

Special Research Report #214: Insect Management

Advancing the Adoption of Pest Management Strategies on Cut Flowers

Produced in the United States and Colombia: Part I

Kevin Heinz, Department of Entomology, Texas A&M, TX 77843 &
Michael Parrella, Department of Entomology, University of California, Davis, CA 95616 &
James Jimenez, EcoFlora LTD, Rionegro, Antioquia, Colombia



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Phone: 703-838-5211
Fax 703-838-5212
E-mail: afe@endowment.org
Website: www.endowment.org

BACKGROUND

Although it has declined in recent years, cut flower production in the United States in 2009 was assessed at \$359 million from 362 producers. California's value was \$269 million, accounting for 75% of the total cut flower value in the U.S. While this value is considerable, it is dwarfed by cut flower production in the Andean countries that accounted for 80% of U.S. cut flower imports. In 2008, cut flower imports from Colombia were greater than \$500 million, which is higher than the total wholesale value of U.S.-grown cut flowers. While there are major differences in cut flower production practices in Colombia and the US, one major similarity is the pests that must be controlled on a day-to-day basis. Many of these pests know no boundaries. While U.S. growers and

consumers demand exceptionally low thresholds for the presence of pests and their damage, this level is greater in Colombia. There, they must meet "0" tolerance requirements for many pests on products intended for export to the U.S. and other countries. A tour of the flower growing operations in Colombia reveals pest control practices that are unique and have no parallel in the U.S. In addition, many of the pest control products commonly used in Colombia are supplied by local companies that have limited connections to the U.S. While there is limited information that these products are effective, Colombia does not have the network of agricultural universities or the equivalent of the USDA IR-4 program to evaluate these materials on an impartial, comparative basis. The basic concept underlying the first part of our research program was to evaluate selected materials from Colombia for control of mites and thrips with the following caveats: (1) the information will be relayed to the Colombians so they know which products are effective and which are not. (2) products that do perform are put into a pipeline for registration in the U.S., thus,

benefiting U.S. growers. This project would not have been possible without the energy and organizational abilities of the late Mr. Ernesto Velez (Former Chairman of Asocolflores and a former Trustee of the American Floral Endowment) who took a personal interest in overseeing and promoting this joint U.S./Colombia research project.

Research Plan

Objective 1: Conduct efficacy trials with biorational materials commonly used in Colombia for control of mites and thrips.

Roses were selected as the test crop because of its importance in the U.S. and Colombia. Furthermore, mites and thrips are common pests on many crops other than roses. Thus, "positive" materials entering the U.S. registration pipeline would be targeted for broad registration across numerous floriculture crops. There are many companies that supply pest control materials to the Colombian growers but to get started we elected to cooperate with two companies: EcoFlora (<http://www.ecoflora.com/>) and Live Systems Technology South America (LSTSA) (<http://www.lstsa.com/>).

Ecoflora has many business facets and one is agriculture. Most of the products marketed by Ecoflora are botanical in nature. For example, CapsiAlil© is a material derived primarily of extracts from plants in the Liliaceae and Solanaceae with purported activity against a wide range of pests. In addition, many of EcoFlora's products are repellents rather than insecticides. There, they may perform best when used in a "preventative" program. However, the most recent results obtained at UC-Davis show that EcoFlora's products are also able to control established populations of mites and thrips. LSTSA has a product line that concentrates on biological control of insects/mites and diseases. For example, one of their products, Successor© (*Paecilomyces fumosoroseus* Strain DSM 15126) is an entomopathogenic fungus targeted against mites, but with the potential to control other important pests such as aphids, whiteflies, and thrips. An important point is that many of these products may not provide sufficient control alone. Therefore, they may need to be tank-mixed with another product to provide commercial acceptable levels of control. Consequently, some of our research evaluated combinations of materials.

Research in Texas

Field studies in Texas evaluated the efficacy of a novel *Beauveria bassiana* product, BioExpert® SC from LSTSA, and an IGR, Pedestal® (Novaluron, Chemtura Corporation, Middlebury, CT), for control of WFT on 'Belinda's Dream' and 'Knock Out'™ roses grown as field-grown container plants.

Results: During the first week after treatments, 'Belinda's Dream' roses treated with applications of BioExpert® SC and Pedestal®, alone or in combination, had, on average, 60-70 % fewer WFT than untreated plants. However, the combination of the two materials provided no better control than either material alone. Similar results were found in the 'Knock Out' rose trial, although there appeared to be better control with the combination than with either material alone.

Research in California: Thrips

In California, we compared the efficacy of Capsialil©, Ecoaz©, Ecoflora©, Ecomix©, and Ecoruta© (all EcoFlora products) against western flower thrips (*Frankliniella occidentalis*). The trial was conducted in a research nursery on the U C- Davis campus using the roses 'Double Knockout' and 'Mardi Gras'. EcoMix (a synergistic mixture of nine edible plant extracts)

provided numerically superior control when compared to the other treatments.

Research in California: Mites

Work with spider mites on roses focused on the product CapsiAlil© at various rates and in combination with other materials. In addition, results were compared to Abamectin as a standard. CapsiAlil (1ml/L) showed a reduction of 87.2%% between the precount and 2 days after the second application while Abamectin (0.3 ml/l) alone provided a 79.4% reduction in this same time period.

US Registration

EcoFlora has signed a distribution agreement with a major company in the US. Some of the products discussed in this report may see US registration in within the next 2 years.

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