

Press Bulletin No. 159

Agricultural Experiment Station
Kansas State Agricultural College

Green Bug

It is well known that the "green bug" (*Toxoptera graminum*, Rondani) wrought great damage to oats in the southern part of this State last spring, and that the attack on wheat was only less serious. Many responsible millers and grain men have expressed to us their firm conviction that the "green bug" was responsible for thousands of dollars' damage to oats and wheat. That it swept the oats and a large proportion of the wheat of Oklahoma, no one conversant with the situation will deny. In short this insect demonstrated its ability almost to sweep certain of the cereal crops of whole states and forced us to recognize it as one of the large factors to be reckoned with in the production of wheat and oats. Yet on the advent of summer it so completely disappeared that there seemed to be hardly a "green bug" throughout the length and breadth of Kansas, Oklahoma, and Texas. Doubtless they disappeared through the attacks of their parasitic and predaceous foes and through flying away from the hardening grain to seek food more to their liking. During this time of scarcity the government agents were finding them in the Dakotas, on the volunteer wheat growing about elevators, and, as later examinations clearly showed, they were passing the summer in some parts of Kansas on volunteer oats and blue-grass.

This insect is pale green, with a dark, irregular line running down the middle of its back, The eyes are very black and show conspicuously against the pale green of the body; the feelers, except for a small portion at the base, are also black, while the horns at the rear of the body are only tipped with black. Many persons have confused with this "green bug" the dark green corn-leaf louse of the corn and Kafir-corn, or the rosy louse on the roots and stems of wheat, or the larger green louse so generally distributed over the wheat fields of this State, but distinguished by having the horns at the rear of the body completely blackened from tip

to base, or green lice on rose bushes, hop plants, and box-elder trees, and as a result we have heard constantly through the press of "green bugs" springing up here and there through the State. Although this misconception caused a great many false alarms, it showed that the people were watching, and it was such watchfulness that brought to light the presence of the real "green bug" in some of our wheat fields this fall. They are now working in at least three wheat fields in this State in sufficient numbers to kill the wheat in spots. The bugs have been found scatteringly in other fields of the same and, in some few cases, of other counties, almost always in wheat that lay near volunteer oats or blue-grass. Indeed, in some instances they were found on the blue-grass in the absence of wheat.

In each of the fields where the "green bugs" were abundant enough to kill the wheat, their parasitic foes had already been at work, and the large leaves of the volunteer oats and the small leaves of the young wheat plants were alike dotted with the swollen and blackened bodies of their victims. From the time the bugs were discovered the parasites worked more and more slowly, until with the advent of December they apparently became almost, if not entirely, inactive. The "green bugs," on the other hand, went forward and increased, slowly pushing the edge of the infested spot out into the healthy wheat. A matter of still greater significance than this increase is to be found in the fact that the latter are constantly producing small numbers of winged females, which, flying up, are caught by the wind and carried into other parts of the same field, or even into other fields. During each examination made of these spots, in from two- to three-week intervals, ranging from late fall until January 31, 1908, winged forms have been seen. The insects are known to occur in injurious numbers in three places in this State, but scatteringly in many others, and it is not impossible that they might be found in any part of the wheat belt.

These being the conditions, what may we expect next spring and summer? This is a question to which no one can give a definite reply, because (1) we do not know whether they can stand our winter, (2) we do not know whether their parasites can stand our winter, (3) we do not know what the character of this winter and spring will be. If they are able to stand the winter, and both they and their parasites have done so thus far, and are favored by a late, cold spring, or if all the parasites should be destroyed by the cold, they will probably increase and become a most serious menace to wheat and oats. Inasmuch as they

usually pass the winter in our latitude in the egg stage, it is unlikely that they will be able to stand the cold of our climate; yet they may survive, and if they do we shall have to face the problem of controlling them. Also, we must remember that, contrary to previous knowledge, the insects wintered last year in the wheat fields of Oklahoma, and possibly in some cases in southern Kansas, and that they are undoubtedly trying to do the same thing this year in the wheat fields of northeastern Kansas. The provident man makes provision against possible loss, and we cannot afford to do less. We owe it to ourselves to take such steps and make such preparation as our present knowledge shows to be necessary to control any outbreak that may occur.

A study of last year's experience, together with a knowledge of the present status of the "green bug," points clearly to certain measures that may be taken to prevent an outbreak. These spots where the "green bugs" are killing out the wheat, and where winged forms are being constantly produced, are simply centers of contagion from which the bugs go to other parts of the same field and to other fields. The fact that such spots bear the overwintering parasites in the swollen and blackened bodies of their victims should not deter us from treating them, for it is an easy matter to go over a small area and pick off the stalks that bear these blackened seed-like bodies, because at a touch the living "green bugs" will fall to the ground while the dead ones, being fixed to the stalk, will remain. This parasitized material should be gathered and strewn in other parts of the field or stored elsewhere for future reference, and the bug-infested wheat be turned under deeply with a plow, the soil being harrowed down smoothly and rolled so that none of the bugs can ever reach the surface. The other measure lies in the preservation, accumulation and multiplication of the "green bug's" enemies so that, in case the parasite fails to live over and the "green bug" appears where there are no parasitic enemies, we can introduce this friend and give it a chance to show whether it can destroy the lice for us. The Experiment Station is watching these matters closely and making every possible preparation to prevent serious damage from the "green bug" next year. The Experiment Station, however, needs the aid and cooperation of the people in all parts of the State in finding out where the "green bugs" are, and in carrying out these measures of prevention. Let every one who has a grain field keep a close watch and, whenever "green bugs" appear, send by mail to the Station Entomologist, T. J. Headlee, Manhattan, Kansas, specimens of bug-infested wheat or oats enclosed in a tight tin box or

can, as well as a description of the way they work. Investigation and recommendations as to method of procedure in the particular case will follow in the shortest possible time. By cooperation and mutual understanding, we hope, in so far as possible, to prevent any outbreak of "green bugs" next spring and summer.

T. J. HEADLEE, Entomologist.

Manhattan, Kan., Feb. 11, 1908.