

THE MEXICAN COTTON BOLL WEEVIL.

The United States Department of Agriculture Describes the Pest's Habits and the Damage It Has Caused this Season.

The United States Department of Agriculture has just issued the following special press bulletin on the Mexican cotton boll weevil, and in view of the widespread interest in the subject, we are glad to lay the official opinion of the Department before the readers of *The Progressive Farmer*:

The most serious menace that the cotton planters of the South have ever been compelled to face is the Mexican boll weevil, which is ravaging the cotton fields of Texas. The weevil has not been found outside that State except in the instance which occurred in August at the Louisiana Sugar Experiment Station at Audubon Park in the environs of New Orleans. In that case the circumstances have led the Louisiana authorities to the conviction that the pests were purposely placed in the cotton plots by some interested person. The station authorities promptly destroyed all the cotton of the experimental plots by picking the fallen fruit, uprooting and burning the plants, and subsequently plowed and flooded the land after it had been thoroughly sprayed with crude petroleum. As there are no cotton fields within 10 miles of Audubon park, and several examinations by the station entomologist failed to reveal any weevils, it is very probable that the colony was completely exterminated.

NATURE OF THE PEST

The difficulties in the way of controlling the boll weevil lie as much in its habits and manner of work as in the peculiar industrial conditions involved in the production of the staple in the Southern States. The weevil lives in all stages, except the imago, within the fruit of the plant well protected from any poison that may be applied, and in that stage takes food only by inserting its beak within the substance of the plant. It is remarkably free from the attacks of parasites and diseases, occupies but fourteen days for development from eggs to adult, and the progeny of a single pair in a season may reach 134,000,000 of individuals.

The weevil adapts itself to climatic conditions to the extent that the egg stage alone in November may occupy as much time as all the immature stages together in July or August. These factors combine to make it one of the most difficult insects to control.

THE MONEY LOSS TO SOUTHERN FARMERS.

The territory at present affected by the boll weevil is entirely in Texas. The nearest approach to the Louisiana line is in the immediate vicinity of Timpson, 25 miles away. The nearest approach to Shreveport is in Wood County, about 100 miles distant. On the north it has been found in the vicinity of Sherman just south of the Red River. In the region between the latitude of Green-

ville and the Red River the weevil is only scatteringly present and has caused no general damage. It will require nearly two years for it to reach such numbers as to materially reduce the normal production. Although many conditions make it very difficult to reduce to figures the damage caused by the weevil, calculations made in the Division of Entomology of the U. S. Department of Agriculture, based upon statements showing the production of cotton in 10 leading counties in Texas when the boll weevil was absent and when it was present, and showing the increase in 10 other counties when the weevil was absent at both similar periods, appear to justify the estimate that the total damage caused by the insect is about 50 per cent. Upon that basis the Texas planters have suffered a loss of \$15,000,000 during the present season, and this estimate, it is stated, agrees with those of conservative cotton statisticians. As the normal cotton crop of the United States is estimated to represent a value of \$500,000,000 the probable ultimate damage, when the pest has become spread over the entire cotton belt, providing nothing were done to check it, would be in the neighborhood of \$250,000,000 annually.

Nevertheless there are conditions at work that seem to indicate that planters in weevil regions are gradually adopting changes in their system of producing the staple that have a tendency to avoid damage.

WORK OF THE DEPARTMENT OF AGRICULTURE.

The work of the U. S. Department of Agriculture with the boll weevil consists of field experiments and laboratory investigations. Mr. W. D. Hunter, of the Division of Entomology, assisted by several entomologists, has charge of the investigations in Texas, and Mr. E. A. Schwarz of the Division has conducted studies in Cuba. The field work comprises tracts of cotton grown in such manner as to constitute demonstrations of the means necessary in order that the staple may be produced profitably in spite of the weevil. These fields are located in six different points representing the five regions in Texas, which, by reason of variation in climate and soil, constitute as many distinct cotton districts. In these fields every expedient that has been found to be useful in avoiding damage by the weevil is being tried. The work of the Division of Entomology during the season of 1902 demonstrated that it is possible to produce cotton profitably in spite of the weevil; the work of the present season shows this again under different conditions of climate and soil, and in addition furnishes practical demonstration of the value of the recommendations of Division to planters at six different points in the State. In the laboratory the life history of the pest is being carefully investigated. In addition, our Mr. Schwarz has spent several months of the present year in Cuba, studying the manner in which natural conditions, whether of parasites, diseases,

climatic conditions, or of bringing about a degree of resistance on the part of the plant, control the insect where it has existed as an enemy of the cotton plant for a much longer period than in the United States. He found what he supposes to be the original food plant of the insect in the "Algodon de Rinon" or Kidney Cotton of that island. He failed to discover any parasites at all and did not succeed in finding any important tendency towards immunity on the part of the five distinct varieties studied.

