

2014 Broccoli Variety Demonstration Trial

Prepared by:

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February 2015

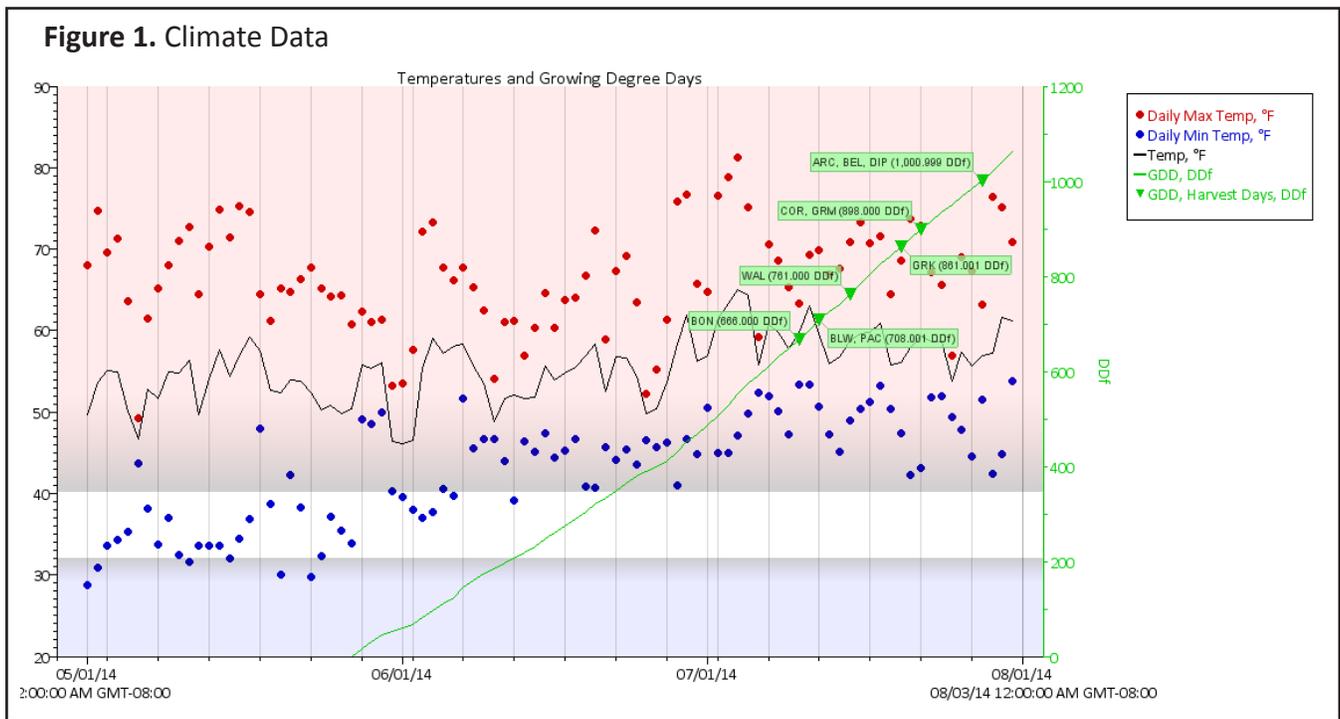


Introduction

Broccoli is a cool season crop that does poorly in hot weather, which makes it a favorable crop for production in the cool summers of Southcentral Alaska. However, farmers in Alaska need updated information on new and old varieties available for commercial production. The Alaska Plant Materials Center, located 5.4 miles south of Palmer, Alaska, conducted a broccoli variety demonstration trial for the Southcentral region of Alaska. It is important to note these trials must be conducted over several growing seasons in order to provide sufficient evidence that these varieties will perform well overall in the region. The new varieties are grown alongside traditional or standard varieties for quality comparison purposes. Commercial production of new varieties should only be considered after several years of variety trials are successful with initial plantings on a small production scale.

Overview

Ten broccoli varieties were evaluated at the Alaska Plant Materials Center. The soil is described as a Kidazgeni-Nikalsen Complex. The varieties chosen and the seed source are as follows: Arcadia, Belstar, Blue Wind, Diplomat, Green Magic – Johnny’s Selected Seeds, Bonanza – Burpee, Coronado Crown – J.W. Jung Seed Co. and Green King, Packman, Waltham #29 – Denali Seed. **Figure 1** shows local climate data along with Growing Degree Days at the time of harvests.



Methods

Ten broccoli varieties were evaluated using a randomized complete block design with four replications in single row plots, 16 feet long, with 39 inches between rows and 8 inches between plants in the row (18,868 plants per acre). The area was tilled and fertilized with 100 lb. N, 100 lb. P₂O₅, 100 lb. K₂O per acre prior to planting. Transplants were started in the greenhouse in 1020 flats with 72 round inserts. The seeds were germinated in

a commercial peat germination mix and maintained at 72°F. After germination, the seedlings were maintained at a minimum temperature of 55°F. The flats were watered as required and fertilized with Peat-Lite Special, 15-16-17 at the rate of 100 ppm N. The seedlings were moved outside the greenhouse to a protected area to harden off after four weeks in the greenhouse. After being outside for a week, the seedlings were transplanted into the field on May 27. Irrigation was supplied through two rows of drip tape per row of plants. The plots were checked two times per week for mature terminal heads. All terminal heads were harvested for each variety at the same time once mature. This was to determine if each variety would mature at the same time for only one harvest per variety. The lateral heads were not monitored or harvested. The growing degree days were calculated using a base temperature of 40°F.

