INSECT MANAGEMENT IN CONVENTIONAL CORN

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Recently, there has been interest in using conventional corn hybrids (non-GMO) to cut input costs because of low commodity prices. However, using conventional corn can also be considered part of an overall IPM plan that diversifies management tactics to increase profitability and avoid resistance.

Using corn hybrids without below ground traits can fit into an IPM program because beetle monitoring is completed prior to making seed purchases. However, you are substituting the convenience of prophylactic treatments (traited corn) for increased labor costs (field scouting). Also, in the absence of below ground traits, at-plant, preventive treatments are available for corn rootworm which are efficacious and have had a history of successful use. Furthermore, field scouting will provide the added value of supportive information that you can use to select field specific management practices that can be used to diversify corn rootworm treatment. Thereby reducing the reliance on a single tactic and delay resistance to Bt hybrids.

Conversely, using corn hybrids with above ground traits does not fit into an IPM approach. Seed purchases are made well in advance of the time period you should scout to determine if control is needed. Fortunately, the insects which are targeted by the above ground Bt traits have scouting procedures, economic thresholds and rescue treatment available if you forgo hybrids with the above-ground traits.

Corn Rootworm

Below-ground traits are only necessary on continuous corn. Exceptions do exist in the southern and southeast part of Wisconsin where western corn rootworm adults have been known to lay eggs in soybean. However, not all first-year corn fields are affected and the chances of damage to first-year corn in the rest of the state is minimal. Furthermore, adult rootworm populations in continuous corn fields are variable. You should not assume all continuous corn will require control or that traited hybrids are the most economical.

Field Scouting for adult beetles will provide the information needed to make cost-effective management decisions. Several written (http://ipcm.wisc.edu/download/pubsPM/Corn-rootworm-card2015hx.pdf, http://ipcm.wisc.edu/download/pubsPM/UW-IPM-ScoutingManual-web.pdf) and video (https://www.youtube.com/watch?v=hYQCJmKNFMo) resources are available to help learn the procedure.

Before switching from below-ground traits, an important consideration would be to check the grower's planter to see if it has insecticide boxes, is plumbed for liquid insecticides or has liquid fertilizer capability. Various aftermarket units are available but cost to retrofit a planter may be an important consideration. Some options may range from $500-$1000/row depending on number of units purchased or if other incentives (rebates) are offered. Others options may be less expensive but this cost does need to be addressed before a decision is made.

Using soil applied insecticides (granules or liquids) at planting is a good option to Bt CRW hybrids. However, care must be taken to choose an effective product. Read labels carefully.

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Some product labeling will provide restriction on rates, placement or dependability in high corn rootworm fields. Most products are restricted use and certification is required before you can buy or use these products. Calibration will also be important to ensure a lethal dose is metered out.

Use of the corn rootworm rate (1.25 mg a.i./seed) of the neonicotinoid seed treatments is also an option to consider. However, these commercially applied seed treatments are most appropriately used in low to moderate rootworm injury situations as per label instructions. These populations should be verified with field scouting data.

Above-ground Insect Pests

Deciding not to use corn hybrids with above-ground Bt traits can be a cost-effective decision because you have reliable scouting procedures, the availability of economic thresholds, as well as efficacious rescue treatments if/when needed. Furthermore, the insects controlled by the above ground traits, like corn rootworm populations, are variable making prophylactic use of the above ground traits questionable or even desirable.

The Field Crop Scouting Manual http://ipcm.wisc.edu/download/pubsPM/UW-IPM-ScoutingManual-web.pdf provides the information needed to scout for all Wisconsin insects such as European corn borer, black cutworm, true armyworm and stalk borer as well as economic thresholds. Insecticides labeled for control of these insects are listed in the UW Extension publication, Pest Management in Wisconsin Field Crops-2017.

The rationale for not using hybrids with the above-ground traits is like that of corn rootworm. That is, insect populations are variable making an economical payback inconsistent. For example, European corn borer populations were at a historical low in 2015. However, locally heavy populations were noted in 2016. Similarly, Western bean cutworm populations have been also low in recent years. Stalk borer tend to be an edge insect and not a problem throughout the field. Black cutworm and true armyworm are a different problem because they are migratory and populations vary greatly from year to year.