Corn flea beetle & Stewart's Wilt Predictions for 2019

by Celeste Welty, Extension Entomologist, 3/9/2019

The current winter has been similar to last year's winter, with bouts of warmer than average temperatures and bouts of colder than average temperatures. Anyone who grows sweet corn might wonder whether the winter was considered harsh or mild overall, because after a very cold winter, we can expect to **not** have problems in sweet corn with Stewart's bacterial wilt, but after a mild winter, we can expect to have problems in sweet corn with Stewart's bacterial wilt. The severity of the disease is related to survival of the corn flea beetle, which vectors the causal pathogen, and which is adversely affected by cold temperature. Every year we make a prediction about how severe Stewart's wilt will be by looking at the winter temperatures and using them to calculate flea beetle index values for several Ohio locations. The index is fairly crude but usually does reflect what we see in the field.

The index values for ten Ohio sites in 2019 range from a low of 88 at Kingsville (Ashtabula Co.), Custar (Wood Co.), and Fremont (Sandusky Co.) to a high of 106 at Piketon and Jackson. The current winter was similar to last year, but colder than 2017 and 2016, and warmer than 2015 and 2014. Most of the Ohio sites fall in the low or negligible disease category this year but there are several sites where wilt predictions are moderate to severe. Individual index values are shown in the chart below.

Corn flea beetle and Stewart's bacterial wilt disease on sweet corn

Site in Ohio	Corn flea beetle index in years 2014 - 2019						
	long term average	2014	2015	2016	2017	2018	2019
Piketon	100	85	86	110	119	101	106
Jackson	96	89	90	112	118	100	106
Columbus	92	85	75	106	112	93	100
S. Charleston	90	68	82	103	104	89	93
Caldwell	87	84	82	109	114	96	102
Wooster	85	74	73	103	102	98	93
Kingsville	85	68	70	114	100	85	88
Custar	81	73	67	101	100	94	88
Fremont	80	65	70	101	101	84	88
Celeryville	78	68	67	109	100	83	91

Prediction of severity of Stewart's bacterial wilt disease on sweet corn:
Severe if index >100
Moderate to severe if index 95-100
Light to moderate if index 90-94
Negligible if index <90

These days, most sweet corn hybrid seed is sold with insecticide treatment on the seeds; it can be difficult to find seed that is not treated. These insecticide seed treatments are effective at controlling the corn flea beetle on most hybrids. Systemic insecticide protection is provided on seed that has been commercially by Cruiser, Poncho, or Gaucho. Cruiser contains the active ingredient thiamethoxam (the same AI as in Platinum and Actara) and is made by Syngenta. Poncho contains the active ingredient clothianidin (the same AI as in Belay) and is made by BASF/Bayer. Gaucho contains the active ingredient imidacloprid (the same AI as in Admire) and is made by Bayer. Tests done at the University of Illinois when seed treatments were under development showed that incidence of Stewart's wilt in susceptible varieties was reduced by about 70% by commercial seed treatment, and severity of symptoms was also reduced. Seed treatments are thus not products that alone will control corn flea beetle and Stewarts wilt.

For farms that are not planting insecticide treated seed, the cultural control of disease-resistant varieties should be used. Ratings for over 600 hybrids from Illinois as of 2010 are shown on a website (http://sweetcorn.illinois.edu/HybRxnSum/Hyb-Rxn-Summary-1984-2010.pdf). A few examples of hybrids that are most resistant to Stewart's wilt are the Ambrosia and Nauset (bicolor se); Sumptuous, Merlin, and Miracle (yellow se); Argent, Celestial, and Denali (white se); Mirai 336BC, Obsession R, and Mirai 350BC (bicolor sh2); and Garrison, Overland, and SummerSweet 7650Y (yellow sh2).

If resistant varieties or commercially treated seed are not planted, it is important to protect seedlings of susceptible varieties from beetle feeding through the 7-leaf stage, especially on farms with a history of problems with this disease. An option is Latitude (imidacloprid plus fungicides), used as a hopper box seed treatment. Another option is systemic soil insecticide, Counter or Thimet, which can be applied to the soil at planting. A final option is to wait until seedlings emerge when they can be sprayed with carbaryl (Sevin), permethrin, or other non-systemic insecticide, but the foliar sprays are not usually as effective as the systemic seed or soil treatments.