



# Blueberry stem gall wasp management in Michigan blueberries

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## Introduction

- Blueberry stem gall wasp (BSGW) is an increasingly problematic pest in the Michigan blueberry industry. Females lay eggs into stems of blueberry, resulting in kidney-shaped galls that are 5-55 mm across.
- It is particularly damaging to fields of Jersey cultivar, and also affects Liberty fields. Galls are also a potential contaminant risk (Fig. 1) for machine-harvested fields.
- The species is active during bloom when pollinators are present, limiting chemical control options, so there is an urgent need to test new insecticides.
- Additionally, estimates of the effect of the species on blueberry yields and fruit quality are lacking, making management decisions difficult.

## Objectives

- Compare registered and new insecticides for control of BSGW when pollinators are present.
- Evaluate high coverage spray strategies for BSGW control at commercial farms.
- Determine the yield loss caused by BSGW in Michigan blueberries.

## Methods

- Insecticide trials were conducted during 2017 and 2018 at the Trevor Nichols Research Center (TNRC) to determine the effectiveness of Sivanto or *Beauveria*-containing products during the bloom season.
- On-farm spray program where assessed to determine the efficacy of post bloom sprays to reduce the size and number of galls.
- During 2017 and 2018, experiments were conducted at TNRC and commercial farms to determine the effects of gall wasp on yield and fruit quality. In 2017, fruit quality was measured on bushes experiencing low, medium, or high levels of gall wasp pressure.

## Results

1. Bushes that received Sivanto applications before bloom had numerically fewer galls than untreated bushes (Fig. 2). There were indications that BioCeres WP and BalEnce both beauvaria products may also reduce the number of galls on bushes.

2. Insecticide applications for BSGW at higher gallons per acre were consistently more effective at reducing the size and number of galls on the bushes (Fig. 3).

3. Fruit quality measurements on bushes experiencing low, medium, or high number of galls indicate berries on high pressure bushes had significantly lower brix levels than berries on low or medium pressure bushes (Table 1). The number of berries/cluster and weight were not significantly different.

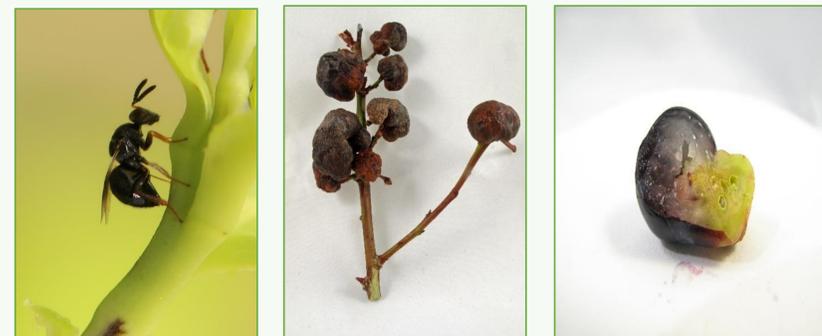


Figure 1. Female blueberry stem gall wasp (BSGW) ovipositing, kidney shaped galls and contaminated fruit

