

# INTEGRATED CROP MANAGEMENT

## Stewart's disease in 1999

The mild winter this year means that there is an increased risk for Stewart's disease in cornfields in the southern third of Iowa. We can expect high flea beetle populations in the spring, which will threaten susceptible dent corn inbreds and sweet corn hybrids. We also can expect considerable leaf damage during grain fill in some fields, resulting in yield loss. Seed producers in the southern part of the state should pay particular attention to early-season flea beetle populations.

Stewart's disease of corn is caused by the bacterium *Pantoea stewartii* (formerly *Erwinia stewartii*). It causes a fatal wilt disease in young plants of sweet corn and certain susceptible field corn inbreds, but usually we see the leaf blight phase, which can affect most dent corn inbreds and hybrids after pollination. The bacterium overwinters in and is spread by the corn flea beetle. Disease symptoms are almost always associated with flea beetle feeding. Stewart's disease symptoms on leaves are long, wavy streaks that are water soaked and that eventually turn yellow and die. The pathogen can be seedborne, although seed transmission is extremely rare. Nevertheless, many countries prohibit the import of seed from affected fields.



[1] **Stewart's disease symptoms.**

Winter temperatures can be used to predict the risk of Stewart's disease. If the average temperatures for December, January, and February added together (Stevens-Boewe index) exceeds 90°F, the environmental conditions favor survival of flea beetles and the risk of Stewart's disease is high. Table 1 shows the disease risk associated with different levels of the index. In an average year, the index ranges from about 45 in Osceola County to about 79 in Lee County. This year, the index is higher than average, as indicated in Table 2, but not as high as last year.

Because Stewart's disease often seems to be more prevalent in seed corn fields than indicated by the Stevens-Boewe index, a modified system is being developed by Forrest Nutter and colleagues at Iowa State University to more accurately predict the risk of Stewart's disease in seed corn. Using this system (still under development), a moderate-to-high risk would be predicted throughout Iowa this year. The high prevalence of the disease last year might also contribute to more disease this year.



## Severe late-season Stewart's disease in corn.

[2]

If corn flea beetle populations are high early in the season, they can damage corn plants even in the absence of *P. stewartii*. You can control early-season Stewart's disease on susceptible corn by controlling the corn flea beetle with a foliar insecticide. Use the following thresholds: in field corn prior to stage V5, 50 percent of plants with severe feeding injury and 5 or more beetles per plant; in seed corn on susceptible inbreds, 10 percent of the plants with severe feeding injury and 2 or more beetles per plant. Several insecticides are registered for flea beetles, including Ambush, Asana XL, Furadan 4F, Lannate L, Lorsban 4E, PennCap M, Pounce 3.2 EC, Sevin XLR Plus, and Warrior.

[3] **Corn flea beetle, carrier of Stewart's disease in corn.**

A new systemic insecticide, formulated as the seed treatment Gaucho, also has been shown to reduce flea beetle feeding and Stewart's disease. This compound is not yet registered for corn, but is expected to receive a label some time this year.

**Table 1. Stevens-Boewe Index for prediction of Stewart's disease.**

Index	Leaf blight severity
>90	Severe
85-90	Moderate to severe
80-85	Light to moderate
<80	Trace

**Table 2. Stevens-Boewe Indices for Iowa in 1999.**

District	Stevens-Boewe Index
Northwest	69.4
North Central	69.3
Northeast	73.4
West Central	79.4
Central	77.9
East Central	82.0

Southwest	86.5
South Central	84.9
Southeast	89.3

---

**Source URL:**

<http://www.ipm.iastate.edu/ipm/icm//ipm/icm/1999/4-5-1999/stewart1999.html>

**Links:**

[1] <http://www.ipm.iastate.edu/ipm/icm//istewart.html>

[2] <http://www.ipm.iastate.edu/ipm/icm//istewartlate.html>

[3] <http://www.ipm.iastate.edu/ipm/icm//ifleabeetle.html>

**IOWA STATE UNIVERSITY**  
University Extension