

EVALUATION OF PRIMED ONION SEED

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Introduction

The objective of this trial was to evaluate the performance of onion variety 'Vaquero' in response to three types of seed pelleting: conventional pellet, primed and pelleted seed, and a modified pellet.

Methods

The onions were grown on a Owyhee silt loam previously planted to wheat. The experimental design was a randomized complete block with five replicates. The three treatments were a conventional pellet, a 118 pellet, and primed seed with a conventional pellet. Primed seed are seed treated to shorten the time from planting to seedling emergence. The 118 pellet is a new pellet formulation that produces a more uniform pellet. Onion seed ('Vaquero', Nunhems, Parma, ID) was planted in double rows spaced 3 inches apart at 9 seeds/ft of single row (427,680 seeds/acre) on March 23. Each double row was planted on beds spaced 22 inches apart with a customized planter using John Deere Flexi Planter units equipped with disc openers. The onion rows received 3.7 oz of Lorsban 15G® per 1,000 ft of row (0.82 lb ai/acre), and the soil surface was rolled on March 24. On April 12, emerged seedlings in 10 ft of row in each plot were counted. From May 17 through May 19, the seedlings were hand thinned to a plant population of two plants/ft of single row (6-inch spacing between individual onion plants, or 95,000 plants/acre).

The trial was conducted in the same field as the 2006 onion variety trial. All other procedures can be found in this report for the 2006 onion variety trial (Shock et al. 2007).

Results

On April 12, the conventional pelleted seed had just started emerging (0.4 percent of full stand of 427,680 seeds/acre) and the primed seed emergence was approximately 27 percent of full stand (Table 1). On April 12, there were statistically significant differences in stand count between the primed seed, the conventional pellet, and the 118 pellet. The primed seed had the highest stand count and the conventional pellet had the lowest stand count. The primed seed had a higher plant population than the 118 pellet and the conventional pellet.

There was no significant difference in onion single centeredness, yield, or grade between the seed treatments (Tables 2 and 3).

Soil moisture was probably not limiting for onion germination and emergence, because significant precipitation occurred before and after the seed was planted. Primed seed could be advantageous when soil moisture is marginal during germination and emergence, because primed seed can emerge before soil moisture becomes too low.

Under limited soil moisture, primed seed could result in higher onion stands and higher onion yield. In this trial, conditions were not limiting for onion emergence. In addition, the onions in all plots were thinned to the same stand, eliminating most yield differences that could have resulted from the seed treatments.

References

Shock, C.C., E.B.G. Feibert, L.D. Saunders, L. Jensen, and K. Mohan. 2007 Onion Variety Trials. Oregon State University, Malheur Experiment Station Special Report 1075:33-42.

Table 1. Stand counts and plant population on April 12, 2006 for three onion seed treatments. Onion seed was planted on March 23 at 180 seeds/10 ft of double row (427,680 seeds/acre). Malheur Experiment Station, Oregon State University, Ontario, OR, 2006.

| Treatment | Preliminary stand counts | Preliminary plant population |
|------------------|----------------------------|------------------------------|
| | plants/10 ft of double row | plants/acre |
| Regular pellet | 0.8 | 1,980 |
| Primed, pelleted | 48.5 | 115,236 |
| 118 pellet | 15.0 | 35,640 |
| LSD (0.05) | 14.2 | 33,674 |

Table 2. Onion multiple-center rating in response to three onion seed treatments, Malheur Experiment Station, Oregon State University, Ontario, OR, 2006.

| Treatment | Multiple-center bulbs | | | Single-center bulbs | |
|----------------|-----------------------|---------------------|--------------|---------------------|--------|
| | Blowout | Intermediate double | Small double | Functional | Bullet |
| | ----- % ----- | | | | |
| Regular pellet | 6.4 | 16.8 | 20.0 | 76.8 | 56.8 |
| Primed | 7.2 | 7.2 | 28.0 | 85.6 | 57.6 |
| 118 pellet | 5.6 | 6.4 | 19.2 | 88.0 | 68.8 |
| LSD (0.05) | NS | NS | NS | NS | NS |

Table 3. Performance data for onions graded out of storage in January 2007 in response to three onion seed treatments, Malheur Experiment Station, Oregon State University, Ontario, OR.

| Treatment | Total yield | Marketable yield by grade | | | | | Bulb counts >4¼ in | Non-marketable yield | | | Maturity on Sept. 7 |
|------------------|------------------|---------------------------|--------|---------|--------|---------|--------------------|----------------------|----------------|-------|---------------------|
| | | Total | >4¼ in | 4-4¼ in | 3-4 in | 2¼-3 in | | Total rot | No. 2s | Small | |
| | --- cwt/acre --- | ----- cwt/acre ----- | | | | | #/50 lb | % | -- cwt/acre -- | % | |
| Regular pellet | 643.8 | 595.4 | 2.1 | 52.3 | 509.3 | 31.8 | 25.2 | 5.8 | 3.8 | 7.2 | 64.0 |
| Primed, pelleted | 606.6 | 568.4 | 0.0 | 47.3 | 479.4 | 41.8 | | 4.4 | 2.5 | 11.4 | 67.0 |
| 118 pellet | 664.5 | 621.0 | 3.9 | 66.5 | 516.4 | 34.2 | 26.7 | 4.5 | 1.8 | 9.5 | 67.0 |
| LSD (0.05) | NS ^a | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |

^a Seed treatments did not affect final plant stands, since onions were hand-thinned.