

Cabbage Study for Vaughan Foods

Bixby, Oklahoma

Brian Kahn, Lynn Brandenberger, Lynda Wells, Bruce Bostian

Introduction and Objectives: Vaughan Foods, an Oklahoma fresh processor, is exploring possibilities for raw product procurement within Oklahoma. The first test crop is cabbage for cole slaw. This study was designed to supplement a commercial test with a grower in western Oklahoma (Mr. Merlin Schantz). The objective was to study combinations of Vaughan-approved cultivars and planting dates to maximize the fall cabbage harvest period. Our goal was one harvest per week for as long as practical.

Materials & Methods: On August 2, urea was applied to the plot area at the Bixby Research Station to supply 50 lbs./acre of N. Trifluralin was applied at 0.75 lbs./acre and incorporated on August 4. Planting dates were August 5, 13, 19, and 26. Plots were 12 ft. long x 3 ft. between row centers, using double rows spaced about 12 inches apart. Seeds were sown to excess with a Planet Jr. hand-pushed seeder, followed by thinning to a target in-row spacing of one plant per foot. The result was 12 plants per row (24 per plot), with 20 plants per plot available for data (end plants were not harvested). All plots began the season with full stands. On each planting date, four cultivars were sown and replicated four times in a randomized block design. Cultivars were Blue Vantage, Bravo, Cheers, and Grenadier. Two topdressings with urea, each supplying 50 lbs./acre of N, were applied to plots of each planting date. The first topdressing coincided with the final thinning, and occurred on September 2, 9, 16, and 23 for the August 5, 13, 19, and 26 plantings, respectively. The second topdressing occurred on September 30 and October 7, 13, and 21 for the August 5, 13, 19, and 26 plantings, respectively. Plots were irrigated by an overhead sprinkler system, and insecticides were applied as needed. Plots were harvested within cultivars and planting dates as plants matured (see table). All data heads in a plot were cut by hand on the date of harvest, trimmed to a cap leaf, counted, weighed, and measured for circumference with a tape. Heads weighing less than 1.5 lbs. each were considered too small to be marketable. Marketable head weights were averaged in each plot, and five heads close to that average were cut in half to measure compactness, core length, head thickness, and head diameter. Two other average heads were reserved for laboratory testing (not reported here).

Results & Discussion: Results are shown in the accompanying table. 'Grenadier' was the earliest cultivar in the trial, but even it did not mature from the August 26 planting. This confirmed earlier studies that suggested a planting window for direct-seeded fall Brassicas of about August 5 through August 20. The August 19 planting of 'Grenadier' had 7 plants that had not headed and 33 plants with heads weighing less than 1.5 lbs. on November 12. However, the decision was made to harvest the plots in order to continue on the "once a week" schedule, and because several mature, marketable heads were present. 'Grenadier' was the only cultivar that matured from plantings made after August 5. 'Blue Vantage' harvested on November 19 had slightly smaller heads than plants from the other harvest dates. However, its heads were very dense, external color was attractive, and cores were desirably short. Heads of 'Bravo' were slightly flattened compared to those of the other harvested cultivars, but quality also was very good. 'Cheers' was too late and did not mature even from the August 5 planting.

Based on the sizes of some of the row-end plants, it may be possible to gain a few days of earlier maturity by allowing the plants more space. Conditions were unusually favorable for stand establishment during much of August, 2004, but we have successfully direct-seeded Brassicas on August 5 in the past. Anything earlier than that could be a major gamble, and at a minimum, would likely incur high irrigation costs. Foliage-damaging freezes normally occur by late November, and while head quality may not be adversely affected, growth slows or stops. Thus, if the cabbage heads do not have adequate size by the end of November, they are not likely to grow further and in fact may begin to split (this was beginning to occur on the August 5 planting of 'Bravo' harvested on November 27). Further studies are needed to examine combinations of cultivars, spacings, and planting dates that result in regular harvests over as many weeks as possible in the fall.

Table 1. Yield data (marketable^z heads only) from five harvests of fall cabbage, Bixby, Okla., 2004.

| Harvest date | Cultivar / Planting date | Count (no./acre) | Weight (lbs./acre) | Avg. wt. per head (lbs.) | Core length (in.) | Head | | | |
|--------------|-----------------------------|---------------------|-----------------------|-----------------------------------|-------------------------|-------------------------------|---------------------------------|-------------------|-----------------------------|
| | | | | | | compact- ness ^y | thickness ^x (in.) | diameter (in.) | circum- ference (in.) |
| Oct. 29 | Grenadier/ Aug. 5 | 21,733 a | 50,458 a | 2.3 | 3.3 a | 4.0 b | 5.8 a | 5.8 a | 18.5 a |
| Nov. 5 | Grenadier/ Aug. 13 | 22,857 a | 51,234 a | 2.3 | 3.0 b | 3.9 bc | 5.7 ab | 5.9 a | 18.6 a |
| Nov. 12 | Grenadier/ Aug. 19 | 14,239 b | 31,772 b | 2.2 | 3.0 b | 3.8 c | 5.9 a | 5.9 a | 19.0 a |
| Nov. 19 | Blue Vantage/ Aug. 5 | 23,607 a | 58,041 a | 2.5 | 2.2 c | 4.7 a | 5.6 b | 5.5 b | 17.7 b |
| Nov. 27 | Bravo/ Aug. 5 | 25,855 a | 59,462 a | 2.3 | 3.0 b | 4.6 a | 5.1 c | 5.8 a | 18.6 a |

^z Heads weighing less than 1.5 lbs. (0.7 kg) each were considered too small to be marketable and are excluded from these data.

^y Scale is 1 = loose and puffy to 5 = rock solid and compact.

^x Thickness is measured from top of head (outer wrapper leaves removed) to base of trimmed butt. Mean separation in columns by Duncan's multiple range test, 5% level.