

**Project 1: Interaction of thrips control and Stemphylium leaf blight disease**

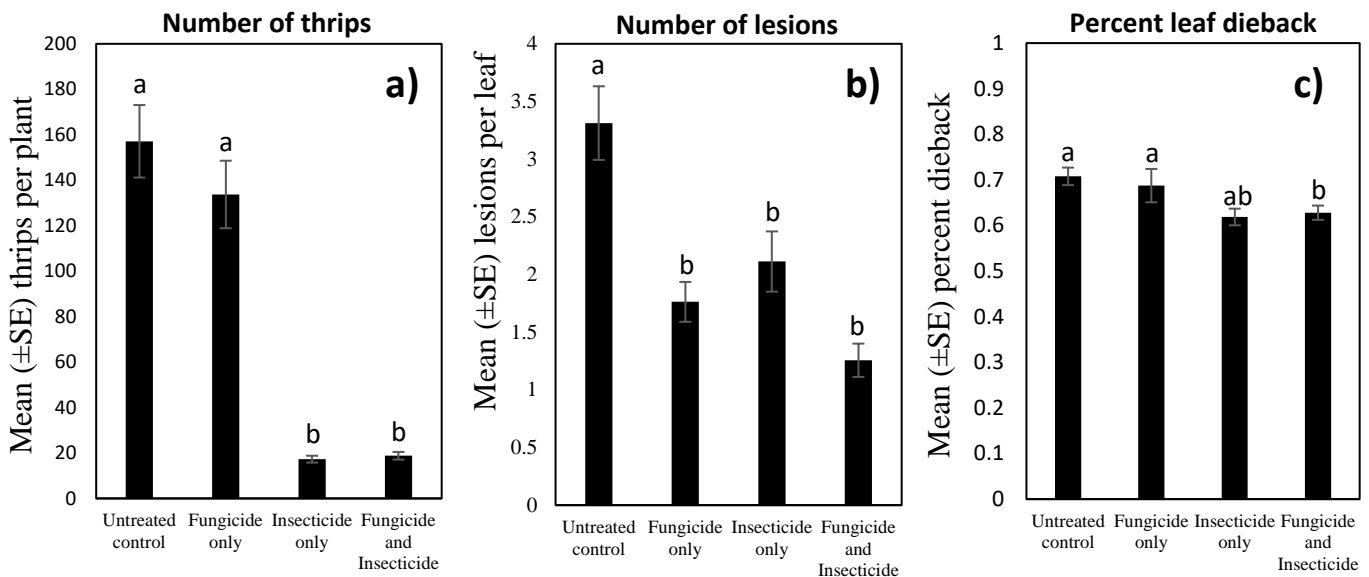
Objective: Determine if insecticide use reduces severity of Stemphylium leaf blight in the field

Stemphylium leaf blight symptoms were recorded in **four treatments**:

- 1) Untreated control (no fungicide or insecticide)
- 2) Fungicide only (Luna Tranquility at 27 fl oz/acre for 5 weeks)
- 3) Insecticide only (Radiant SC at 10 fl oz for 5 weeks)
- 4) Both fungicide and insecticide (Luna Tranquility at 27 fl oz/acre and Radiant SC at 10 fl oz/acre for 5 weeks)

**Results**

- » Insecticide usage reduced thrips densities, and numbers of SLB lesions on leaves (Fig. 1a and b).
- » The combination of fungicide and insecticide had the lowest levels of leaf dieback (62%), however was not significantly different from the insecticide only treatment (62%) (Fig. 1c). Dieback was mostly caused by thrips.
- » Most onions in the untreated control died without successfully lodging (Fig. 2)



**Figure 1:** a) mean number of thrips per leaf, b) mean number of lesions per leaf by a visual estimate, c) mean percent of onion tissue dead. All graphs show the means from the entire 5-week data collection period.



**Figure 2:** Pictures taken from trial on 08/16/2016 in Elba, NY. Inset on untreated control image shows onions dying before successfully lodging.

**Project 1: Evaluating cultivar x nitrogen rates to reduce onion thrips densities and bacterial bulb rot**

Objective: Determine the cultivar x nitrogen treatment that best reduces onion thrips densities and bacterial bulb rot without compromising marketable yield.

