1995 TURFGRASS INSECT ACTIVITY UPDATE AND GRUB SAMPLING FOR RESIDENTIAL LAWNS

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Turfgrass insect activity in 1995 for residential lawn maintenance firms was not as severe as the 1994 season. The list below ranks the pests in order of most to least troublesome and provides comments about their activity:

1. Sod webworms (including cut worm and army worm) are the most common pest in commercial and residential turf. Turf managers treat the larval stage curatively. Some felt that this pest was more common on newly sodded lawns.
2. White grub complex - Both Japanese beetle and European chafers are spreading geographically. All turf mangers agreed that if a site has a history of grub infestations, that site was prone to repeat grub problems. Most turf managers treated for grubs on an 'as needed' basis—a spring insecticide application was made if there was heavy spring feeding followed by an application for the next generation of grubs in the Fall. Some firms are planning to utilize imidacloprid in the coming season on sites with a history of grub injury. The grub populations were described as a 'moving target' in reference to new hot spots year to year. Overall, there were less grub problems in 1995 than in the past four years.
3. Chinch bugs were a minor problem this year. Some locations reported two generations. Others reported a short period of activity, and limited locations of infestations, but when found the numbers of insects detected were very high. A few areas were spot treated for chinch bugs.
4. Billbugs have not been problematic in recent years, including 1995.
5. Turfgrass scale. A possible finding of turfgrass scale occurred on multiple sites in the metro Detroit area. Specimens were not available for confirmed identification. These sites had no history of pesticide applications. This pest feeds on the turfgrass crown. Tashiro documented turfgrass scale on 3-5 year old lawns in Ontario, Canada in the early 1980's.

GRUB SAMPLING FOR RESIDENTIAL LAWNS

Work done by Jan Nyrop, Michael Villani and Jennifer Grant, Department of Entomology, Cornell University provides a framework for European chafer control decision making. They developed a method of sampling lawns for deciding the need for controlling European chafer larvae. Larvae are often abundant enough to cause damage to turf in portions (patches) of properties when average density over an entire site was much less than a damage threshold of 5-10 grubs per ft^2. To account for this, an empirical relationship between the size of the largest patch of European chafer larvae at a site and site-wide density was used in the development of a decision rule. The pattern of patch size in relation to average density was found to be quite strong and can therefore serve as a basis for the protocol for deciding on the need for control. The pattern was similar over three years, and applied when Japanese beetle was found as well. The sampling procedure presented (below) can provide reliable decisions on the need for scarab grub control in home lawns. Use of the decision protocol should reduce the need for insecticide applications 50-80% when compared to prophylactic treatments.

Grubs are well established in the Detroit, Grand Rapids and Jackson metropolitan areas and in Lansing, Kalamazoo and Adrian to a lesser degree. This information from Cornell University is presented with the intention that

it will be used as a sampling technique and decision-making tool for turf managers as the grub problem in Michigan increases in severity. This protocol provides Michigan turf managers a reliable method for sampling and avoiding preventative insecticide applications. This protocol assures higher turf quality and more judicious use of insecticides than preventative treatments can provide.

SAMPLING RECOMMENDATIONS:

1. Pull 20 samples per site with golf course cup cutter (four inch diameter). If the site is > 0.5 acres, subdivide the site and pull 20 samples form each subdivision.
2. If the **Average Site Density** of grubs =0.25 grubs per plug, the site is a candidate for an insecticide treatment.
3. If the estimated Average Site Density is close to the 0.25 threshold, i.e. 0.21 or 0.3, pull 20 more plugs and then make your decision to treat or not to treat.

ERRORS:

1. A decision to treat should have been made and was not, OR
2. A decision NOT to treat should have been made but was not.

The Cornell researchers found that when using this sampling technique and treatment threshold (0.25 grubs per plug) the decisions were 85-90% reliable, thereby avoiding the above errors. Other factors about the sites where grubs were found were profiled. They looked at site characteristics including terrain (slope), age, shade, soil type, thatch and species composition. Of these six factors, those associated with high grub density were age, percent shade and percent Kentucky bluegrass. Therefore, a lawn that lacks shade, is middle aged—5-20 years old, and is predominantly Kentucky bluegrass may be more prone to high grub populations than lawns without these characteristics.

In conclusion, grub populations of European chafer and Japanese beetle are continuing to increase in Michigan. Sites with new infestations can be difficult and frustrating for a turf manager to predict. It may become tempting to recommend preventative insecticide applications rather than to risk turf quality and treat curatively. By selling a sampling event instead of a prophylactic application we can make more reliable insecticide applications decisions. This portrays to the public that the turf industry is concerned about the safe and wise use of pesticides and assures the judicious use of pesticides.

REFERENCES

"Control Decision Rule for European Chafer (Coleoptera: Scarabaeidae) Larvae Infesting Turfgrass," J.P. Nyrop, M.G. Villani, and J. A. Grant, 1995 Entomological Society of America, p. 521-28.

"Turfgrass Insects of the United States, and Canada," H. Tashiro, Cornell University, Ithaca, NY, 1987.