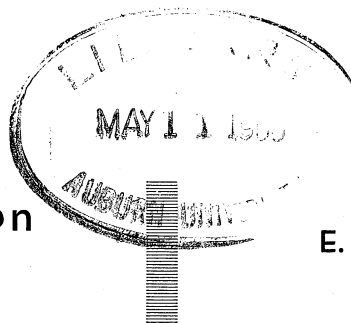


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Controlling Chinch Bugs on St. Augustine Grass Lawns

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THE CHINCH BUG¹ is a serious pest of St. Augustine grass lawns in Alabama. Infested grass may be severely damaged or killed by this pest unless control measures are used.

Chinch bugs damage grass by sucking the sap from the plants. Many bugs collect at the base of one plant, suck the sap from it, then leave to attack adjoining plants. This causes damage to appear in spots in a lawn. In fact, the first sign of chinch bug injury in St. Augustine grass is small spots of yellow grass. The spots increase in size as the bugs increase in numbers and attack new plants. A lawn may have several spots that join and cover the entire area. Plants that are attacked turn from green to yellow and finally to brown as the grass withers and dies.

¹ *Blissus leucopterus insularis* Barber, Family Lygaeidae.

DESCRIPTION and LIFE HISTORY^{2, 3}

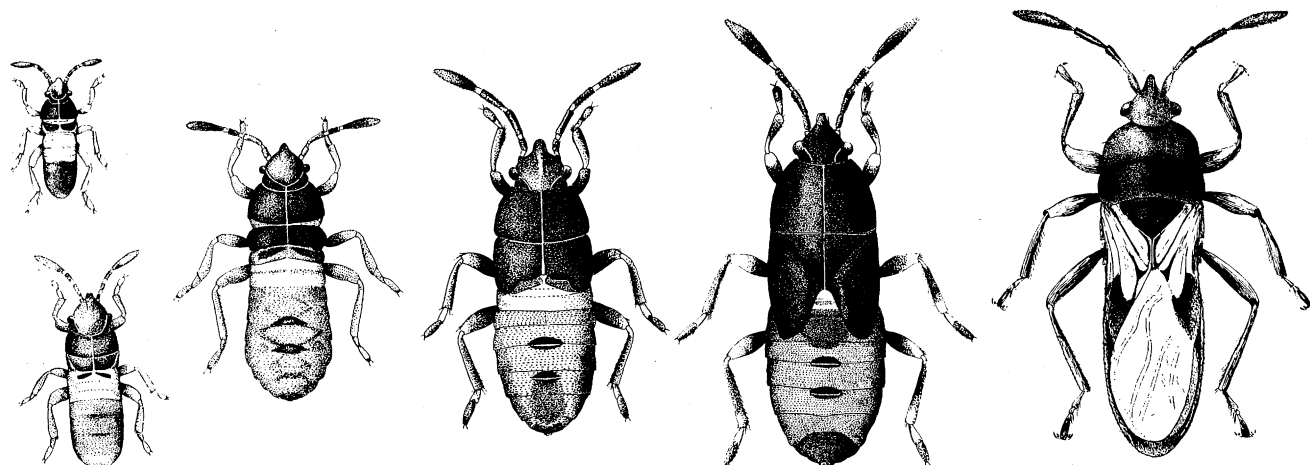
There are three stages in the life cycle of the chinch bug — egg, nymph, and adult.

The adult chinch bug is black-bodied and about 1/5-inch long. It has white wings that reach almost to the tip of the abdomen. The upper pair of wings has a black spot on the outer margin of each wing. Legs of the chinch bug are yellowish to red.

Chinch bugs pass the winter in the adult stage in dead grass, leaves, and other litter. In deep grass the bugs crawl down into the sod and hibernate. The bugs emerge from hibernation

² Watson, J. R., *The Chinch Bug on St. Augustine Grass Lawns*, Fla. Agr. Expt. Sta. Bul. 371, 1925.

³ Wilson, R. N., *The Chinch Bug in Relation to St. Augustine Grass*, U.S. Dept. of Agr. Cir. 51, 1929.



Different stages in the life cycle of the chinch bug are shown above. From left to right (beginning at top left) are the five

stages of the nymph, with the adult form at extreme right. The adult measures about 1/5 inch long. (USDA photos.)

when the weather warms up in the spring. Soon after emergence they mate and begin to lay eggs.

Eggs are laid on the grass near the surface of the soil or they may be scattered about in the soil. The very small eggs are whitish at first but gradually turn to amber or red. They hatch in about 2 weeks into nymphs that have the same form as adults, except for being smaller and wingless.

Nymphs are yellow when first hatched but soon change to red and have a pale band across the abdomen. They molt four to five times before becoming adults. Just before the adult stage is reached, the nymphs change to a brownish-black color and have wing pads. The nymphs require about 30 days to reach maturity, and adults begin to lay eggs in 7 to 10 days.

