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Corn Flea Beetle & Stewart's Bacterial Wilt Disease of Sweet Corn: Predictions and Management for Ohio in 2008

By C. Welty & B. Precheur

Corn flea beetle populations, and the Stewart's Bacterial Wilt pathogen that they carry, are likely to vary from moderate to severe in southern Ohio, light to moderate in central Ohio, to negligible in northern Ohio this year.

Shown below are brief summaries of predicted wilt disease and management recommendations. After the summaries are more details about specific management options.

Predictions and management recommendations for 2008:

There are no locations in Ohio which have a Corn Flea Beetle Index >100 which would be predictive of severe Stewart's Wilt.

The following locations in Ohio have a Corn Flea Beetle Index of 95-100 and are predicted to have moderate to severe Stewart's Wilt: Piketon-100, Jackson-100. In areas where moderate to severe wilt is predicted, resistant varieties are strongly recommended. Susceptible varieties can be grown but must be supplemented by insecticide. On resistant varieties, use insecticide option 4. On moderate or susceptible varieties, use insecticide options 1 or 3 (below).

The following locations in Ohio have a Corn Flea Beetle Index of 90-94 and are predicted to have light to moderate Stewart's Wilt: Columbus-93, South Charleston-90. In areas where light to moderate wilt is predicted, resistant varieties are recommended. Susceptible varieties can be grown but should be supplemented by insecticide. On resistant varieties, use insecticide option 4. On moderate or susceptible varieties, use insecticide options 1, 2, or 3 (below).

The following locations in Ohio have a Corn Flea Beetle Index of <90 and a negligible risk Stewart's Wilt: Kingsville-87, Wooster-88, Hoytville-84, Fremont-87, Celeryville-86, Avon-89. In areas where negligible wilt is predicted, resistant or susceptible varieties can be grown, but should be scouted to verify that flea beetles are not present. On resistant or susceptible varieties, use insecticide option 4 (below).

Overview of management options

Option 1: Buy sweet corn seed that has been commercially treated with a systemic insecticide. Buy seed treated with Cruiser 5FS (thiamethoxam), Poncho 250 (clothianidin), or Gaucho 480 (imidacloprid). This is the easiest way to apply insecticide because it is already on the seed when bought. These treatments are effective for flea beetle control until the 5-leaf stage. Seed treatment is advantageous on varieties rated as moderate or susceptible to Stewart's Wilt, especially in a summer after a relatively warm winter. Tests done by Dr. Jerald Pataky at the University of Illinois showed that incidence of Stewart's wilt in susceptible varieties was reduced by about 70% by Gaucho. Gaucho also reduced the severity of symptoms. The degree of control by Gaucho was

roughly equivalent to using a hybrid with one higher level of resistance, among the four levels used when rating the disease. Gaucho alone will not control corn flea beetle and Stewarts wilt on susceptible varieties. Cruiser and Poncho are similar to Gaucho but have a broader spectrum of activity against soil insect pests.

Option 2: Use Concur or Latitude as a hopper box seed treatment. These are systemic insecticides that are formulated as dry talc-based products. Concur is imidacloprid + metalaxyl. Latitude is imidacloprid + carboxin + metalaxyl. These are effective for flea beetle control until the first true-leaf stage.

Option 3: Use a systemic soil insecticide at planting, in furrow or as a drench banded over the row. Furadan 4F (carbofuran) is the best choice. The other choices are Counter 15G or 20CR (terbufos) or Thimet 20G (phorate), but these are not usually as effective as Furadan for control of corn flea beetle. The products provide systemic protection for about 2 to 4 weeks.

NOTE: THERE IS NO ADVANTAGE TO USING MORE THAN ONE OF OPTIONS 1, 2, AND 3 TO CONTROL CORN FLEA BEETLE IN THE SAME PLANTING.

Option 4: Wait until seedlings emerge when they can be scouted for presence of flea beetles. Scout two or three times per week until the 7-leaf stage, preferably on calm sunny warm days when beetles are most likely to be found on corn plants. The threshold for susceptible varieties is 6 beetles per 100 plants. The threshold for resistant varieties is 2 beetles per plant and >25% of seedlings severely damaged by beetle feeding injury. If the threshold is exceeded, then spray with Sevin, Diazinon, PennCap-M, Lannate, Lorsban, Pounce, Asana, Mustang, Capture, Warrior, or Proaxis. The foliar sprays are not usually as effective as the systemic seed or soil treatments, especially when flea beetle populations are heavy. The foliar products provide protection for about 7 days. Control of corn flea beetle is not needed after the 7-leaf stage.

Vegetable & Fruit Insecticide Update for 2007/2008

Celeste Welty, Extension Entomologist, Ohio State University

New products with new active ingredients:

- ◆ Radiant 1SC (spinetoram): controls caterpillars, thrips, leafminers. For use on cole crops, mustard greens, onion, sweet corn, leafy veg., fruiting veg., root veg., potato, herbs, cucurbits, legumes, strawberries. Made by Dow. Registered Sep. 2007.
- ◆ Delegate 25WG (spinetoram): controls caterpillars, thrips. For use on pome fruit, stone fruit, grapes, caneberries, blueberries. Made by Dow. Registered Sep. 2007.

