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# The Use of Folicur and Biological Inoculants for White Rot Management in Processing Onions

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**Introduction:** In 2010 an onion trial was conducted to examine the influence of biological inoculants used alone or in combination with Folicur for white rot management in processing onions. Biological inoculants were commercial products containing bacterium, rhizobacterium, mycorrhizal fungi, or parasites of fungal pathogens. The trial was conducted at the Intermountain Research & Extension Center (IREC) in Tulelake.

**Cultural Information:**

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|---|---|
| **Location:** | Tulelake, CA |
| **Soil Type:** | Tulebasin mucky silty clay loam (IREC) |
| **Planting Date:** | Aril 16th, 2010 |
| **Harvest Date:** | October 11th, 2010 |
| **Irrigation:** | Solid-set sprinklers: Season applied water totaled 25.27 inches |
| **Plot Size:** | 6 ft by 25 ft |
| **Bed Spacing:** | 36 inch |
| **Number of Reps:** | 4 |
| **Pest Management:** | Bravo, Warrior II, Lannate, Lorsban and Manzate were applied for management of insects and diseases throughout the entire plot area. Goal, Prowl $H_20$, and Outlook were used for weed control throughout the entire plot area. |

**IREC site fungicide treatment and data collection information:**

**Folicur and Biological Inoculants Application Methods**:

- All treatments were applied in furrow at planting on Aril 16th, 2010. Stealth was broadcast applied during the 5 and 7-leaf stage at 20 GPA and then irrigated with 0.5 inch of water within a ½ hour after application.

**Onion Stand Count and Vigor:**

- Onion stand and vigor ratings were taken in every plot. Onion stand was estimated on June 15th, 2010 by counting the number of plants in both beds for the entire length of the plot. Vigor ratings consisted of a visual observation of the entire plot area at multiple times throughout the growing season using a 0-5 scale. 0 = plant death and 5 = excellent vigor. The only vigor rating with a significant treatment difference was the evaluation on June 15th.

**Yield and Late Season Leaf Dieback Rating**:

- Late season leaf dieback was visually estimated from the entire plot area in each plot on September 24th. Onions were harvested from both beds in each plot. Onions were dug, hand-sorted, and weighed. Onion bulbs that did not show signs of white rot were placed in a clean pile. Onions with visual signs of mycelia, sclerotia, or rot were placed in a separate pile marked "yield with rot". Both piles were weighed to estimate yield per acre.

**Results:**

None of the treatments had a significant influence on onion stand. All treatments with Foliar except for MycoApply + Biolife+Folicur reduced early onion vigor compared to the untreated control. All treatments with Folicur had significantly higher clean yield (yield without white rot) compared to the untreated control. The biological inoculants tested in this trial did not provide suppression of white rot. The biological inoculants when used in combination with Folicur did not increase clean white rot yield compared to Folicur alone.

| Treatments | Onion Stand* 6/15/2010 plants/A | Early Vigor** 3-4 leaf stage 6/15/2010 0-5 scale | Late Season Leaf Dieback Rating*** 9/24/2010 % leaf dieback | Total Yield 10/11/2010 tons/acre | Clean Yield 10/11/2010 tons/acre | Yield with white rot 10/11/2010 % |
|---|---|---|---|---|---|---|
| 1. Folicur in-furrow | 303907 | 4.25 | 20 | 20.25 | 15.87 | 22.00% |
| 2. STO-01 + Folicur in furrow | 295803 | 4.375 | 20 | 19.24 | 14.98 | 22.50% |
| 3. Superzyme + Folicur in furrow | 309985 | 4.25 | 23 | 19.57 | 15.44 | 21.70% |
| 4. MycoApply+ Biolife + Folicur in-furrow | 307959 | 4.625 | 26 | 19.39 | 14.09 | 27.40% |
| 5. Untreated | 340376 | 4.875 | 43 | 17.54 | 9.04 | 48.00% |
| 6. Superzyme in furrow | 309985 | 4.5 | 38 | 17.6 | 10.608 | 40.10% |
| 7. MycoApply + Biolife in furrow | 320115 | 4.75 | 41 | 16.65 | 8.88 | 46.80% |
| 8. Galaxy PGPR in furrow & Stealth applied at 5 and 7 leaf stage | 324167 | 4.625 | 39 | 17.31 | 10.07 | 42.00% |
| **LSD** | **NS** | **0.47** | **12** | **2.09** | **3.7** | **14.30%** |

* Onion stand counts equal number of plants/acre. Treatments were not statistically different (NS).

** Onion vigor based on 0 to 5 scale; 0= low and 5 = high

*** The percentage of plants with the majority of leaves showing leaf dieback.

**Product Rates**

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|---|---|
| Folicur | 10.3 oz/A |
| STO-01 | 4 pts/A |
| Superzyme | 4 qts/100 gallons H20 |
| MycoApply | 4 oz/A |
| Biolife | 1 pt/A |
| Galaxy PGPR | 2 oz/A |
| Stealth | 4 oz/A |