

ALTERNATIVE METHODS FOR CONTROLLING ONION THRIPS – EFFECTS OF THRIPS ON TWO VARIETIES OF STORED RED ONIONS

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Introduction

Red onion has been grown in the Treasure Valley production region for many years. The quality of red onions coming out of the valley is generally very high, but the past 3 years have seen some quality problems related to thrips damage in storage. Thrips damage on red onion bulbs has been reported from most production areas of the world and is a relatively new problem, having developed over the past 6-10 years. Many ideas have circulated about why this problem has recently arisen. One theory is that widespread use of synthetic pyrethroid insecticides, which are toxic to predatory insects, has reduced the availability of late season predators to prey on thrips. Over the past 3 years, an alternative approach to controlling onion thrips has been developed at the Malheur Experiment Station. This program consists of straw mulch for predator habitat plus the use of soft insecticides to suppress thrips while leaving predators to feed on the residual thrips population. This program has been very successful in controlling thrips and increasing bulb size and yield. In 2003, a trial was established to investigate the effects of an alternative program on two red onion varieties in storage.

Materials and Methods

A 1.5-acre field was planted to the onion varieties 'Flamenco' and 'Redwing' (cv. Flamenco, Sunseeds, Parma, ID; Redwing, Bejo Seeds, Oceano, CA) in a split-plot design on March 14, 2003. The onions were planted as two double rows on a 44-inch bed. The double rows were spaced 2 inches apart. The seeding rate was 154,000 seeds per acre. Lorsban 15G was applied in a 6-inch band over each row at planting at a rate of 3.7 oz / 1,000 ft of row for onion maggot control. Irrigation was by furrow. The field was divided into plots 36.7 ft wide by 100 ft long. There were three treatments with six replications.

The three treatments were a grower standard treatment, an untreated check, and the alternative treatment. The grower standard treatment included four applications of Warrior (lambda-cyhalothrin); Metasystox-R (oxydemeton-methyl) and Lannate (methomyl) applied through the growing season. The untreated check did not receive any treatments for thrips control. The alternative treatment included straw mulch

applied to the center of the bed plus Success (spinosad), and Aza Direct (azadirachtin) applied five times during the growing season.

Insecticide treatments were applied according to the treatment schedule during the growing season. All insecticides were applied in water at 30.9 gal/acre. Straw was applied only between the irrigation furrows on top of the beds to avoid confounding irrigation effects with thrips effects. The straw was applied on May 1, 2003 at rate of 1,080 lb/acre.

The onions were harvested on September 23. They were put in burlap bags and placed in a temporary storage at ambient temperature for 30 days. This time period was to allow any thrips on the bulbs to actively feed on the bulbs, so that relative injury could be evaluated. After 30 days, the onions were placed into cooled storage and the temperature kept as close to 38°F as possible. The onions were peeled and the top fleshy layers subjectively evaluated for thrips injury. Fifteen bulbs from each plot were evaluated; the results are shown in Table 1.

Results

There was a trend towards lower injury in both varieties with the alternative thrips control program compared to either the standard spray program or the untreated check. Redwing also had significantly less thrips injury than Flamenco. Redwing had tighter wrapper skins than Flamenco, which probably accounts for the varietal differences.

Conclusion

Redwing had less thrips injury than Flamenco, probably due to tighter wrapper skins. Varietal characteristics such as more wrapper skins, and tighter wrapper skins will help reduce thrips injury. The alternative approach to controlling thrips also reduced thrips injury.

Table 1. Thrips injury (0 = no injury, 10 = severe injury), on two stored red onion varieties, Malheur Experiment Station Oregon State University, Ontario, OR, 2003.

Treatment	Redwing	Flamenco
Alternative	1	1.3
Standard	1.3	1.6
Untreated Check	1.5	2.1
LSD (.05)	0.3	ns
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Varietal differences		
Redwing	1.27	
Flamenco	1.68	
LSD (.05)	0.39	