The total life cycle of the chinch bug is 7 to 8 weeks. Two or more generations per year occur in the Mobile area. However, the generations overlap to such an extent that all forms are present after early summer.

Chinch bugs have an offensive odor, especially when crushed. A severely infested lawn has an odor that can be detected by walking across it.

RESEARCH on CONTROL

This publication reports results of research on chinch bug control conducted in Mobile in 1959. The experiment was done on the lawn of the Alabama Trade School.

Observations were begun in early spring for presence of chinch bugs in the St. Augustine grass. At that time only a few bugs were found. These were hibernating in mulch around ornamental plants. By early June the bugs had moved out into the grass and were increasing in number. The experiment was begun June 18.

In the experiment, 26 different insecticides were applied at various rates as sprays and/or granules. A total of 40 treatments was included. Plots were square, 1/1000-acre areas of St. Augustine sod. All treatments were replicated four times. The sprays were applied to the plots in 2 gallons of water (equal to 0.07 inch rainfall). Granules were spread evenly over the plots by hand, then 2 gallons of water was applied to each plot with a power sprayer.

Infestation counts were made by using a metal cylinder made by cutting both ends from a 5-gallon can. The cylinder, which enclosed an area

of 0.6 square foot, was pushed into the sod and filled with water. The bugs that floated to the top in 5 minutes were counted.⁴

RESULTS and DISCUSSION

Results of the experiment are presented in Table 1. On the untreated grass, the chinch bug population reached a peak of 233 bugs per 0.6 square foot of turf in the last half of July. The population was somewhat lower in August and leveled off at about 22 bugs per sample area in Septem-

TABLE 1. CHINCH BUG INFESTATIONS IN ST. AUGUSTINE GRASS BEFORE AND AFTER VARIOUS INSECTICIDAL TREATMENTS, MOBILE, 1959

Treatment ¹	Bugs/0.6 sq. ft., by dates ² , av.				
	6/18 ³	7/21	8/19	9/22	10/15
Untreated check.....	No. 17	No. 233	No. 92	No. 22	No. 24
Am. Cy. 18133, 4 lb. e. c. ⁴	14	20	38	28	19
Am. Cy. 18133, 4 lb. gran. ⁵	12	8	46	21	20
Am. Cy. 18133, 8 lb. e. c.....	6	11	24	11	14
DDT, 5 lb. e. c.....	8	6	19	3	3
DDT, 10 lb. e. c.....	12	1	8	1	1
DDT, 20 lb. e. c.....	10	2	13	2	3
DDT, 10 lb. gran.....	11	1	5	1	1
Demeton, 2 lb. e. c.....	5	36	25	7	5
Diazinon, 2 lb. e. c.....	49	40	37	12	18
Diazinon, 5 lb. e. c.....	12	6	57	12	19
Diazinon, 10 lb. e. c.....	16	2	31	32	18
Dibrom, 4 lb. e. c.....	17	147	34	9	13
Dimethoate, 4 lb. e. c.....	11	118	56	9	12
Dimethoate, 4 lb. gran.....	8	34	34	14	19
Dipterex, 5 lb. gran.....	5	61	15	8	8
Endrin, 2 lb. e. c.....	11	92	49	25	20
Ethion, 4 lb. e. c.....	12	9	37	5	10
Guthion, 2 lb. e. c.....	16	123	64	28	14
Heptachlor, 8 lb. e. c.....	16	85	33	23	19
Heptachlor, 8 lb. gran.....	11	213	54	11	19
Malathion, 10 lb. e. c.....	13	67	60	20	10
Malathion, 10 lb. gran.....	11	65	25	13	15
Methyl Trithion, 4 lb. e. c.....	8	39	39	36	18
Phorate, 4 lb. e. c.....	9	3	23	12	14
Phorate, 4 lb. gran.....	14	3	37	22	21
Phosdrin, 2 lb. e. c.....	11	56	35	8	44
Phosphamidon, 2 lb. e. c.....	9	112	35	7	8
Sevin, 4 lb. w. p. ⁶	8	34	33	16	13
Shell SD-5539, 2 lb. e. c.....	4	71	40	9	9
Strobane, 10 lb. e. c.....	14	105	52	11	24
Tedion, 2 lb. e. c.....	6	63	25	9	6
Thiodan, 8 lb. e. c.....	7	73	33	8	12
Thuricide, 10 lb. w. p.....	8	75	38	7	27
Toxaphene, 10 lb. gran.....	8	123	47	15	13
Trithion, 4 lb. e. c.....	4	10	22	9	13
VC-13 (75%), 5 gal. e. c.....	34	10	13	3	8
Zytron, 10 lb. e. c.....	4	4	31	7	10
Zytron, 10 lb. gran.....	18	2	28	8	9
Zytron, 20 lb. gran.....	11	3	15	2	4

¹ Rates are pounds of technical material per acre.

