orius insidiosus* (Say). Environ. Entomol. 29:376–382.

Osborne, L.S. and J.E. Barrett. 2005. You can bank on it. Orn. Outlook. September:26–27.

Seal, D.R., M.A. Ciomperlik, M.L. Richards, and W. Klassen. 2006. Comparative effectiveness of chemical insecticides against the chili thrips, *Scirtothrips dorsalis* Hood (Thysanoptera: Thripidae), on pepper and their compatibility with natural enemies. Crop Protection 25: 949–955.