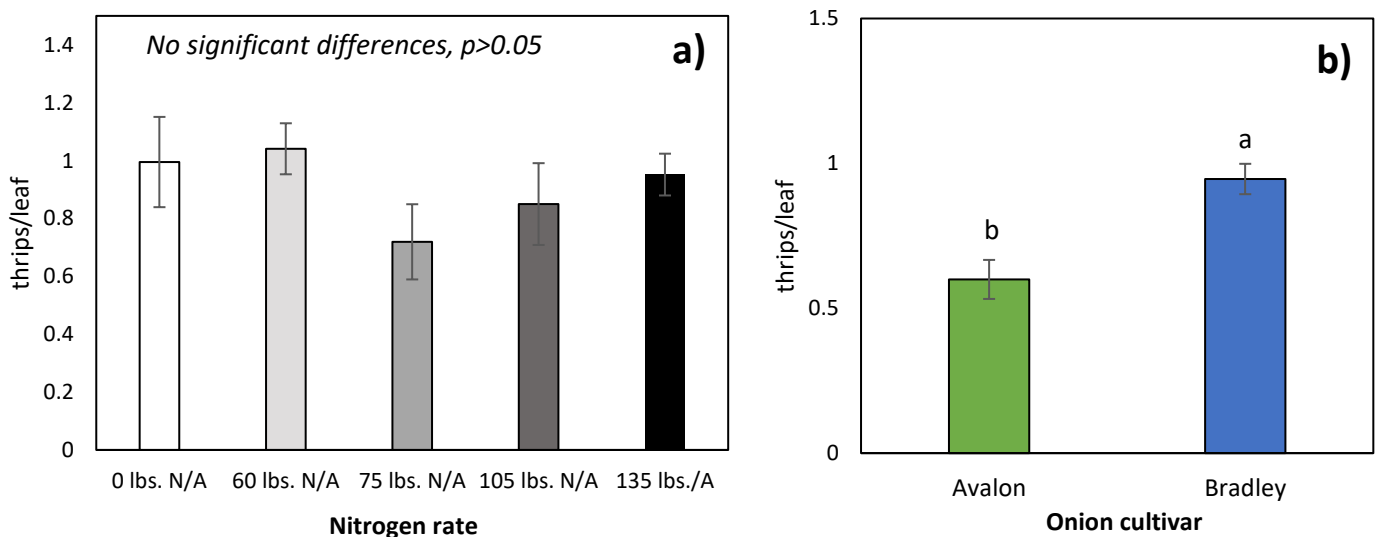
Onion thrips densities, bacterial bulb rot, and marketable yield were recorded in **ten treatments**:

- 1) **AVALON** x 0 lbs. N/A = **0 lbs. N total**
- 2) **AVALON** x 60 lbs. N/A at planting = **60 lbs. N total**
- 3) **AVALON** x 60 lbs. N/A at planting + 15 lbs. N/A = **75 lbs. N total**
- 4) **AVALON** x 60 lbs. N/A at planting + 45 lbs. N/A = **105 lbs. N total**
- 5) **AVALON** x 60 lbs. N/A at planting + 75 lbs. N/A = **135 lbs. N total**
- 6) **BRADLEY** x 0 lbs. N/A = **0 lbs. N total**
- 7) **BRADLEY** x 60 lbs. N/A at planting = **60 lbs. N total**
- 8) **BRADLEY** x 60 lbs. N/A at planting + 15 lbs. N/A = **75 lbs. N total**
- 9) **BRADLEY** x 60 lbs. N/A at planting + 45 lbs. N/A = **105 lbs. N total**
- 10) **BRADLEY** x 60 lbs. N/A at planting + 75 lbs. N/A = **135 lbs. N total**

**Results**

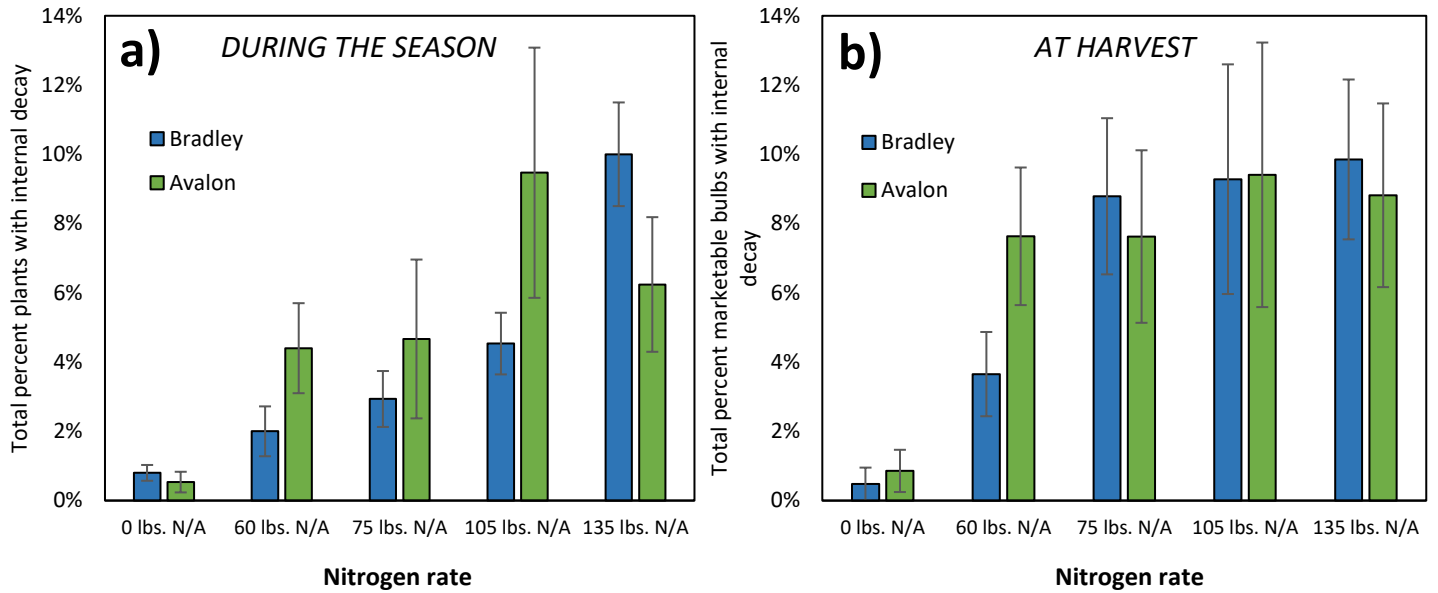
- » Seasonal numbers of onion thrips densities were not impacted by nitrogen rate in 2017 (Fig. 3a). Densities were only significantly reduced by cultivar (Fig. 3b).
- » In 2017, incidence of bacterial bulb rot was significantly higher in plots fertilized with nitrogen as compared to unfertilized onions (Fig. 4a- graph on page 3). Data collected from 2018 appears to be consistent with 2017 results, and onions fertilized with nitrogen have more rotten bulbs as compared to unfertilized treatments (data not shown).
- » Marketable yields were significantly impacted by nitrogen rate. Onions that received fertilizer had statistically similar yields; however, onions that were not fertilized had 60% lower yields (Fig. 5- graph on page 3).