² Mean of two samples per plot and four replications.

³ Counts were made prior to treatment on June 18.

⁴ Emulsifiable concentrate.

⁵ Granules.

⁶ Wettable powder.

⁴ Kerr, S. H., Personal correspondence to W. G. Eden dated May 8, 1959.

ber and October. Some of the insecticidal treatments were effective throughout the summer, some for shorter periods, and some were ineffective.

DDT at 5, 10, or 20 pounds per acre as sprays or 10 pounds per acre as granules, and Zytron at 20 pounds per acre as granules protected the grass for the longest period (4 months). Ten pounds of DDT per acre as spray or granules appeared to be slightly more effective than 5 pounds as a spray; however, 20 pounds as a spray was no better than 10 as spray or granules.

Zytron at 20 pounds per acre as granules was effective for the 4-month period of the experiment, but 10 pounds as granules or spray was somewhat less efficient. VC-13 at 5 gallons per acre controlled the bugs for 3 months but appeared to lose some of its effectiveness thereafter.

Ethion and Dipterex appeared to have some residual action against the chinch bug after 1 month, but their performances were not as good as DDT, Zytron, or VC-13. Diazinon at 5 or 10 pounds per acre as a spray was highly effective for 1 month but had little residual effect thereafter. American Cyanamid 18133 at 4 pounds per acre as granules or 8 pounds per acre as a spray controlled the chinch bug for 1 month but was less effective after 1 month. Four pounds per acre of the compound as a spray did not control the insect.

Zytron at 10 pounds per acre or phorate at 4 pounds as spray or granules was effective for 1 month but then lost some effectiveness. Trithion at 4 pounds per acre as a spray controlled the chinch bug for 1 month after application. The most effective treatments and lengths of their effectiveness are summarized in Table 2.

There have been reports that the chinch bug was resistant to DDT in Alabama, but there was no indication of resistance in this experiment. One application of DDT at the 10-pound rate as spray or granules gave excellent control of the insect throughout the summer. If resistance to DDT develops, good control of the insect may be had with other insecticides.

Phorate and American Cyanamid 18133 are extremely toxic compounds and should not be used by the average person. Ethion and Trithion, though less toxic than the above two, are highly toxic. Diazinon and VC-13 are considerably safer than any of the previously mentioned insecticides, but they must be used with proper precaution to prevent ingestion, inhalation, or skin absorption. DDT and Zytron are relatively safe to handle, but

TABLE 2. LENGTH OF EFFECTIVENESS OF INSECTICIDAL TREATMENTS AGAINST THE CHINCH BUG ON ST. AUGUSTINE GRASS, MOBILE, 1959

Treatment ¹	Length of effectiveness ²
	Months
DDT, 5 lb. e. c.	4 ³
DDT, 10 lb. e. c.	4
DDT, 20 lb. e. c.	4
DDT, 10 lb. gran.	4
Zytron, 20 lb. gran.	4
VC-13 (75%), 5 gal. e. c.	3
Ethion, 4 lb. e. c.	3 ⁴
Dipterex, 5 lb. gran.	2 ⁵
Diazinon, 5 lb. e. c.	1
Diazinon, 10 lb. e. c.	1
Am. Cy. 18133, 4 lb. gran.	1
Am. Cy. 18133, 8 lb. e. c.	1
Zytron, 10 lb. e. c.	1
Zytron, 10 lb. gran.	1
Phorate, 4 lb. e. c.	1
Phorate, 4 lb. gran.	1
Trithion, 4 lb. e. c.	1

Chinch bugs/0.6 sq ft. in untreated plots	Av. no.
1 month	233
2 months	92
3 months	22
4 months	24

¹ Rates are pounds of technical material per acre.
² Effective control was measured as less than 15 bugs per 0.6 square foot at 1 and 2 months and less than 5 bugs at 3 and 4 months. Counts were discontinued after 4 months.

³ Not effective at 2 months, but within effective range at 1, 3, and 4 months.

⁴ Within the effective range at 1 and 3 months but not at 2 months.

⁵ Within the effective range at 2 months but not at 1 month.

normal precaution in handling poisonous compounds should be used with them.

SUMMARY

Unless control measures are used, St. Augustine grass infested with chinch bugs may be severely damaged or killed.

The chinch bug overwinters as an adult and begins to feed as soon as the weather becomes warm in the spring.

The first sign of chinch bug injury in lawns is small spots of yellowing grass; the spots increase in size as the summer progresses.

Populations of chinch bugs reached the highest peak in 1959 in late July.

Excellent control of the chinch bug was obtained throughout the summer in 1959 with one application of 10 pounds of DDT per acre as spray or granules. Twenty pounds of Zytron as granules also controlled the insect throughout the summer.

VC-13 at 5 gallons per acre as a spray was effective against the chinch bug for 3 months. Diazinon, Trithion, and some other phosphate insecticides controlled the insect for 1 month.

