

A REVIEW OF DATCP'S INSECT SURVEY RESULTS FROM 2019

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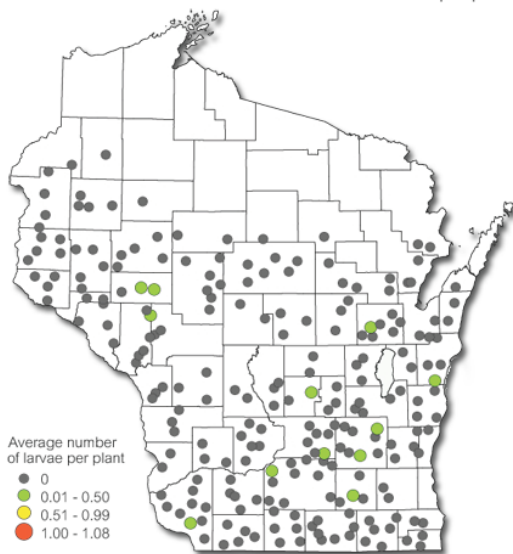
European Corn Borer

Larval populations remained historically low for the second consecutive season. The 2019 fall European corn borer survey found a state average count of 0.01 borer per plant, tying 2018 for the lowest population in 78 years. Seven of the state's nine agricultural districts showed averages less than or equal to 2018 levels, while negligible increases were noted in the southwest and south-central areas. Larvae were absent from 89% of the 229 sampled fields in September and October.

The exceptionally low European corn borer (ECB) pressure documented by the fall survey should provide reassurance to growers who planted non-trait corn seed in 2019, though conventional acreage will continue to require a higher level of scouting and management to address local variability in seasonal ECB abundance.

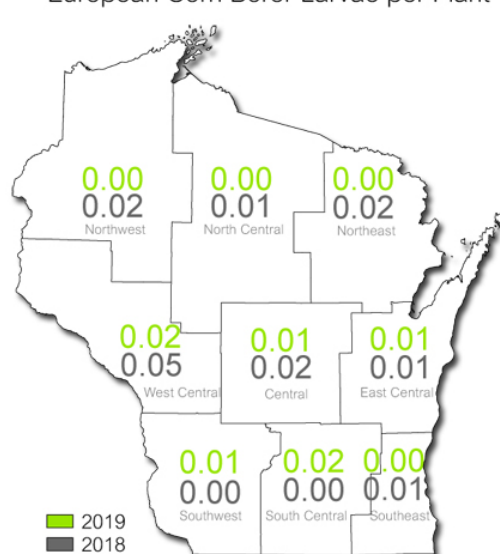
European Corn Borer Survey Results 2019

State Ave. = 0.01 borer per plant



Wisconsin Department of Agriculture, Trade and Consumer Protection

District Average Number of European Corn Borer Larvae per Plant



Wisconsin Department of Agriculture, Trade and Consumer Protection

Table 1. European corn borer fall survey results 2010-2019 (Average no. borers per plant).

| District | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 10-Yr |
|----------|------|------|------|------|------|------|------|------|------|------|-------|
| NW | 0.08 | 0.15 | 0.04 | 0.07 | 0.06 | 0.03 | 0.13 | 0.09 | 0.02 | 0.00 | 0.07 |
| NC | 0.02 | 0.07 | 0.01 | 0.02 | 0.04 | 0.00 | 0.08 | 0.04 | 0.01 | 0.01 | 0.04 |
| NE | 0.19 | 0.13 | 0.05 | 0.02 | 0.01 | 0.04 | 0.00 | 0.00 | 0.02 | 0.01 | 0.06 |
| WC | 0.08 | 0.12 | 0.09 | 0.06 | 0.12 | 0.03 | 0.15 | 0.01 | 0.05 | 0.02 | 0.08 |
| C | 0.06 | 0.05 | 0.01 | 0.01 | 0.00 | 0.01 | 0.24 | 0.02 | 0.02 | 0.01 | 0.05 |
| EC | 0.01 | 0.03 | 0.01 | 0.01 | 0.01 | 0.04 | 0.00 | 0.01 | 0.01 | 0.01 | 0.02 |
| SW | 0.12 | 0.03 | 0.03 | 0.06 | 0.00 | 0.03 | 0.14 | 0.04 | 0.00 | 0.01 | 0.05 |
| SC | 0.07 | 0.20 | 0.01 | 0.08 | 0.01 | 0.02 | 0.14 | 0.06 | 0.00 | 0.02 | 0.06 |
| SE | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.04 | 0.04 | 0.01 | 0.00 | 0.01 |
| WI Ave. | 0.07 | 0.09 | 0.03 | 0.04 | 0.03 | 0.02 | 0.11 | 0.03 | 0.01 | 0.01 | 0.05 |