New products with old active ingredients:

- ◆ Onager 1EC (hexythiazox): same a.i. as in Savey, miticide now marketed east of Rockies, Feb. 2008. Made by Gowan. For spider mite control on pome fruit, stone fruit, grapes.
- ◆ Portal EC (fenpyroximate): same a.i. as in Fujimite. Made by Nichino. For use on apples, pears. ◆ Jan. 2008.
- ◆ Hero 1.24EC (bifenthrin + zeta-cypermethrin): controls caterpillars, beetles, bugs. For use on sweet corn, eggplant, pepper, tomato, head lettuce, cole crops, legumes. Made by FMC. Registered Feb. 2007.

Registration expanded to additional crops:

- ◆ Assail 30SG (acetamiprid): new for berries, Jan 2008; stone fruit, cucurbits, beans, peas, Nov. 2007.
- ◆ Warrior (lambda-cyhalothrin): new for cucurbits and potato and other tuber/corms, Jan. 2008.
- ◆ Provado 1.6F (imidacloprid, foliar): new for herbs, caneberries. Controls aphids, leafhoppers, whiteflies. Aug. ◆07.
- ◆ Admire 2F, Admire Pro 4.6F (imidacloprid, soil): new for herbs, pome fruit, stone fruit, grapes, caneberries. Controls aphids, leafhoppers, whiteflies, flea beetles, Japanese beetle, white grubs. August 2007.
- ◆ Brigade (bifenthrin): 2EC new for greens, potato, cilantro (Feb. 2007). 10 WSB includes at-plant use on cabbage, sweet corn, beans, cucurbits, tomato. Controls beetles, caterpillars, bugs, spider mites, thrips.
- ◆ Avaunt 30DG (indoxacarb): new for greens, cucurbits, leafy veg., tuber veg., grapes, stone fruit. Controls caterpillars. July 2007.
- ◆ Actara 25WDG (thiamethoxam, foliar): new for cabbage, greens, leafy veg., cucurbits, tomato, eggplant, grapes, caneberries. Controls aphids, leafhoppers, whiteflies, flea beetles, thrips, Colorado potato beetle. June ◆07.
- ◆ Platinum 2SC (thiamethoxam, soil): new for cabbage, greens, leafy veg., grapes. Controls aphids,

leafhoppers, whiteflies, flea beetles, thrips, Colorado potato beetle, Japanese beetle. June 2007.

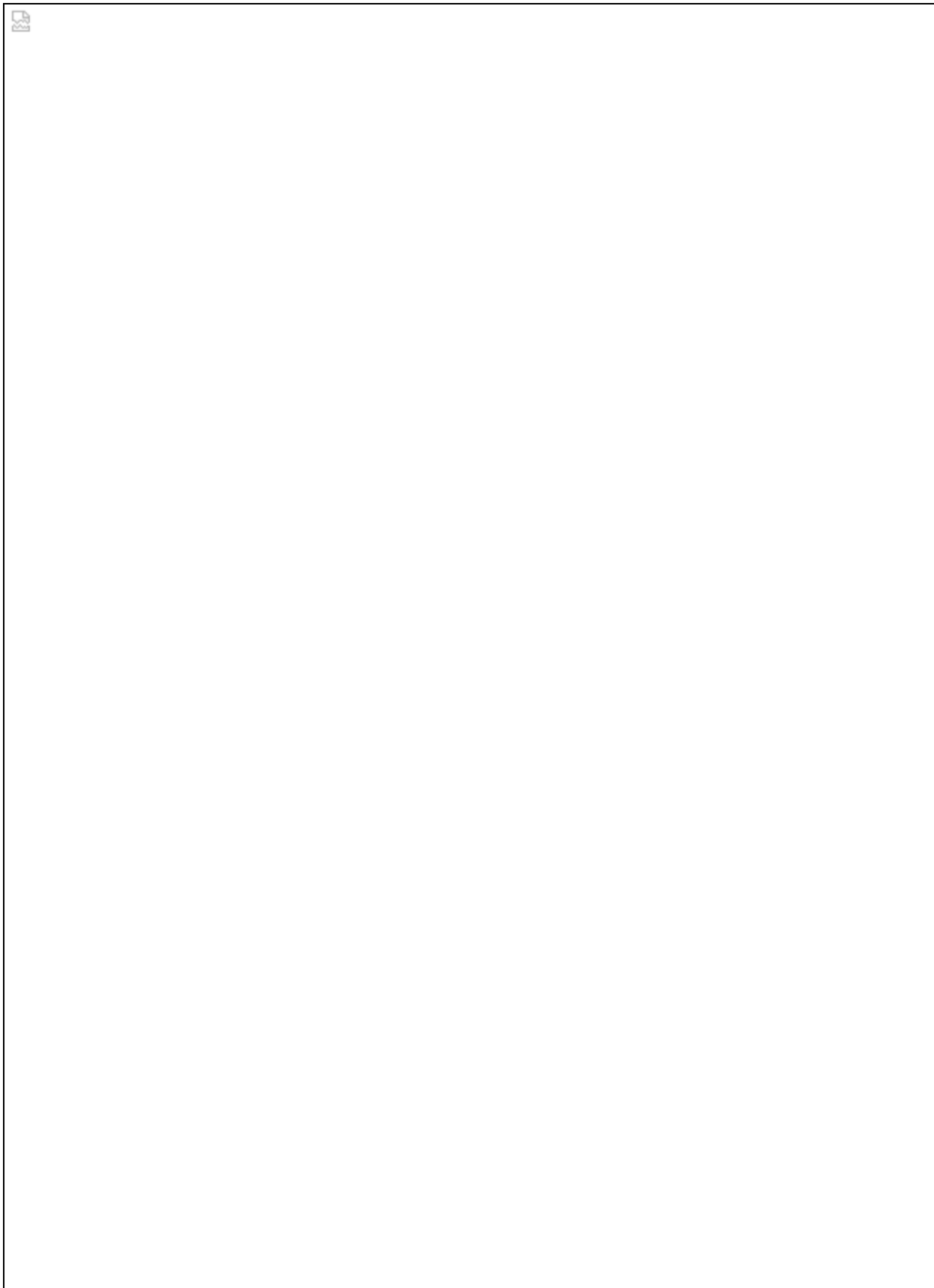
- ◆ Clutch 50WDG (clothianidin): new for potato, grape. Controls aphids, leafhoppers, Colorado potato beetle, Japanese beetle, mealybug, grape berry moth. March 2007. Now a Valent product, formerly Arysta.
- ◆ Acramite (bifenazate): Controls spider mites. 50WS had cherries and apricots added. New formulation 4SC has potato and succulent peas. Feb. 2007.
- ◆ Mustang Max 0.8EC (zeta-cypermethrin): new for cucurbits, root vegetables, potato, blueberry, caneberries, grapes, pome & stone fruit. Controls beetles, root weevils, caterpillars, bugs. Jan. 2007.

