

IPM Thresholds For Japanese Beetle Larvae In Turf

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As Japanese beetle and European chafer expand their range in Michigan, more questions are being raised about when it is necessary to apply an insecticide to prevent turf damage. An insecticide is not needed for one or two grubs per square foot. But when is an insecticide necessary? Very little information is available on thresholds for grub infestations of turf. Several people have noted that turf infested with 30 or more Japanese beetle larvae per square foot may still be green. Because daily irrigated turf remains green even after most of the root system is chewed or rotted, visual ratings are a poor way to determine turf injury. In 1990 we initiated a new project to determine how many Japanese beetle larvae are required to seriously injure turf. In August 1990, sixty rooting boxes were placed on bare soil at the Hancock center. Freshly cut sod was fused to fill the rooting boxes and to cover the ground between rooting boxes. After the sod was established Japanese beetle larvae collected were added to the rooting boxes at concentrations of 0, 10, 20, 30, 40, or 50 per square foot. The grubs were allowed to feed undisturbed in September and October. The rooting boxes were pulled up in early November and the damage to turf roots quantified by measuring root strength.

In initial tests in November 1990, rooting boxes worked well as a method of evaluating root damage caused by grubs. Turf in rooting boxes without grubs required about 45 lbs of pressure to be pulled, while turf in rooting boxes where 40 or 50 grubs per square foot were added required only 25 lbs of pressure. Despite the substantial amount of root pruning from the grubs no differences were found in visual ratings among treatments (Fig. 1A). However, a good correlation was found between the number of grubs per square foot and the amount of pressure necessary to pull the turf squares in rooting boxes.

Results from this study indicate that 20 Japanese beetle larvae per square foot cause a significant amount of turf injury that may result in dead patches if the turf is allowed to dry out. However, even 50 grubs per square foot may not cause any visible injury if the turf is irrigated daily. More research is needed to determine how turf injured from grubs should be cared for to allow proper recovery and to prevent visible injury.

Figures 1 A, B. The relationship of grubs per square foot of turf to visual ratings (A) and actual turf injury as measured by pounds of pull necessary to lift rooting boxes (B).

Figure 1A.

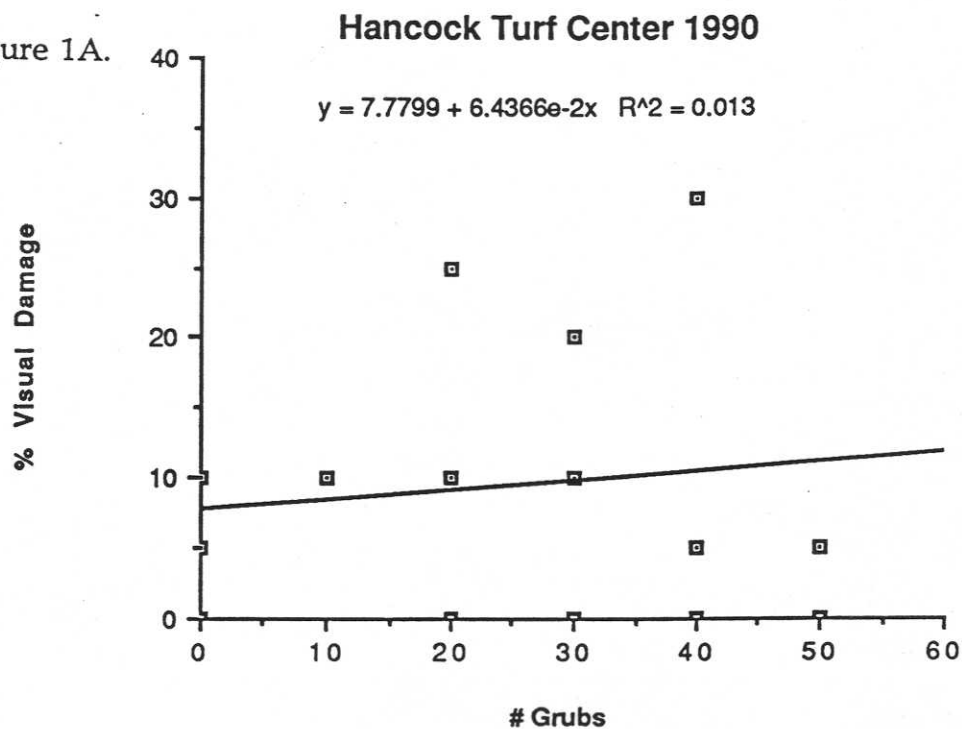


Figure 1B.

