

# MICHIGAN AGRICULTURAL COLLEGE

## EXPERIMENT STATION

### PRESS BULLETIN NO. 15.—THE WHEAT JOINT-WORM.

R. H. PETTIT.

Just at this time, before the regular sowing of fall wheat, a few timely hints in relation to the joint-worm may prove of interest to wheat growers. The joint-worm is a periodical visitor in this state, but fortunately the intervals between visits are rather long. Of course, they are present all the time but in very small numbers. Whenever the parasites lose control, then the pests multiply and an infestation is the result. About twenty-two years ago we had a serious outbreak in Michigan. These outbreaks usually last for several years and then the pests gradually disappear to come again after another period. From the very nature of the case it has been difficult to collect facts bearing on the proper treatment of the joint-worm. It comes and goes and one has to do his experimenting on the wing as it were, however, every time the insect appears we are able to find out something which adds to the sum of our knowledge. As in the case of most grain insects, it is impossible to spray or to do anything except to minimize the injury by certain farm practices.

The joint-worm is the larva of a small wasp-like insect considerably smaller than a mosquito, the eggs of this creature are laid in the stalk of the wheat just above the joints, usually the lower joints, although in bad cases the writer has seen all of the joints infested. The young larvae or grubs which come from these eggs burrow into the stem, usually from four or five to a dozen above a joint. They cause the stalk to become woody and hard in the vicinity of their burrows. Here they attain their full growth and change to pupae, which stage corresponds to the cocoon stage of many insects. In these hardened woody sections they remain all winter, coming out in the spring to perpetuate their race. The thickening of the stem in this way, of course, interferes with the proper ripening of the berry and for this reason wheat from infested stalks is likely to be shriveled. Furthermore, the grain is apt to lodge or go down if there is much wind and wet weather just before harvest. The loss is often very serious as the yield is cut down often one-half. We have examined, during the present year, samples of more than a score of the popular varieties of wheat and can find no evidence thus far that any variety is immune to the attacks of the pest.

As before stated, the winter is passed in the woody sections of straw. These are brought out in the spring with the barnyard manure and spread

over the fields. The adult insects come out and if wheat is near at hand they lay their eggs and provide for the next crop of the pests. It is quite likely that a thorough soaking of these woody sections in the stable liquids would kill many of their inmates. However, we shall need to know a little more about it before we can say this with confidence. In order to gather statistics the writer has inquired of representative wheat growers in various parts of the state for information regarding their methods of growing the wheat and also for estimates as to the damage sustained from the attacks of the joint-worm. From these replies it would seem that the worst infestations in most cases follow the application of stable manure just before the wheat is sown, very often this is applied on clover sod. Of course, there are many cases where the application of manure is not followed by the joint worm, but such cases are usually outside of the worst infested districts. On the other hand sometimes bad infestations follow commercial fertilizers which could not have been responsible for the trouble. In such cases we shall have to look for other sources, perhaps these fields were near old wheat fields or perhaps quantities of stable manure were used in the near vicinity of the wheat.

To sum up the situation, the insects pass the winter in the hardened sections of the straw. All methods of control look to the destruction of the straw and especially of these hardened sections. If all of the straw could be destroyed in the fall it follows that the insects would disappear on the instant. The following recommendations are made with the view of preventing the straw from getting where it can supply the adults for fresh infestations.

Do not keep over until spring more straw than is absolutely necessary.

Plow stubble in the fall, unless seeded with clover and harrow at least not later than early spring for the adults are able to crawl out of the soil if only covered loosely.

Place new wheat fields at a distance from any old unplowed ones.

Do not apply barnyard manure just before wheat on any account. Put it on at some other point in the rotation, after clover and before corn or at least not just before wheat.

Separate out and burn the woody sections of straw which get in with the grain at threshing time.

R. H. PETTIT,  
Entomologist, Exp. Sta.