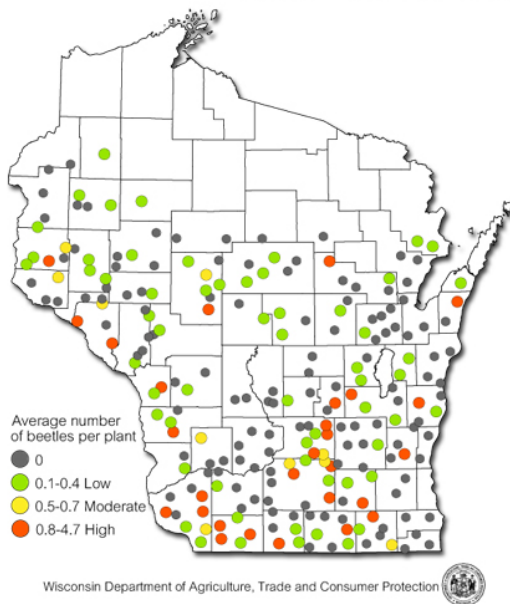
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Corn Rootworm

Beetle counts increased from record-low levels in 2017-2018, but remained low overall. The state average count in 229 cornfields sampled in August was 0.3 beetle per plant, which is only marginally higher than the all-time low average of 0.2 per plant found during the two preceding seasons. For the third year in a row, average counts stayed at or below 0.3 beetles per plant across all six central and northern crop districts and the southeast region, while increases were limited to the south-central and southwest districts. Averages in these two districts rose from 0.3 beetle per plant last year to 0.5 per plant in 2019.

Above-threshold populations of 0.75 or more beetles per plant were found in 27 of 229 (12%) fields surveyed this season, compared to last year's 20 fields (9%). No beetles were observed in 120 (52%) of the sites. The 2019 total count of 711 beetles was 26% higher than the 566 beetles recorded in 2018.

Corn Rootworm Beetle Survey Results 2019
State Ave. = 0.03 beetle per plant



District Average Number of Corn Rootworm Beetles per Plant

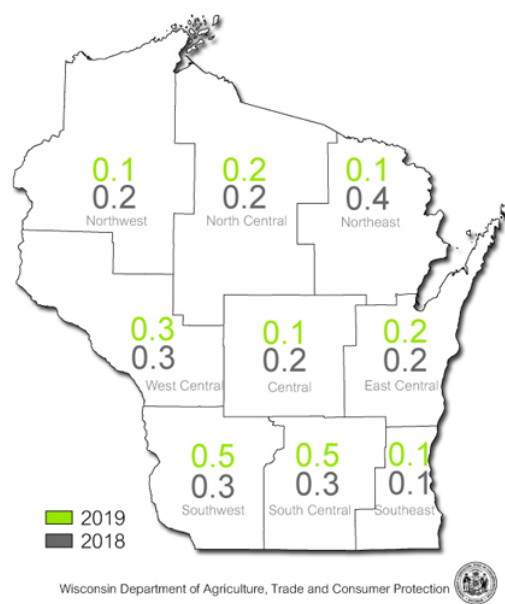


Table 2. Corn rootworm beetle survey results 20010-2019 (Average no. beetles per plant).

