

## 2013 White Rot Fungicide Trial in Processing Onions

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### Introduction

Over the past five years, a number of experiments have been conducted at the Intermountain Research and Extension Center (IREC) to evaluate the effectiveness of various fungicides for controlling white rot disease in onions. Experiments demonstrated the level of disease control that may be expected using fungicides individually and they demonstrated the best fungicide application method was in-furrow at planting for all products. This trial was designed to determine if tank-mixing fungicides in-furrow has an additive effect on white rot suppression compared to using fungicides individually. The study also evaluated if fungicide applications after planting used in combination with fungicides in-furrow improved white rot control. The experiment was established in a field with white rot fungus (*Sclerotium cepivorum*). Laboratory analysis of composite soil samples indicated an average count of 5 white rot sclerotia per kg of soil prior to planting. ***Some pesticides listed in this report may not be labeled for use in onions. Please consult pesticide labels for use instructions.***

### General Trial Information for 2013

**Location:** Tulelake, CA  
**Soil Type:** Tulebasin mucky silty clay loam 4.2% organic matter  
**Planting Date:** April 17, 2013  
**Harvest Date:** October 9, 2013  
**Irrigation:** Solid-set sprinklers  
**Plot Size:** 6 ft (2 beds) by 25 ft  
**Bed (row) Spacing:** 36 inches; 4 seed-lines per bed spaced 6 inches apart  
**Trt Replication:** 4 replications; RCB design  
**Seeding Rate:** 1200 seeds per plot (348,500 seeds per acre)

### Fungicide Application Methods

Lorsban insecticide was applied in-furrow at planting with all treatments. In-furrow treatments were applied using Teejet 8001 EVS nozzles @ 30 psi. The nozzles were mounted on the onion planter to apply a 3 to 4 inch band directly over the seed line after seed placement but before furrow closure. The 3, 6 and 9-leaf foliar fungicide treatments were broadcast applied at 20 GPA and then incorporated

with irrigation water within 24 hours of application. Foliar fungicide treatment dates were June 6<sup>th</sup> for 3-leaf, June 28<sup>th</sup> for 6-7 leaf, and July 15<sup>th</sup> for 9-leaf application.

### **Onion Stand, Vigor, Leaf-Dieback Rating, and Yield**

Onion stand density was measured in each plot by counting the number of green onions in the two center seed-lines for the entire plot length on June 6<sup>th</sup>. Onion vigor was visually estimated in each plot on July 2<sup>nd</sup> using a 0 to 10 scale, with 10 = highest vigor in the trial. Visual leaf die back ratings were taken on September 6<sup>th</sup> and 18<sup>th</sup>. Leaf die back was estimated using a 0 to 100% scale. Onion yield was measured by harvesting all onions in each plot. All onions were run across a grade-line to remove loose soil and then hand-sorted based on the presence of white-rot symptoms that penetrated past the outside scale. A total weight was recorded for clean onions and diseased (white-rot infected) onions in each plot.

### **Results**

Onion stand, onion vigor, leaf dieback ratings, and onion yield results are presented in the Table on page 3. Fungicide treatment means highlighted in green were statistically the best performing in the trial. Tebuconazole (Folicur) applied in-furrow at 20.5 fl. oz/A has historically been the most effective fungicide treatment for suppressing white rot. In 2013, tebuconazole at 20.5 fl. oz/A was again one of the best performing treatments with regard to maximizing clean yield (onion yield without white-rot symptoms). Penthiopyrad (Fontelis) at 24 fl. oz/A, a new fungicide from DuPont, is another fungicide that maximized total and clean onion yield. Tank-mixing penthiopyrad with tebuconazole did not increase total yield or clean yield compared to applying each fungicide alone. Applying fungicides at the 3-, 6-, and 9-leaf stages in combination with tebuconazole in-furrow at planting did not improve white rot suppression compared to applying tebuconazole in-furrow alone.

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Influence of Fungicides on Onion Stand, Onion Vigor, Onion Yield, and White Rot Symptoms in 2013 at IREC.

Trt#	Product Name	Product Rate/A	Application Timing		Onion Stand 30 ft of row	Onion Vigor <sup>1</sup> 1-10 scale	Leaf dieback <sup>2</sup>		Total yield tons/acre	Clean <sup>3</sup> yield tons/acre	Clean % of total yield
			In-furrow	Postemergence			%	%			
1	Untreated	n/a	n/a		276	8.5	17.5	36.3	27.6	15.6	56.4
2	Folicur (tebuconazole)	10.25 fl. oz/A	x		264	9	13.8	25.0	30.6	23.9	78.2
3	Folicur	20.5 fl. oz/A	x		255	9	15.0	26.3	31.1	24.5	78.7
4	Fontelis (penthioopyrad)	24 fl. oz/A	x		263	9	13.8	21.3	32.0	25.6	80.0
5	Folicur	20.5 fl. oz/A	x		264	9	8.8	22.5	29.4	24.7	84.0
5	Fontelis	24 fl. oz/A	x		270	9	26.3	30.0	28.9	18.1	62.4
6	Luna Tranquility (fluopyram + pyrimethanil)	11.2 oz/A	x		264	9	20.0	28.8	31.2	23.7	75.9
7	Folicur	20.5 fl. oz/A	x		260	9	12.5	22.5	30.9	26.2	84.9
8	Luna Tranquility	11.2 oz/A	x		257	8.9	16.3	28.8	29.2	20.3	69.5
9	Folicur	20.5 fl. oz/A	x		284	9	7.5	18.8	31.9	26.8	83.9
10	Cannonball (fludioxonil)	10 oz/A	x		254	9	13.8	23.8	30.4	24.0	79.1
10	Fontelis	24 fl. oz/A	x	3, 6, & 9 leaf stage	272	9	11.3	18.8	31.5	24.6	78.2
11	Folicur	20.5 fl. oz/A	x	3, 6, & 9 leaf stage	NS	NS	7.0	5.7	1.9	4.5	12.3
11	Luna Tranquility	11.2 oz/A	x	3, 6, & 9 leaf stage							
12	Folicur	20.5 fl. oz/A	x	3, 6, & 9 leaf stage							
12	Folicur	6 fl. oz/A	x	3, 6, & 9 leaf stage							
12	Fontelis	24 fl. oz/A	x	3, 6, & 9 leaf stage							

95% Confidence Interval (NS = treatments were not different at p ≤ 0.05)

Treatment means highlighted in green were statistically the best performing in the trial.

<sup>1</sup> Onion vigor ratings evaluated onion height and color over the entire plot area; The tallest onions with dark green coloring received a 10 rating.

<sup>2</sup> Onion leaf dieback ratings evaluated the percentage of dead onion leaves in each plot. Leaf dieback is the primary late season symptom for white-rot.

<sup>3</sup> Clean onion yield represents onions bulbs that did not show symptoms of white-rot.