DISTRIBUTION OF THE SOUTHWESTERN CORN BORER IN 1944

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The southwestern corn borer *(Diatraea grandiosella* Dyar) is another injurious Mexican pest that has invaded the State, coming by way of Texas and New Mexico. This insect is a moth of the family Pyralididae which contains two other injurious species closely related to the form under discussion, i. e., the sugarcane borer *(D. saccharalis* Fabricius) and the southern corn-stalk borer *(D. crambidoides* Grote), which do serious damage to the sugar-cane and corn crops of the southern United States. Corn is the only crop plant seriously injured by the southwestern corn borer, although occasional light infestations develop in sorghums, broomcorn, and Johnson grass which are near infested corn. The extent of damage to corn in Oklahoma depends upon the intensity of infestation and upon the age and size of the plants when attacked. Losses due to borer activity vary from slight injury, sustained by early corn lightly infested with second generation borers, to 90-100 per cent of the crop in the case of late corn heavily infested. Investigation of control measures by the State Experiment Station is being directed along the lines of date-of-planting tests and cultural treatment of the corn stubble in which the hibernating larvae pass the winter.

In 1931, the known distribution of the southwestern corn borer in Oklahoma was limited to the two most western counties in the State (Davis *et al.*

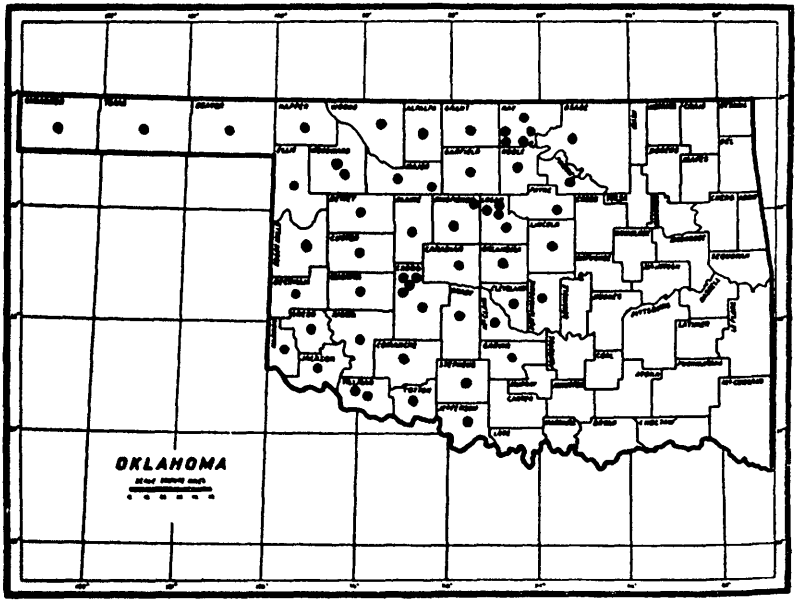

Fig. 1. Distribution of the southwestern corn borer by counties in 1944. Percentage of infestation generally 0 to 20, one dot per county; 21 to 50, two dots; above 50, three or more dots.

1933). Since that time the infestation has spread generally over the western half of the State. This rapid spread, over an area in which relatively little corn is grown, was probably assisted to a considerable extent by the narrow chain of corn fields along the several rivers of the section which flow in a generally eastward direction. Surveys of the 1943 and 1944 crops show the eastern boundary of the borer-infested territory in Oklahoma to be roughly along a line running between Osage and Jefferson Counties. Injury from borer attack along this east border is not as yet important, the percentage of plants infested being generally in the range of 1 to 20.

In areas where borers have been present for several years, the degree of infestation is correlated with the extent to which corn is grown. Isolated fields of corn usually have a low percentage of infestation while those fields in localities where corn is commonly grown generally have from 50 to 100 per cent of the plants attacked. Furthermore, the number of borers per stalk is directly proportional to the percentage of plants infested. In a field where the infestation is in the range of 20 to 50 per cent, the number of borers per stalk seldom averages more than one. As the percentage of infestation increases, the number of borers per stalk increases until fields having an infestation of 100 per cent may have as many as 5 to 8 borers per plant.

In Fig. 1 three centers of high infestation are shown. The southernmost of these areas is in northern Caddo County where drought-resistant upland sandy-loam soil has consistently produced fair yields of corn prior to the advent of the borer. A similar condition is found farther north, beginning in Logan County and extending northwestward along the Cimarron River. The third center of infestation is in Kay County extending generally along the sandy valley of the Salt Fork River.

This higher intensity of infestation in corn-growing localities as contrasted with the lower degree in isolated fields appears to be simply due to the fact that in the former case there is always an ample supply of moths emerging in the spring to infest the current crop while this is not necessarily true in the latter instance. If in an isolated field, as often happens, a crop other than corn is planted the second year, the potential infestation for a corn crop planted the third or fourth year is greatly reduced.

Just how far this native of warm arid Mexico will be able to penetrate the northern section of the corn belt is not known. At the present it is known to be as far north as the southern boundary of Nebraska (Wilbur *et al.* 1943). Neither is it known how successful it will be in living under the conditions of higher rainfall that will be encountered as it moves eastward.

LITERATURE CITED

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