Cancellations:

- ◆ Mitac (amitraz): was used on pears; cancelled May 2006.
- ◆ Kelthane (dicofol): Kelthane 50WSP and Kelthane MF discontinued by Dow. Generic dicofol still available.

Current pest management concerns:

- ◆ Pest watch: three potential pests are Swede midge on cole crops (from Ontario), western bean cutworm on sweet corn (from Illinois), and brown marmorated stink bug on fruit and legume crops (from Pennsylvania).
- ◆ Thrips control on cabbage: after loss of dimethoate in 2006, there is a shortage of good products for thrips control. Assail is good when used at high rate just after cupping and 10–14 days later. Radiant is a new option that should be tried. SpinTor and MSR are other alternatives.
- ◆ Stink bug injury on fruit is showing up in many tomato and pepper fields. Control by a pyrethroid or Actara when nymphs first detected, often in early August.
- ◆ In apple orchards that had no crop due to the Easter freeze, large populations of codling moth could be present in 2008 if no insecticides were used in 2007.
- ◆ Resistance to pyrethroids is developing in populations of corn earworm and tomato fruitworm. The resistance problem was compounded by exceedingly large populations of the pest in 2007. Alternatives for sweet corn are growing ◆Attribute◆ transgenic BT hybrids, or spraying Radiant, SpinTor, Lannate, or Larvin, or a tank mix of pyrethroid plus Larvin or Lannate; for tomatoes, spray Avaunt, Proclaim, Intrepid, or SpinTor.
- ◆Attribute◆ hybrids should be supplemented with two sprays during silking if earworm is abundant.
- ◆ Beet armyworm and fall armyworm continue to be a challenge to control in tomato, pepper. These species are tolerant of pyrethroids, so are better controlled by Avaunt, Proclaim, SpinTor, or Intrepid.
- ◆ Mode of action: The label front page of new insecticides has a code number for the mode of action group, from the Insecticide Resistance Action Committee (IRAC). To avoid resistance, rotate among products from different mode of action groups.



Crop Report Southern OH ♦ 4-4-08 Brad Bergefurd

Tomato planting began 2 weeks ago in high tunnels and continues this week.

The only field planting getting done is along the Ohio River (which is flooded up into fields in some low areas) in the extreme SE and SW corners of the state where growers have planted sweet corn under plastic and bare ground plantings were made on high ground. Plowing was getting

done slowly on high fields and those farmers with walking plows and Teams of Horses have been able to get on fields that tractors cannot. Seeding continues in the greenhouses for vegetable, watermelon and melon transplants. Microgreens planted last fall /winter in high tunnels continue to be harvested. Lime Sulfur applications have been made to bramble plantings and straw and row covers are being removed from matted row and plasticulture strawberry fields. Mice damage is being reported in some plasticulture strawberry fields. Some damage from girdling of blackberry canes by mice and rabbits at snow line levels after the March 7 Blizzard are being reported. As fields dry out somewhat growers are trenching fields and ditches surrounding fields with tractor mounted slingers to facilitate movement of water out of fields.

Research Reports

Check out the research reports list which has greatly expanded since our last newsletter. Look in the right hand column at <http://vegnet.osu.edu>