

CASE STUDY

NEW YORK GOLF COURSE FOUNDATION BEST MANAGEMENT PRACTICES



IPM Methods to Control Annual Bluegrass Weevils



Project Details

- **Location:** Black Course at Bethpage State Park, Farmingdale, NY
- **Annual rounds of golf:** ~300,000 (all five courses at Bethpage)
- **Acres:** 180
- **Public or Private:** Public

- **BMP Implementation:** Integrated pest management for ABW control.

Overview

Annual bluegrass weevils (ABW) are a prominent pest of short-cut annual bluegrass. Found on northeastern United States golf courses, ABW adults and/or their larvae can be present from May through September.

Damage from ABW activity can present itself in a number of ways:

- Early stage larvae boring into leaf stems and late-stage larvae feed at the turf crown. Larval activity weakens turfgrass, which in turn cannot easily cope with additional stress (e.g. heat, humidity, etc.)

- Animals digging for larvae can disrupt large areas of turfgrass.



CASE STUDY

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In addition, unusually warm summers and/or higher mid-summer temperatures can accelerate ABW development, resulting in two or three generations in one growing season, adding significantly to the potential for turf damage.

Case Study Site

ABW is a growing concern at Bethpage State Park in Farmingdale. Because the Black Course has the highest ABW pressure as compared to the other four courses at Bethpage, it was selected as the case study site to monitor, quantify and control ABW populations.

Case Study Goals

Before implementing this case study project at the Black Course, a cheap insecticide with a pyrethroid active ingredient was typically used to target ABW adults. With the assistance of Dr. Ben McGraw, it was concluded that adult ABW had developed resistance to this insecticide. Civitas was considered as an alternative to pyrethroids; while more expensive, the benefits of using Civitas included that it is both an insecticide and fungicide, is OMRI Listed, and has a low Environmental Impact Quotient (EIQ).

For this case study, the following goals were established:

- Monitor adult ABW populations to determine the proper amount, timing, and efficiency of the selected adulticide.
- Limit ABW larvae damage to the turfgrass.
- Utilize scouting techniques to help determine which insecticide types (adulticide, larvicide, narrow spectrum, etc.) and brands are most effective.
- Evaluate whether less spraying or specific products with a lower EIQ are effective, based on ABW data collection.

Methods

ABW populations were estimated using both passive and active methods. Growing degree days (GDD data) were used to time pesticide applications. A second indicator for predicting the timing of ABW activity was forsythia blooming. Forsythia in full bloom typically coincides with the end of ABW overwintering and is used to time the start of scouting for adults as they move from their preferred overwintering habitat (accumulated leaf litter and clippings such as turf adjacent to native areas/forest edges and shrub lines) towards the nearest playing surface. Weekly scouting for adults usually shows that peak adult ABW activity typically coincides with the presence of half green/half golf forsythia flowers.



Figure 1. Forsythia in bloom near the 13th hole indicates the appropriate time to begin scouting for ABW adults.

University entomologists, superintendents, and other employees conducted the adult monitoring, using the following methods:

- Pitfall traps placed in the ground to collect and quantify ABW adults.
- Vacuuming.
- Soap flushes, in which solutions of water and liquid soap applied to small areas of turfgrass to bring adult ABWs to the surface for counting.

| 2018 GDD Annual Bluegrass Weevil Tracking Base GDD 50 from March 1, 2018 Republic Airport | | | |
|---|-------------|--------------------------|---|
| Date | GDD base 50 | Notes | Black Course |
| 13-Jun | 637 | ABW damage 1st gen done. | |
| 19-Jun | 774 | | |
| 2-Jul | 1074 | | |
| 10-Jul | 1276 | | 16 app fwy damage still lingering in other areas on 4 as well |
| 14-Aug | 2204 | | black collars still lighting up |
| 1-Sep | | Clear of damage | |

Figure 2. Scouting worksheet (Excel-based) from 2018.



Figure 3. Preparing to soap flush (left); soap flushing to scout for ABW adults (right).



CASE STUDY

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Figure 4. The soap flush (left) brings adult ABW adults to the surface (right).

Results

ABW scouting was conducted regularly on the Black Course, which had the highest ABW pressure as compared to the other four courses at Bethpage. The hypothesis for this greater pressure on the Black Course is that repeated use of adulticide on the Black Course (but not the Red, Green, Yellow and Blue Courses) may limit interspecific competition and weevil predators, thereby allowing ABW populations to flourish. If accurate, this would explain the greater damage on the Black Course observed. As a result, the current management strategy for the Black Course is to reduce the amount of spraying days and to focus on the judicious use of larvicide instead of adulticide. This approach is believed to be a more effective, environmentally conscious approach to reducing ABW damage.

Following the case study, several recommendations were identified, including review of older GDD data would be beneficial to understand population trends and pest development and the recognition that enough time must be devoted to scouting, and that scouting must be made a priority.