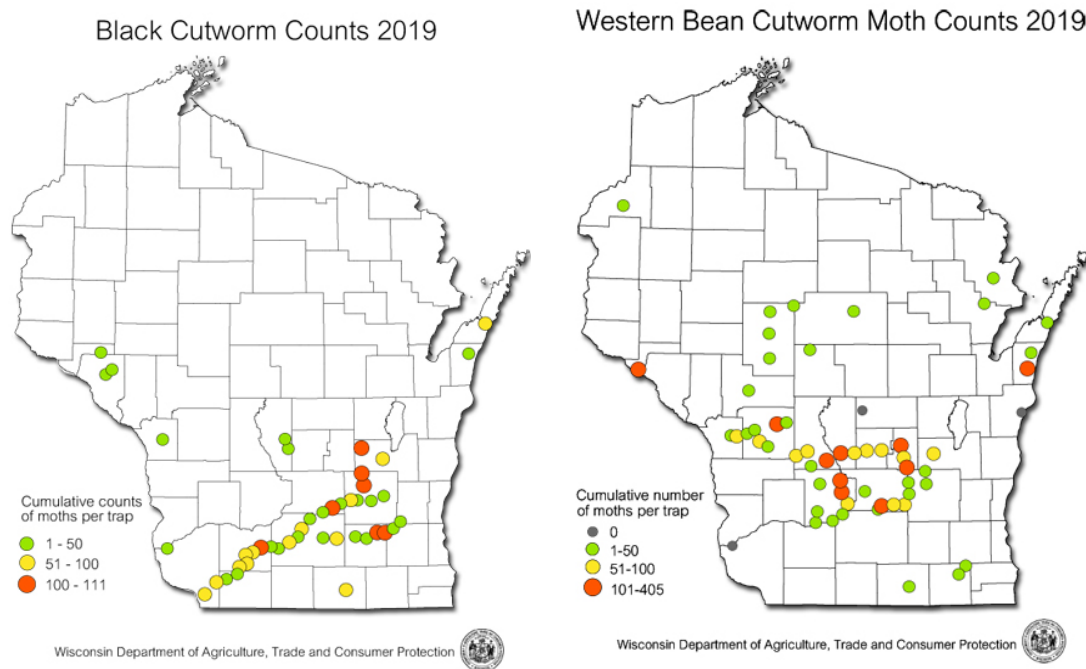
| District | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 10-Yr |
|----------|------|------|------|------|------|------|------|------|------|------|-------|
| NW | 0.3 | 0.1 | 0.5 | 0.7 | 0.5 | 0.2 | 0.5 | 0.2 | 0.2 | 0.1 | 0.3 |
| NC | 0.1 | 0.1 | 0.3 | 0.2 | 0.2 | 0.5 | 0.7 | 0.2 | 0.2 | 0.2 | 0.3 |
| NE | 0.1 | 0.3 | 0.6 | 0.2 | 0.1 | 0.2 | 0.7 | 0.2 | 0.4 | 0.1 | 0.3 |
| WC | 0.4 | 0.6 | 0.4 | 0.4 | 0.6 | 0.3 | 0.6 | 0.2 | 0.3 | 0.3 | 0.4 |
| C | 0.4 | 0.8 | 0.5 | 0.2 | 0.2 | 0.5 | 0.3 | 0.3 | 0.2 | 0.1 | 0.4 |
| EC | 0.3 | 0.5 | 0.4 | 0.3 | 0.3 | 0.8 | 0.4 | 0.2 | 0.2 | 0.2 | 0.4 |
| SW | 0.3 | 1.1 | 0.8 | 0.6 | 0.9 | 0.8 | 0.7 | 0.3 | 0.3 | 0.5 | 0.6 |
| SC | 0.3 | 1.4 | 0.9 | 0.5 | 0.3 | 0.8 | 0.4 | 0.3 | 0.3 | 0.5 | 0.6 |
| SE | 0.2 | 0.7 | 0.9 | 0.8 | 0.4 | 0.7 | 0.2 | 0.1 | 0.1 | 0.1 | 0.4 |
| WI Ave. | 0.3 | 0.7 | 0.6 | 0.5 | 0.4 | 0.6 | 0.5 | 0.2 | 0.2 | 0.3 | 0.4 |