**Number of thrips**



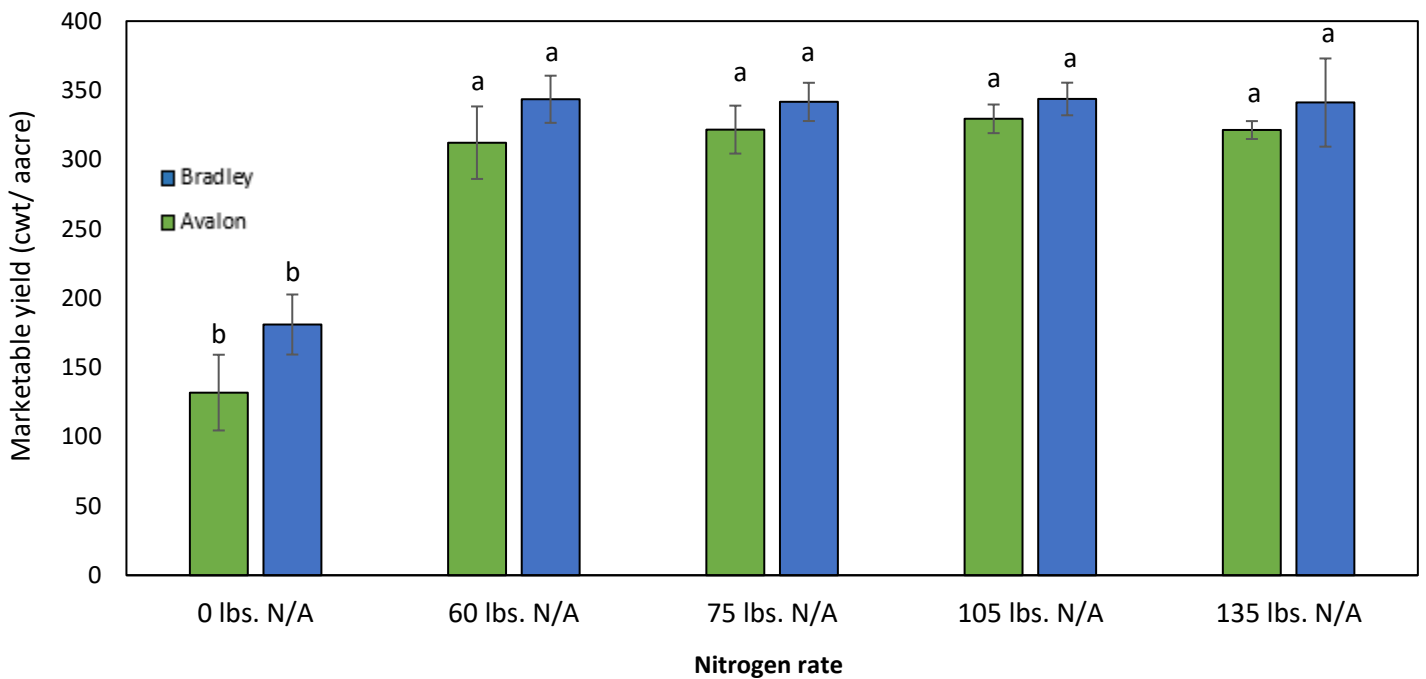
**Figure 3:** a) mean number of thrips per leaf within 5 different rates of nitrogen, and b) mean number of thrips per leaf within 2 onion cultivars.

**Bacterial bulb rot**



**Figure 4:** Total percent onions with bacterial rot symptoms during the 2017 growing season (a) and at harvest (b) within differing rates of nitrogen (0, 60, 75, 105, and 135 lbs. of N per acre) and two onion cultivars, 'Avalon' and 'Bradley'.

**Marketable yield**



**Figure 5:** Marketable yield in 2017 in 'Bradley' and 'Avalon' within differing rates of nitrogen (0, 60, 75, 105, and 135 lbs. of N per acre).