

RELATIONSHIP OF THATCH THICKNESS AND GRASS SPECIES  
TO ABUNDANCE OF CHINCH BUGS IN HOME LAWNS

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The chinch bug, Blissus leucopterus, is known to be a pest on all cool season turfgrasses, especially the bluegrasses, fescues, and ryegrasses. However, in any given neighborhood, outbreaks are likely to be sporadic, with some lawns becoming infested and others not. Our research has focused on identifying the factors common to lawns with chinch bug problems, in order to eventually develop a cultural management strategy for the insect. Research in 1986 identified thatch thickness as related to chinch bug numbers and hinted at a relationship between lawn composition and infestation by chinch bugs. The data from our 1987 field season, detailed below, give support to these hypotheses.

Thatch thickness

Data were collected from 42 randomly selected Lansing, MI, lawns--26 with measurable chinch bug populations, 16 without. Chinch bug abundance is reported as the sum of visual counts of five 5ft long, one inch wide transects taken on two sampling dates (early July and late August) for a total of ten transects. Uncompressed thatch was measured to the nearest mm and is reported as a mean of ten measurements taken during the two sampling dates.

Figure 1 demonstrates the relationship of thatch thickness and chinch bug abundance. The correlation coefficient is significant at the .001 level ( $N=42$ ,  $r=.52$ ). Lawns with thicker thatch tend to have more chinch bugs than those with thinner thatch. This has been shown for the southern chinch bug, Blissus insularis, but not for B. leucopterus. Average thatch thickness in infested lawns was 9.5 mm, compared to 5.3 mm in uninfested lawns.

Grass species

Species composition of 42 lawns was determined as follows: Five ten ft long transects were randomly placed in the lawn. One plant was taken every foot along each transect and was pressed in a plant press for later identification in the lab. Percent composition of each species in the lawn was determined by dividing the number of plants of a particular species by the total number of plants sampled (50 in most cases). Kentucky bluegrass and fine fescue were the most common turf species present, with one or the other or both occurring in nearly all lawns sampled.

Table 1 shows the percent fine fescue in chinch bug infested lawns to be significantly higher than in uninfested lawns (39.9% vs. 12.3%,  $t=3.532$ ,  $P<.002$ ). The student's t-test was performed on arc sin square root transformed data to correct for non-normality of percentages. Variances reported are for transformed data whereas means are non-transformed.

Table 2 shows the reverse to be true for percent Kentucky bluegrass--a lower percent Kentucky bluegrass in infested lawns as compared to uninfested lawns (41.1% vs. 63.5%,  $t=2.680$ ,  $P<.02$ ). Data were transformed and reported as above.

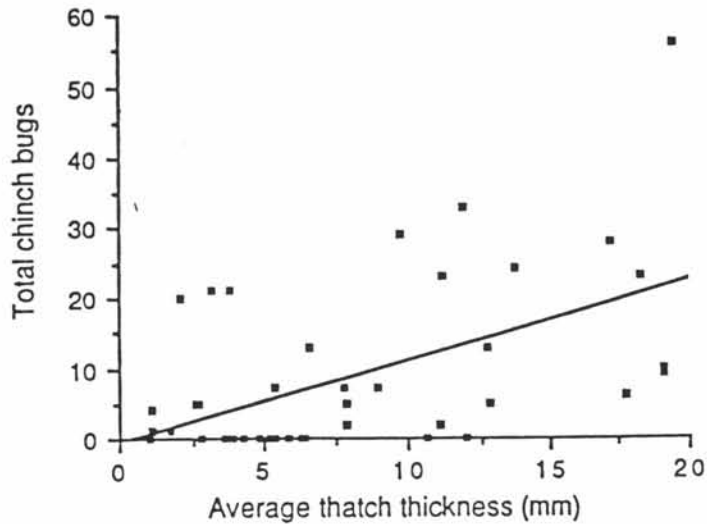


Figure 1. Relationship of chinch bug abundance to thatch thickness ( $N=42$ ,  $r=.52$ ,  $P<.001$ )

Table 1. Percent fine fescue in infested and uninfested lawns

	Infested	Uninfested
$\bar{x}$ =	39.9 %	12.3 %
$s^2$ =	278.19	423.43
$t$ =	3.53	
	.001 < P < .002	

Table 2. Percent Kentucky bluegrass in infested and uninfested lawns.

	Infested	Uninfested
$\bar{x}$ =	41.1 %	63.5 %
$s^2$ =	195.43	282.5
$t$ =	2.68	
	.01 < P < .02	