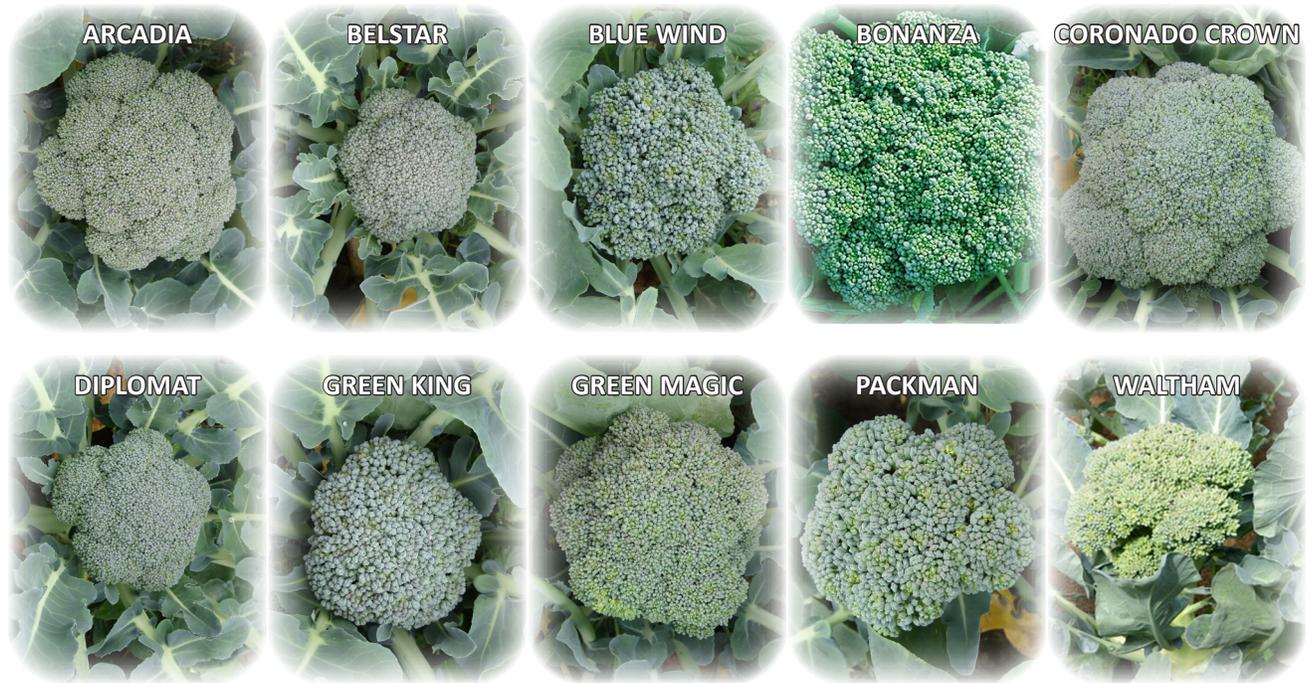
Results

The earlier varieties, Bonanza, Blue Wind, Packman and Waltham #29 were mature in 40-50 days from transplanting (**Table 1.**) and Packman and Blue Wind produced the best terminal heads for a single harvest. Waltham #29 had very inconsistent sized heads. Close monitoring of these varieties is necessary in order to harvest before flowering begins. The varieties that were mature in 50-60 days; Coronado Crown, Green King and Green Magic, all performed comparably, having consistent terminal head size and equal maturity within the variety. The later varieties; Arcadia, Belstar and Diplomat were harvested at 61 days and while they could have remained in the field for a couple more days, they were harvested as time permitted as a result of scheduling. Arcadia did produce the most consistent terminal heads while all three varieties were equally mature. **Figure 2** illustrates mature broccoli heads by variety.

Table 1. Broccoli Production Data

VARIETY	DAYS TO HARVEST	GROWING DEGREE DAYS (DDf)	AVERAGE HEAD SIZE (in.)	MAX HEAD SIZE (in.)	MIN HEAD SIZE (in.)
Arcadia F1	61	1001	4.7	8	1
Belstar F1	61	1001	3.7	5	1
Blue Wind F1	45	708	4.4	6	1
Bonanza F1	43	666	3.8	5	1
Coronado Crown F1	55	898	5.4	8	2
Diplomat F1	61	1001	3.7	7	1
Green King F1	53	861	4.2	7	1
Green Magic F1	55	898	5.2	8	1
Packman F1	45	708	4.4	9	1
Waltham #29	48	761	2.6	4	1

Figure 2. Mature Broccoli



Conclusion

Based on this trial, the early varieties; Packman with dark green medium beads or Blue Wind with blue-green medium beads, are great selections for commercial production although Blue Wind does not hold in the field as well as Packman. Arcadia was the best late variety performer for commercial production. The heads are tight and dense with tiny, dark-green beads and an almost frosted appearance. The overall best selection was Coronado Crown with its consistently large, dark-green, dome-shaped heads with tiny beads. These varieties will be evaluated again the following year and additional data will be collected, including marketable yield.