Corn Earworm

Pheromone traps captured a cumulative total of 3,495 moths (15 traps) during the late-season monitoring program, with the largest flights recorded during the last two weeks of September. The highest individual pheromone count was 589 moths at Mayville in Dodge County from September 19-25, while the Janesville black light trap registered its highest weekly total of 932 moths from September 26-October 2. Compared to 2018 when 7,905 moths were collected in 15 pheromone traps, this year's total count was markedly lower. Although this would suggest the risk to late sweet corn from migrating corn earworm moths was also much lower in 2019, the September CEW flights produced localized larval damage to apples, corn and tomatoes throughout fall.

Black Cutworm

Unprecedented planting delays and wet, weedy field conditions contributed to an elevated threat of cutworm damage this spring. Moths appeared by April 4 and substantial migration flights occurred throughout May. The April-June trapping survey captured 1,271 moths in 44 traps, with an individual high count of 111 moths near Waupun in Dodge County. In 2018, the survey collected 2,217 moths in 47 traps. Late corn planting resulted in a protracted primary larval damage period that extended throughout June, but contrary to expectations, black cutworm damage to emerging corn was not prevalent this spring.



Western Bean Cutworm

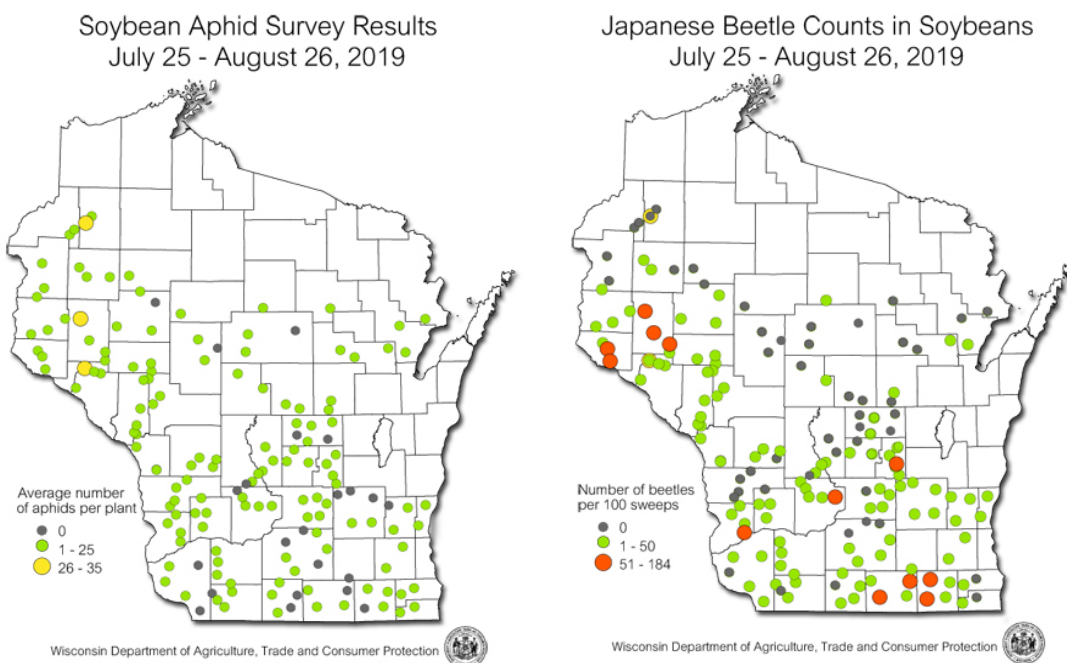
Moth counts and larval injury to corn increased in 2019 compared to the year before. The annual trapping program from June-August registered an average of 65 moths per trap (3,600 moths in 55 traps), the second highest average in 15 years. The survey record of 79 moths per trap (10,807 moths total) was set in 2010. The highest individual count for the 10-week monitoring period was 405 moths at Princeton in Green Lake County. This season's relatively large flight generated larval infestations in central and southern areas of the state

that traditionally experience western bean cutworm problems, though widespread damage not observed during fall corn pest surveys.