WILL COVER THE COTTON BELT

The steady extension of the territory affected by the weevil year by year until the northern boundary is far north of the center of cotton production in the United States has convinced all observers that it will eventually be distributed all over the cotton belt. Although its progress has been comparatively slow during the time it has been in Texas, it has displayed no tendency toward dying out.

The fact that several European governments are sending agents to this country to procure seed to be used in experiments in producing the fiber in their colonies calls attention to the probability that the weevil may be carried to remote portions of the globe. Although the insect does not, except accidentally, hibernate within the hull of the seed, every seed house attached to a gin in the infested territory harbors many that are brought in from the fields in seed cotton. They crawl into the seed bins as they would crawl anywhere for protection. All danger could easily be avoided by fumigation of the seed or by leaving it sacked in storage rooms isolated from new cotton for a year previous to shipment.

NO DIRECT MEANS OF FIGHTING IT

The work of the Division of Entomology has demonstrated that no direct or specific means, such as poisons, will ever be of much avail in fighting the weevil and that there is little hope for the artificial propagation of diseases or in obtaining a variety that is in any sense resistant. Experiments, however, with cultural methods have been highly successful and have obviated the necessity of looking to direct ones.

The cultural methods consist of reducing the number of the pests in the fall by early destruction of the plants and in hastening the maturity of the crop the following spring by every means available. Fall destruction consists of plowing up and burning the plants as soon as the pests have multiplied to such an extent as to render the picking of any more cotton doubtful. Under normal conditions this should occur some time in October. The benefits resulting from this process are threefold. Many weevils are actually killed, the development of several of the so-called broods is prevented, thus further reducing the number which goes into hibernation, and, moreover, the hibernating season, during which many causes bring about a considerable mortality, is lengthened.

While this apparently causes a loss

of the top crop, it is not a loss when the other recommendations of the Division of Entomology are followed. A crop can be obtained which will mature before the weevils have an opportunity to do considerable damage, and this is brought about by the use of a rapid-growing variety accomplished by the planting of northern seed. This must be planted early when the season permits; the rows must be planted at a somewhat wider distance than has been the practice, and a thorough cultivation of the crop must follow. In this way it has been shown the past season that from a half bale to a bale per acre can be cropped in territory where under the old system one-tenth of a bale more or less is secured with difficulty.

By these methods it is possible to produce the staple at a margin of profit that will compare favorably with that realized in the production of most of the staple crops of the United States, even though the large yields of cotton occasionally gained in earlier years seem no longer possible in the districts affected by the weevil.

Soil-Inoculation.

A good many farmers are disposed to laugh at the idea of soil-inoculation to enable it to grow clover and other legumes. They regard it as a sort of scientific fad. Look here, my conservative and old-fashioned friend, you had better take some lessons from your wife. We suspect that she knows a good deal more about inoculation than you do. When she told you yesterday to get her two cents' worth of compressed yeast when you went to town, she had inoculation in her mind. She intended to inoculate a batch of dough with the bacteria of yeast. We have not the slightest doubt that inoculation would be successful, and still less doubt that if she had not been practicing this ever since you were married you would have been a very bad dyspeptic by this time, and possibly in your grave. The yeast is simply bacteria, and when you laugh at the United States Government sending out bacteria in cotton in a bottle corked up tight, remember that it is doing just what your wife has been doing all these years in order to promote your health and comfort. She sends for this yeast only when she is out of bacteria at home. She could just as well save some of the raised dough, and thus keep bacteria in stock, as not, but now that the bacteria is kept in stock by the stores she thinks it better for you to pay two cents, and thus save her the trouble.

Possibly you have a pond on your place that has been recently drained, and is full of peat. You have not been able to grow anything on it this summer. Suppose you take a wagon-load of horse manure, and scatter it over that pond. For what, you say? Simply to inoculate it with another kind of germ altogether—a germ that promotes the decay of vegetable matter. Try it.—Wallace's Farmer.