

NECK LENGTH AND INSECTICIDE TREATMENT IN RELATIONSHIP TO THRIPS (*THRIPS TABACI*) DAMAGE ON STORED RED ONIONS

Lynn Jensen
Malheur County Extension Service
Oregon State University
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Introduction

Onion thrips (*Thrips tabaci*) infestation on stored onion bulbs has become a world wide problem in recent years. As commercial insecticides lose their ability to control thrips and as growers increase the number of insecticide applications, natural thrips predators are destroyed, leaving high populations of thrips in the fields at harvest time. Thrips move onto the bulb and when the skins are loose, cracked or split they crawl under the skins. These thrips are moved into storage where they continue to feed and propagate until storage temperatures are lowered. When the onions are warmed prior to packing and during shipping, the thrips continue to feed on the tender tissue of the fleshy layers of the bulb. Damage can range from superficial to severe, and in some cases the onions are unmarketable. The problem is especially severe in red onions, where thrips feeding removes the red pigments and the onion is left with a silver, splotchy appearance. Thrips feeding can also lead to increased incidence of storage diseases such as botrytis gray mold, aspergillus black mold, penicillium, or other common molds.

This trial was structured to determine if topped neck length or insecticides applied immediately after topping might be effective in eliminating thrips damage.

Materials and Methods

The treatment area was marked out of a commercial field of red onions, cv. 'Mercury'. The onions had been grown under standard cultural practices. Irrigation was by furrow. Registered insecticides were applied during the growing season to control thrips. The treatments were:

- 3-inch neck, Lannate (24.0 oz/acre)
- 3-inch neck, Pounce (12.0 oz/acre)
- 3-inch neck, Warrior (3.84 oz/acre)
- 3-inch neck, no insecticide
- 7-inch neck, Lannate (24.0 oz/acre)
- 7-inch neck, no insecticide

The trial consisted of plots 10 ft long by two beds wide, replicated four times.

The onions were hand topped on September 6. Insecticide treatments were made immediately afterwards. The insecticides were applied with a pressurized CO₂ – 4-nozzle sprayer set to apply 36.7 gal/acre at a pressure of 80 psi. Ten

bulbs from each plot were collected on September 7 and placed into mesh bags made of "no-thrips insect screen." The bags have a mesh size of 81 x 81 with a hole opening size of 0.0059 x 0.0059 inches and a thread size of 0.006 inches (0.15 mm). The onions were then placed into ambient air storage until they were graded on November 11.

The onions were evaluated for severity of damage with 0 being no damage and 100 representing the bulb completely covered with thrips feeding damage.

Results and Discussion

Both adults and nymphs were found on the onion bulbs. Since the onions had been in storage for 2 months, any eggs or nymphs on the bulbs at harvest should have matured to adult thrips by the evaluation date. The presence of nymphs indicates that the thrips had continued to propagate and a new generation had occurred in storage. The results are shown in Table 1 and Figure 1.

Conclusion

None of the treatments were statistically different but there was a trend towards less thrips injury with longer neck length. None of the insecticide treatments were as effective as leaving a longer neck during the topping operation. Applying insecticides at harvest is not a feasible method for reducing damage caused by thrips while the onions are in storage.

Table 1. Evaluation of red onions for thrips damage after 2 months in storage, Ontario, OR, 2002.

Treatment	Average thrips damage/bulb	Bulbs with no thrips damage
	----- % -----	
3-inch neck – No insecticide	23.6	12.5
3-inch neck – Warrior	21.9	15.0
3-inch neck – Pounce	21.0	17.5
3-inch neck – Lannate	17.1	5.0
7-inch neck – Lannate	16.6	12.5
7-inch neck – No insecticide	11.8	27.5

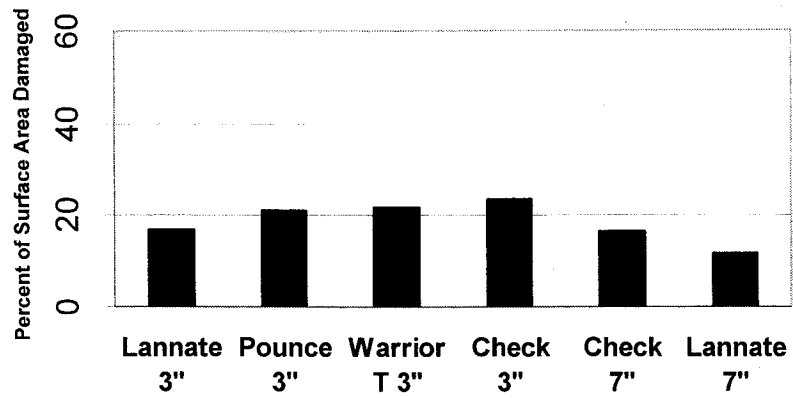


Figure 1. Thrips damage to red onions in storage as influenced by insecticides and neck length.