Soybean Aphid

Populations recorded during the annual survey were very low, aside from a few western Wisconsin fields with moderate pressure. The state average count in 160 fields sampled from July 26-August 26 was only five aphids per plant. For comparison, the 2018 survey found an average of 14 aphids per plant, the 2017 average was six aphids per plant, and surveys from 2010-2016 documented counts of 7-55 aphids per plant. This season's state average was the lowest in the 18-year history of Wisconsin soybean aphid surveys. In addition, no cases of pyrethroid insecticide failure were reported in the state in 2019.

Results of the survey suggest that while aphid pressure was slightly higher in 2018 than in the previous two years, most sampled soybean fields did not meet treatment guidelines during the survey timeframe. In addition, no cases of pyrethroid insecticide failure were reported or confirmed in the state.



White Mold Gall Midge

This new gall midge was found for the first time in Wisconsin this year. The white mold gall midge (WGM) *Karshomyia caulicola* (Diptera: Cecidomyiidae) was collected by a seed company representative from a Pierce County soybean field in August and identified by a USDA ARS entomologist on October 2. The species is similar morphologically to the soybean gall midge (SGM) *Resseliella maxima*, but there are important differences between the two. First, the WGM is a fungus feeder and, unlike the SGM, is not considered a significant crop pest. Second, the larvae appear later in the season (after flowering) and can be found throughout white mold-infected fields. By contrast, SCM infestations can develop by the V3 stage and show an edge effect. Although the WGM is associated with soybean white mold, it does not spread or promote infection.

Soybean producers are advised to be alert for both this species and the soybean gall midge next season. The SGM has not yet been found in Wisconsin.

Japanese Beetle

Defoliation was observed in 75% of the soybean fields examined in August. Counts taken during the soybean aphid survey ranged from 1-184 beetles per 100 sweeps, with a state average of 14 per 100 sweeps (the 2018 average was 8 per sweep). The highest counts of 50 or more beetles per 100 sweeps were noted in the southern and west-central districts for the second year in a row (see table 3 page 159). The prevalence of Japanese beetles documented by the survey signals that this invasive pest is becoming an increasingly significant defoliator threat to the state's soybean crop.

Table 3. Soybean pest survey results 2019 (Average no. insects per 100 sweeps).

| District | Bean leaf beetle | Japanese beetle | Northern CRW | Southern CRW | Western CRW | Green Cloverworm | Grass-hopper | Stink Bug |
|-----------------|-------------------------|------------------------|---------------------|---------------------|--------------------|-------------------------|---------------------|------------------|
| NW | 0.3 | 1.5 | 0.1 | 0 | 0 | 5.2 | 3.5 | 0.7 |
| NC | 0 | 0.6 | 0.1 | 0.4 | 0 | 3 | 5.8 | 0.6 |
| NE | 1.3 | 2.7 | 0 | 0 | 0 | 2 | 2.6 | 1 |
| WC | 0.1 | 27 | 0.9 | 0.1 | 0.2 | 12.8 | 3.3 | 1.3 |
| C | 1.1 | 7.9 | 1.9 | 0 | 1.5 | 2.8 | 7.2 | 1.2 |
| EC | NA | NA | NA | NA | NA | NA | NA | NA |
| SW | 0.3 | 17.3 | 1.7 | 0.1 | 1 | 1 | 4.5 | 1.5 |
| SC | 0.2 | 14.9 | 1.8 | 0.1 | 0 | 7.1 | 1.7 | 0.4 |
| SE | 0.1 | 18.3 | 7.7 | 0.1 | 0.5 | 16.3 | 1.1 | 0.3 |
| WI Ave. | 0.4 | 14.4 | 1.8 | 0.1 | 0.5 | 6.6 | 3.8 | 1.0 |