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1998 Field-Crop Insects Update

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One summer, when I was conducting a pest survey, a grower asked to go along into his field. He commented, “One thing about farming (pest management in my case), each year is different and you learn something new every year. Unfortunately, you never get to use it!” What was different about 1998 and how will we use the experience?

1998 was the first season that seed of corn varieties protected from the European corn borer by the Bt gene was plentiful and planted extensively. The borer did not cooperate and was generally scarce throughout the Corn Belt. Low numbers were generally true of Iowa, with a few pockets where they were more abundant. The reason borer populations were unusually low was cool weather during the moth flights that reduced egg-laying activity while diseases were allowed to increase and spread throughout the adult population.

This was the second season that the Bt varieties and related non-Bt lines were planted at numerous locations across Iowa. With the very low borer numbers, 1998 was remarkable in the opportunity for documenting the performance of Bt varieties in the absence of the pest. Stalk-tunneling and yield data are summarized in the handout.

The corn rootworms are the most consistent pests of corn throughout the Corn Belt. Even their numbers will vary, however, from year to year. During 1998 rootworm populations had declined from the unusually high numbers in 1997. In Iowa, the pest was still easy to find, but the decline resulted in fewer reports of insecticides failing to prevent lodging. The decline was more drastic in some areas, especially east of Iowa. In the area of Illinois and Indiana where the western is apparently laying eggs in soybeans rotated annually with corn, numbers were so low that there was a large reduction in the number of acres sprayed to control beetles.

The areawide corn rootworm management project has completed its first year; apparently quite successfully. Beetle controls applied in Iowa prior to egg laying in 1997 reduced densities sufficiently so that larval root injury was no worse than where soil-applied insecticides were used. Capturing beetles that emerged from the soil documented that rootworm populations were about 20% lower in 1998 than in 1997. The beetle treatments in 1997 caused an additional four-fold reduction in rootworm numbers in the areawide management area. The population suppression achieved by applying the insecticidal bait with a small amount of carbaryl resulted in such low beetle numbers that only about 1/3 as many acres were sprayed in 1998 as in 1997.

Rootworm resistance to insecticides continued to be a concern in 1998. Tolerance to methyl parathion was found again in areas where it has been reported previously and the
problem seems to have spread somewhat. There is also some tolerance to carbaryl, with the most startling discovery being some carbaryl tolerance in South Dakota. The reports of insecticide resistance remind us that rootworm management will continue to change. Will transgenic varieties that are protected from larval feeding be part of the evolution?

A somewhat unusual event during 1998 was the frequency of seedling-attacking soil insects. Some Area Field-Crop Specialists reported a number of infestations of wireworms. This may have been due to the early cooler, wetter weather in many parts of the state. Under these conditions, the wireworm larvae are likely to remain closer to the soil surface, feeding on seedlings longer.

Remember that, while the adult wireworms prefer to lay their eggs in sod, the larvae may be a problem in fields for longer than the first year after sod. Many common species take several years to mature. Consequently, if stand loss occurred in 1998, a treatment might be considered in 1999.

The least expensive treatments for wireworm larvae are seed treatments. Labeled seed treatments will control light to moderate infestations. Most corn rootworm planting-time treatments will control wireworms. If control of wireworms as well as rootworms is desired, however, make sure the higher labeled rate is used if the rates differ for a particular product.

There were more reports of economic stand loss caused by white grubs than usual. This occurred primarily in corn, but some soybean fields were infested severely also.

There is not a good way to sample for or predict grub infestations. Recent literature reports that row crops near wooded fencerows are most likely to be infested. This was not completely true in 1998, however, with some infestations being spread throughout fields and with no sod in recent history.

This is another pest with a long lifecycle. Larvae will feed for at least parts of three seasons before pupating and emerging. If there were serious infestations in 1998, a soil treatment could be necessary in 1999. Seed treatments would not be adequate and I would prefer a band application rather than applying the chemical into the furrow. Liquid Lorsban is labeled as a preventive and a rescue treatment if granule application equipment is not available. Dow told me that they prefer a full-rate, incorporated if Lorsban is used prior to planting. They suggested a two-quart rate would be adequate in a re-plant situation, which would be a more considerable cost. I did have reports this year, however, of economic stand loss when a full-rate, preventative treatment of Lorsban had been used.

Though the best pest management practices differ each year, I hope the review will help plan for 1999. Insect pest abundance is regulated primarily by environment in the Corn Belt. As soon as we can predict the weather with certainty, or better yet control it, we will be able to take the uncertainty out of pest management. Unfortunately, the excitement will be gone as well!