

**Novel Use of Japanese Beetle Pheromone & Floral Lures to Reduce Grub  
Populations in Turfgrass**

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**Summary of Research Rational, Objectives and Experimental Design**

There has been considerable interest in the use traps that incorporate 2 chemical lures the first containing (R, Z,)-5-(1-decenyl) dihydro-2(3H)-furonone that mimics the female sex pheromone of this species (attracting only male Japanese beetle adults), and the second, a standard floral lure composed of a mixture of phenethyl propionate, eugenol, and geraniol (3:7:3 ratio), that serves as a feeding lure (attracting both male and female beetles). The use of these dual lure beetle traps for reducing both adult Japanese beetle populations and subsequent grub populations have long been debated. While large numbers of adults can be attracted to these traps in the field there is little evidence that enough beetles are actually removed from the population to reduce adult feeding damage to foliage (Potter 1985, 1986) or to prevent beetle mating, thereby reducing grub damage in turfgrass the following fall.

Two factors seem to reduce the usefulness of the traditional trapping system used today. The first is that Japanese beetle lures appear to be very efficient in attracting large numbers of adults (both males and females in approximately equal number (Villani pers. obser.) to the vicinity of the traps while the traps themselves appear to be relatively inefficient in actually trapping the beetles, thereby removing them from the feeding, mating, and ovipositing adult population. The net result is to concentrate a large number of both male and female beetles into an area thereby facilitating the very act we hope to avoid (mating). One solution would be to develop a more effective trap that actually caught all attracted beetles both male and female. There has been some movement in this direction by Steve Alm in Rhode Island. A second approach, the one we propose here, would be to physically separate the two chemical lures. One trap would be baited with several pheromone lures and would attract only male beetles while several meters away, a second trap would be baited with only the floral lure. This trap would be significantly more attractive to female beetles but significantly less attractive to male beetles than the pheromone trap. We thereby have created a system in which male and female beetles are segregated in the environment reducing the probability that beetles not trapped will mate and females move to turfgrass to oviposit.

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