2011 Onion Fertilizer Trial

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Introduction: This trial investigated two fertilizer additive programs with claims of improving onion yield. In the case of the N-Boost program, N-Boost was evaluated with and without Radiant insecticide to test the compatibility and efficacy of the tank-mix combination. Additional treatments evaluated the influence of applying higher than recommended nitrogen fertilizer rates at planting on onion stand and onion yield.

General Trial Information
Location: Tulelake, CA
Soil Type: Tulebasin mucky silty clay loam 4.2% organic matter
Planting Date: May 6, 2011
Harvest Date: October 7, 2011
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: 6 replications; CRD design
Onion Seed Source: Sensient (87% germination)
Seeding Rate: 1200 seeds per plot (348,500 seeds per acre)
Herbicides: Fusilade Dx, Goal Tender, Goal + Buctril
Fungicide: Thiram, Folicur
Insecticides: Admire Pro

Fertilizer Application Methods:
- Fertilizer treatments are detailed in Table 1. Seed treatments were applied the day before planting according to manufacturer recommendations. Shortly before planting, a liquid fertilizer blend consisting of 65 lbs N/A, 60 lbs P205/A, 50 lbs K20/A, and 10 lbs of Zn/A was applied in three bands placed 2 inches below and to the side of the onion seed rows. Postemergence treatments were applied with a CO2 backpack sprayer at 20 GPA. Plots were irrigated 24 to 48 hours after postemergence treatment application according to manufacturer recommendations.

Onion Stand Count, Onion Vigor, and Onion Yield:
- Onion stand density was measured in each plot by counting the number of green onions in the entire plot on June 29th. A visual evaluation of onion stand and vigor was estimated in each
plot on June 25th, July 5th and July 25th using a 0 to 5 scale. 0 = 100% stand loss and 5 = highest stand and vigor in the trial (Fig 2). Yield was measured by harvesting and weighing all onions in each plot.

Results
Treatments did not have an influence on onion stand (Figure 1). None of the fertilizer additive treatments increased onion yield compared to the untreated control (Figure 2). Increasing the amount of nitrogen applied at planting did not increase yield compared to the recommended 65 lb N/A rate (Figure 2). The triple N (195 lb N/A) at planting treatment decreased onion yield compared to the untreated control (Figure 2). Treatments did not have a significant influence on average onion bulb size (Figure 3). Results suggest applying additional nitrogen above recommended rates at planting should be avoided as it did not increase yield and high N rates decreased onion yield.

Table 1. Treatment List & Timing

<table>
<thead>
<tr>
<th>Trt #</th>
<th>Fertilizer Treatment</th>
<th>Seed Treatment</th>
<th>Planting</th>
<th>Split Applications starting at 5 Leaf (early July) &amp; ending at mid-bulking (mid-August)</th>
<th>29-Jun</th>
<th>12-Jul</th>
<th>20-Jul</th>
<th>28-Jul</th>
<th>2-Aug</th>
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Fig 1. Influence of Fertilizer Programs on Processing Onion Stand

- Untreated (normal fertilizer program)
- Double N at Planting (130 lbs N/A at planting)
- Triple N at Planting (195 lbs N/A at planting)
- Stoller Program with Bioforge
- Stoller Program with Stimulate
- N-Boost@ 2.5 pint/A (7-leaf and bulb forming)
- Radiant + N-Boost@ 2.5 pint/A (7-leaf and bulb forming)
- N-Boost@ 5 pint/A (7-leaf and bulb forming)
- Radiant + N-Boost@ 5 pint/A (7-leaf and bulb forming)
- Radiant Insecticide@ 10 fl. oz/A (7-leaf and bulb forming)

LSD (0.05) = Treatments Are Not Significantly Different

Average Onion Stand (plants per 25 ft of bed)
Fig 2. Influence of Fertilizer Programs on Processing Onion Yield

- Untreated (normal fertilizer program)
- Double N at Planting (130 lbs N/A at planting)
- Triple N at Planting (195 lbs N/A at planting)
- Stoller Program with Bioforge
- Stoller Program with Stimulate
- N-Boost@ 2.5 pint/A (7-leaf and bulb forming)
- Radiant + N-Boost@ 2.5 pint/A (7-leaf and bulb forming)
- N-Boost@ 5 pint/A (7-leaf and bulb forming)
- Radiant + N-Boost@ 5 pint/A (7-leaf and bulb forming)
- Radiant Insecticide@ 10 fl. oz/A (7-leaf and bulb forming)

LSD [0.05] = 1.217 tons
Fig 3. Influence of Fertilizer Programs on Processing Onion Bulb Size

- Untreated (normal fertilizer program)
- Double N at Planting (180 lbs N/A at planting)
- Triple N at Planting (195 lbs N/A at planting)
- Stoller Program with Bioforge
- Stoller Program with Stimulate
- N-Boost@ 2.5 pint/A (7-leaf and bulb forming)
- Radiant + N-Boost@ 2.5 pint/A (7-leaf and bulb forming)
- N-Boost@ 5 pint/A (7-leaf and bulb forming)
- Radiant + N-Boost@ 5 pint/A (7-leaf and bulb forming)
- Radiant Insecticide@ 10 fl. oz/A (7-leaf and bulb forming)

LSD (0.05) = Treatments Are Not Significantly Different

Average Bulb Size (ounces)