

Oakes Irrigation Research Site

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ONION SEED PRODUCTION

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The Seminis Seed company was looking for areas outside the Pacific Northwest to produce onion seed. We made an agreement with them to be one of three sites they tested for onion seed production. In 1997 they provided us with seed which we planted on 1¼ acres of land. Onion bulb production practices were similar to regular onion production practices. The bulbs were harvested using an onion lifter and stored in crates in a controlled environment overwinter. Harvested bulb size was smaller than the bulb size for onions normally grown in this area. The onions stored very well. Blake Lulloff, a production consultant for Seminis, helped us plant the onion bulbs and told us the bulbs we planted looked much better than those they planted in the Pacific Northwest.

MATERIALS AND METHODS (1998)

Soil:	Maddock sandy loam and Hecla sandy loam; pH=7.3; 2.3% organic matter; soil-P and soil-K were very high; soil-S was very low.
Previous crops:	1997 - soybean, potato, cabbage and carrot; 1996 - oriental vegetable, tomato, and squash; 1995 - sweet corn and potato.
Seedbed preparation:	Disked on 31 October 1997. Multiweeded (field cultivated) on April 13 to incorporate fertilizer and smooth the seedbed.
Planting:	On April 16 and 17 hand planted onion bulbs shoulder to shoulder in single rows on 24" centers. Area planted was ½ acre.
Fertilizer:	On April 13, broadcast 14 lbs N/acre and 70 lbs P ₂ O ₅ /acre as 10-50-0, 16 lbs N/acre and 19 lbs S/acre as 21-0-0-24, and 94 lbs K ₂ O/acre as 0-0-60. Fertigated 50 lbs N/acre as 28-0-0 on June 5 and July 9.
Irrigation:	Overhead sprinkler irrigation as needed.
Pest control:	Weeds were controlled with: Prowl (1.5 pt/acre on April 20), Poast + Dash (1.5 pt/acre + 1 pt/25 gal on May 20), spot application of Fusilade + nonionic surfactant (16 oz/acre + 1 pt/25 gal on June 25); and hand weeding. No insect control needed.
Harvest:	Hand harvested onion seed heads Aug 24 to Aug 26.

Onion production takes much manual labor, including hand planting, hand weeding, and hand harvesting. Onions are hand planted to assure the bulb is oriented with the roots down and the stem up. The herbicides used for regular onion production are labeled for onion seed production. The Buctril + Goal treatments, which are the foundation of successful weed control in onions in this area, were not applied because they should be applied between the second and fifth leaf

stage, and the onion bulbs shot out six to seven leaves before the weeds grew to the stage where they could be treated. Consequently, we had a major weed problem which could only be controlled by a lot of hand weeding. About 10 beehives were placed by the onion field when the onions began to bloom and were left there the rest of the season. Bees don't like onions. Therefore, bees have to be placed close to the onions and away from any other blossoms so the bees will pollinate the onions. Seed set appeared to be okay. Disease (purple blotch and mildew) attacked the onion leaves in July. We held off putting on a fungicide so as not to discourage the bees from pollinating the onions, which were in bloom at the time. That was a mistake. The disease eventually destroyed many plants and reduced seed yield. We picked the seed heads (umbels) by hand when the seed pods were just beginning to open and put them into tightly woven burlap bags. Seed loss due to shattering is a problem in onions if the harvest timing is too late. Harvesting seed too early reduces percent viable seed and seed size. The seed was air dried. Drying with heat reduces seed viability. After the seed dried, we threshed it using a spike tooth thresher. This did not do an adequate job, but reduced the volume considerably. What we got out of the thresher was shipped to Seminis Seeds. They threshed it again, cleaned it, and sent it to their seed lab for quality analysis. Total good seed yield was only 10 lbs (or 20 lbs/acre), which is considered very low.

We are unable, at this time, to put together any economic analysis for onion seed production. Seed yields were small because of mistakes we made in production. Also, because this was our first time and we produced onion seed on a very small area, the amount of labor per acre that we used was greater than what is used commercially. The management personnel at Seminis Seeds that asked us to investigate onion seed production in North Dakota have been replaced by others who have little interest in continuing onion seed production development so far from the Pacific Northwest. Therefore, we will not continue onion seed production research at this time.