Utilizing Host Plants in an Integrated Pest Management Control Program©

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INTRODUCTION

Insect vectors can be serious pests of production and display crops, of both woody and herbaceous plants. This presentation will highlight an ongoing Integrated Pest Management (IPM) program designed to reduce conventional chemical control methods of selected insect pests.

MATERIALS AND METHODS

There are numerous seasonal insect pests which damage and even destroy production plant materials. These pests also ruin display gardens, by their predation of the plants, making them unsuitable for view, by eating stems, leaves, and flowering parts of these plants.

In some cases, traditional chemical control is becoming problematic. Liability issues now arise with dispensing insecticides near residential areas, swimming pools, fish ponds, domestic animals, children's play areas, and related equipment. Another factor is insect resistance to certain chemical compounds, or the inability of these products to effect a "rapid death" of these pests. The insect pest I focused on is *Popillia japonica* Newman, the Japanese beetle. Like many of you, I am all too familiar with this pest, and decided to conduct a qualitative control program experiment. These beetles are attracted to many perennials and woody plants found throughout the gardens of the upper Midwestern U.S.A.

I decided to explore utilizing some of these plants as insect attractants. Japanese beetles are found in many locations throughout the greater Chicago land area. Their infestation levels can vary by geographic location, local environmental conditions, and of course by plant content of both gardens and natural areas. In urban garden settings, neighboring gardens and lawns are often adjacent to one another. Treatment in one garden or lawn does not take care of grubs, larvae, or adults in the adjacent property. So while using insecticidal products on turf or plants has an effect on the immediate area, insects can arrive on the property from elsewhere. Therefore, I undertook the implementation of creating a perimeter planting, on an existing residential landscaping account. In theory, the plants would draw the adult beetles away from the main landscape beds. These plantings coupled with trapping, and in some cases, focused contact with insecticidal products, would help reduce the population of adult insects. I knew before I began this program, that it would not be nearly as successful as my aspirations wanted it to be. There was a significant amount of adjacent property I do not maintain. My goal was to reduce adult populations, and reduce feeding damage, as much as possible.

I used various specimens of *Persicaria*, *P. polymorpha*, and *P. virginiana* Variegata Group 'Painter's Palette', due to their robust growth, abundance of flowers, as beetle attractants. The plants were located at the least 25 to 75 ft away from the structured landscape beds. There were two groups of plants, three plants each,

spaced about 8 to 10 ft apart. A third group of plants, installed near a 4,000-gal koi pond and waterfall, had Trece® Japanese beetle traps as the only control product. In the initial stages of beetle population emergence, female beetles visit the flowers first, attracting males to join them on the plants.

At this stage, the beetles are not yet feeding upon the leaves. They seem rather to focus on the pollen. With the abundance of blooms, and their somewhat rank odor, in a matter of days, plants where hosting many hundreds of beetles per day. A landscape tarp was placed on the ground, surrounding the base of several plants to collect as many insects as possible. The insects on the plants were treated with several types of products. The products used were diatomaceous earth, insecticidal soap, and Sevin. Each product was used on two plants each, of the two groups.

The results were predictable. The dust caused most of the insects to escape the plants by flying off, presumably succumbing to the dust somewhere else, and over a period of time. The soap and Sevin had quicker results. With the liquid sprays, insect counts for a 7-day period ranged from 50 to 85 insects per plant treated, treating 3 days out of 7, with the soap, once with the Sevin. Along with the insecticidal soap, a teaspoon of household ammonia was added to each gallon, to aid in "knocking" down the beetles. After 1 week, a Trece Japanese beetle trap was hung above each group of plants, to begin to draw off the insects from the plants proper. Here again, we can predict that the trapping would work effectively. Of course, the chemical and pheromone lures always brings beetles to the traps. They will also attract beetles from other areas other than the immediate target area, often times from hundreds of feet away.

The trapping counts for a period of 3 weeks, emptying the traps every day, averaged 100 plus insects per trap. The insects were only counted; no sex determination of adults was done. As the trapping and the season progressed, damage to the plants was lessened, but not eliminated.

The conundrum for me as always has been the traps help to reduce adult beetles from the immediate area, but always bring more beetles from outside the area. Treating affected plants with conventional insecticide products is expensive, given the duration of a seasonal population of the beetles. Preemergent control in the form of nematodes or a direct turf applied product to lawn areas, is part of the program solution.

The reduction of target plants helps to reduce beetle numbers in the various landscape situations. There are cases however, where clients request plants that are more or less beetle fodder. Cannas, roses, viburnums, the already mentioned persicarias, lindens, ornamental and wild grapes, and many other plants attract Japanese beetles. The last two seasons, I have been watching beetles at this landscape account, roosting in and causing minor damage to *Metasequoia glyptostroboides*.

CONCLUSION

This program has had some positive results. Beetles can be "lured" away from gardens with some success, by using plants as attractants. Utilizing traps to harvest the adults can reduce breeding populations, to the extent where the current seasons' flowering plants do not have to sustain significant visual damage. The following season can see a reduction in infestation and population levels. There is no silver bullet for treating some insect pest invasions. However, I believe the reduction of a pest population is a "successful" solution, owing to the fact that pest elimination in many cases may not be achievable. I hope this presentation will be of use to you, and your horticultural endeavors.