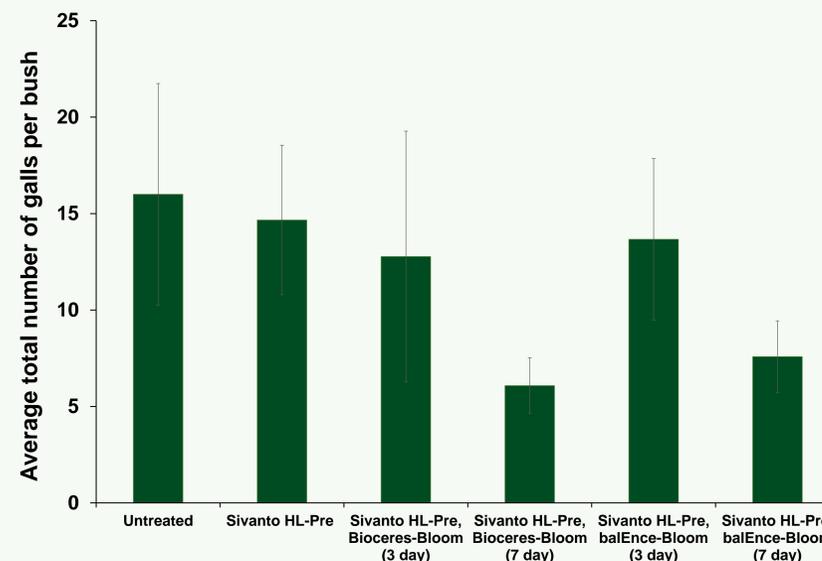


Figure 2. Effect of insecticide applications on infestation of blueberry bushes by blueberry stem gall wasp in trials conducted 2018

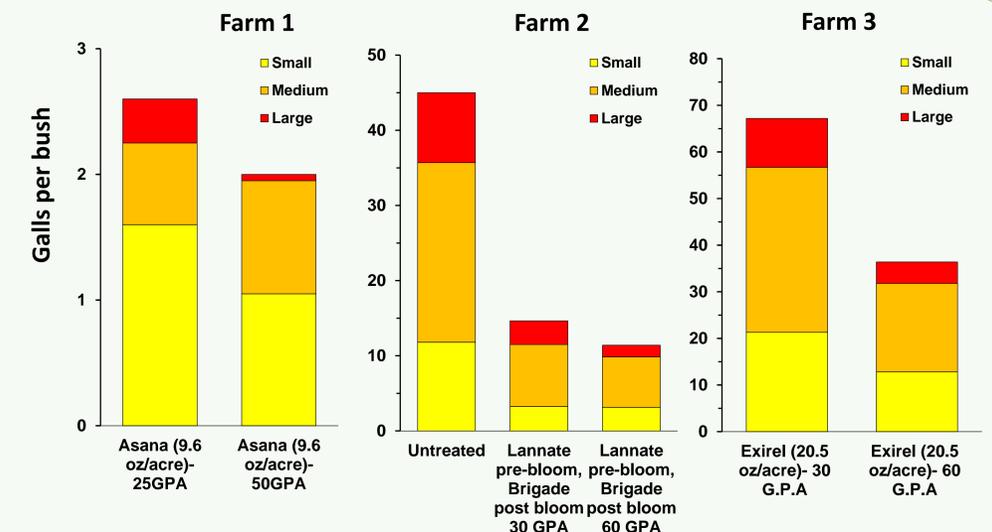


Figure 3. Effect of insecticide applications on infestation of blueberry bushes by BSGW in on-farm trials conducted at three farms in Liberty (Farm 1) and Jersey (Farm 2 & 3)

Table 1. Fruit quality measures of ripe fruit samples collected from 'Jersey' blueberry bushes with low (<15 galls per bush), medium (25-40 galls per bush), or high (>100 galls per bush) blueberry stem gall wasp pressure in 2017

Gall pressure	Brix (%)	Berries per cluster	Berry weight (g)
Low	15.5 ± 0.2 a	4.4 ± 0.2 a	0.54 ± 0.06 a
Medium	15.7 ± 0.3 a	4.2 ± 0.3 a	0.51 ± 0.03 a
High	14.0 ± 0.3 b	4.7 ± 0.2 a	0.42 ± 0.04 a
significance	P<0.0001	P=0.22	P=0.14

## Conclusions and recommendations

- Sivanto immediately before bloom followed by BioCeres WP during bloom showed promise in the small plot trials at TNRC in 2018.
- Use of cover sprays of Mustang Maxx and Lannate a week apart after bloom has provided good control in conventional farms, especially in fields of Liberty cultivar. These applications MUST be done with high volume applications to ensure complete coverage. These applications need to be immediately after bees are removed from the field.

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