New York State Integrated Pest Management Program

Recent advances in applied spatial ecology: An efficient and flexible treatment decision-making protocol for Japanese beetle grubs on golf course fairways 1999

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Introduction

The Japanese beetle is a major turfgrass pest in the eastern U.S. The grubs live under the soil and eat the roots of the grass, causing extensive damage when populations are dense. Damage can readily be prevented by applying insecticides such as imidacloprid (Merit or Grubex), bendiocarb (Turcam), or insect growth regulators (Mach II). However, such treatments can be expensive and environmentally hazardous. Fortunately, grub populations fluctuate from year to year, and grubs are often too scarce to cause significant damage. Substantial cost savings and environmental enhancement can readily be realized by limiting insecticide treatments to areas where grubs are abundant. To determine whether grub populations warrant treatment does require sampling the soil for grubs, but an entire golf course can be sampled for about $360 – about $40 less than treating a single fairway! Thus, a cost savings is realized if sampling reveals that even one fairway does not need treatment. Of course, any "DO NOT TREAT" recommendation must be reliable, because the primary goal is to avoid damage. A sampling plan that saves a few thousand dollars in treatment costs but results in the loss of a fairway to grub damage would not be worth much. That is why we have been so careful to develop a plan that is reliable – and flexible enough to satisfy the most risk averse superintendent as well as the most economy minded or environmentally sensitive. The plan is based on a cutting-edge, scientific analysis of the results of a long-term, intensive study of grub populations on golf course fairways in central New York. Although the science behind plan is sophisticated, the sampling plan itself is quite easy to use. In Part 1, the sampling plan is discussed. Part 2 is a brief discussion of the science and is not necessary to using the plan itself.

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