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Pest Management in Ornamental Production©

James A. Bethke
University of California Cooperative Extension, 151 E Carmel, San Marcos, California 92078
Email: jabethke@ucdavis.edu

INTRODUCTION

Ornamental plants are some of the most attractive yet costly plants in production on the planet. Total sales by greenhouse- and nursery-crop growers reached $17 billion in the U.S. in 2006 (Jerardo, 2007), and total gross sales of nursery crops alone totaled $4.65 billion (NASS USDA, 2006). In addition, average sales per acre were $88,411, which is significantly greater than most any other crops on an acre-by-acre basis. However, maintaining a high-value high-quality crop can be challenging for any grower with the myriad plants to grow and the myriad pests to control. Even small blemishes caused by pests can have a profound effect on the quality and value of an ornamental plant. Therefore, pest management in ornamental production is very different than pest management in agriculture because higher standards are expected and prophylactic use of pesticides is common and allows an ornamental grower to sleep at night. But what are some of the challenges and alternatives in pest management faced by the producers of today?

First, attempts to find the most striking colors and selections of ornamental plants have produced some of the most pest-susceptible plants grown. At this point, what is lacking in the ornamental industry is good scientific efforts that identify genes for desirable flower and plant characteristics and identify genes for pest resistance. Once identified, these genes can then be engineered into selected ornamental species. There are much greater efforts in basic genomic research on campuses around the world, so answers are probably right around the corner.

I remember being told by chrysanthemum growers that if I grew the Tuneful cultivar, I was sure to have aphids for my pesticide trials. It was absolute, and I used them for many years until the industry finally gave up on the cultivar, because it was nearly impossible to grow a damage-free, aphid-free Tuneful mum. There went the best plant we ever used for our trials. The point is that there are selections of every cultivated plant that are highly susceptible to certain plant pests and Tuneful mum is not the only example. I'm willing to bet that there are many examples like the one that I just gave.

Second, many scientists recommend that if you produce a healthy plant, it will be more resistant to pest damage. There is also truth, however, to the fact that if a pest is adapted to that plant, then a healthy plant is healthy food too. Recent research suggests that reducing the recommended nitrogen fertilizer level by 50% to chrysanthemums will also reduce the mean abundance of thrips (Chau and Heinz, 2006). Conversely, if you create a healthy well-fertilized plant, it will be well-suited for pest population development.

Another challenge comes from those that compare pest management in agriculture to pest management in ornamental production, and then suggest that ornamental producers can use similar tactics, i.e., less pesticides, or biological control, etc. In contrast to the common monoculture production systems in agriculture, the diversity of plant material grown in greenhouse production systems lends itself