

FACTORS INFLUENCING CHINCH BUG DENSITIES ON HOME LAWNS

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The chinch bug (Blissus leucopterus) is a native North American insect that has become a major pest of turfgrass. It is most often reported to reach high population densities in dry, drought-stressed lawns. However, no empirical data exists to support this assertion. The purpose of these 1986 field studies was to give us a jumping-off point for our long-term goal of answering the question "what factors are most influential in regulating chinch bug densities in home lawns?". We approached this question last year in our first field season in two ways: 1) an experiment that looked at the importance of natural enemies in chinch bug infested plots and 2) a survey of Lansing area lawns that looked for variables that might be associated with chinch bug infestation.

Natural Enemy Exclusion Experiment

Chinch bug infested plots were sprayed with the fungicide Dithane, to exclude the insect-pathogenic fungus Beauveria bassiana, or with the insecticide Sevin, to reduce predators. Control plots were not sprayed. Although over-wintering populations did not differ between the plots, Table 1 shows that the Dithane treated plots increased in survivorship as compared to the Sevin treated or control plots. This suggests the importance of fungal insect pathogens to chinch bug populations.

Survey of Lansing Area Home Lawns

Of 125 randomly selected home lawns, 30 were found to have chinch bug populations. These 30 lawns as well as 15 uninfested lawns were sampled for predators, grass health variables such as chlorophyll content and dry weight, abiotic variables such as soil moisture and air temperature, and general lawn parameters such as grass height, thatch thickness, and grass species present. Of these variables, thatch thickness and grass height were the most closely related to chinch bug density. Lawns with thicker thatch or taller grass tended to have more chinch bugs than those with thinner or no thatch or shorter grass. We plan to investigate these relationships in coming field seasons.

There also appears to be a relationship between the occurrence of fine fescue in a lawn and the density of chinch bugs. Figure 2 shows chinch bug density plotted against the percent of fine fescue in the lawn. The vertical line separates the points on the figure in half. Most of the lawns with chinch bugs lie to the right of the line, suggesting that chinch bugs are most often found in lawns that are one third or more fine fescue.

Table 1. Predator/pathogen exclusion experiment.

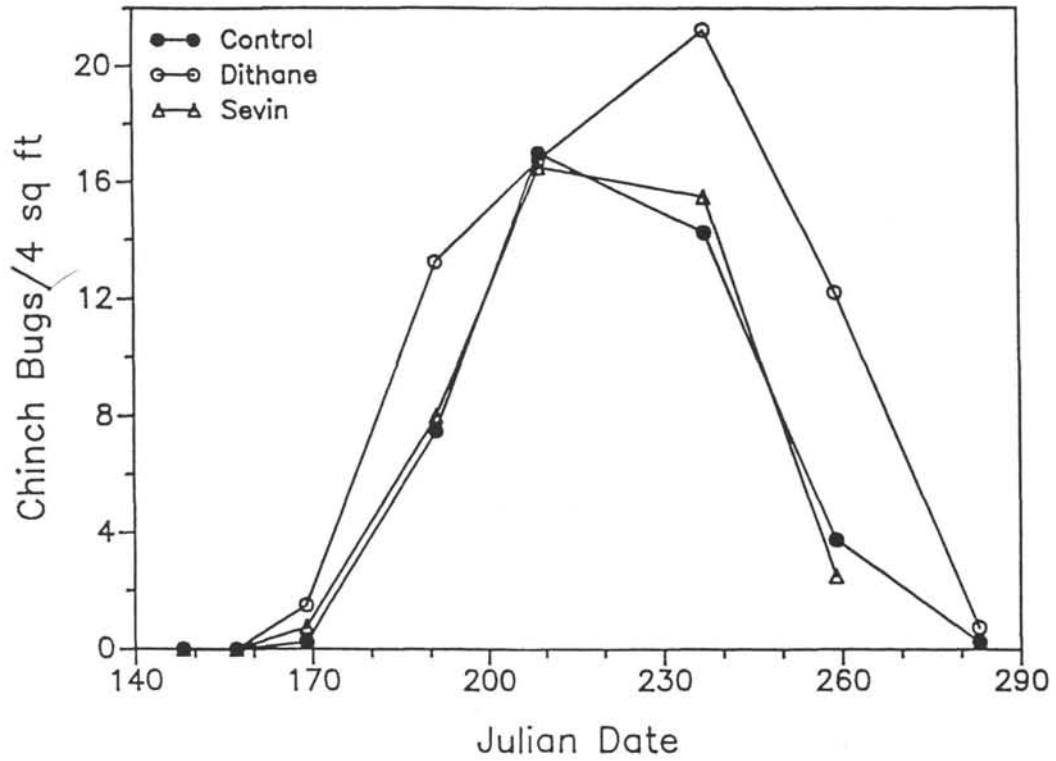


Table 2. Chinch bug density vs. percent fine fescue.

