HS1101

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Selecting Collard Varieties Based on Yield, Plant Habit and Bolting[1]

S. M. Olson and J. H. Freeman[2]

Introduction

Collard (Fig. 1.) (*Brassica oleracea* L. var. *acephala* DC.) is one of the most primitive members of the cabbage family. They are closely related to kale and cabbage and could be described as a non-heading cabbage. They originated in the eastern Mediterranean or Asia Minor and have changed little in the thousands of years that man has used them for food. Collards are a traditional vegetable for the southeastern US and are not as popular in the rest of the US. They are grown for the rosette of smooth, rather thick and tender leaves that are used as greens or pot herbs. The usual commercial practice is to harvest the whole rosette and make bunches. Collards are usually packed into 25 lb boxes, with each box containing 12 bunches. For some markets only the leaves may be harvested or cropped, washed, petioles removed, chopped and bagged for market. Collards are low in calories and fat but are excellent sources of fiber, Vitamins A, C and K, calcium, manganese and folic acid. They are also a good source of Vitamins B_2, B_3, B_6 and E and magnesium. People on blood thinners such as coumidan should be careful because of high Vitamin K content and people prone to kidney stones should be careful because of oxalate content.

Figure 1. Collard Field

The plant is a biennial or potentially perennial under certain conditions. It can produce a hard stalk up to 4 foot tall bearing a loose crown of leaves. Collards are a cool season crop and can be difficult to grow in FL during the summer without shade. Many people feel that collards are sweeter when harvested after a frost. Adverse conditions (cold temperatures) during production can cause the plants to produce premature seedstalks (bolting). Bolting is caused by an interaction of plant size (age) and cold temperatures. There is not an exact temperature that will cause bolting to occur. Large plants when subjected to cold temperatures are more susceptible to bolting than a young plant subjected to the same temperature. Young plants are very resistant to bolting especially if they have been hardened off. There are also varietal differences in susceptibility to bolting.

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2. S. M. Olson and J. Freeman, Professor and Graduate Research Assistant, North Florida Research and Education Center, Quincy

The most common disease problems associated with collard production include Alternaria leaf spot, downy mildew and black rot. The most common insect pests include aphids, lepidopteran larvae (caterpillar pests), mole crickets (seedlings or young transplants), whiteflys and at times root maggots.

Collards are available on the market all year round with peak supplies from November through April.

Variety Testing

Since 1983 more than 20 replicated variety trials have been conducted on collards at the North Florida Research and Education Center at Quincy. Data will be presented from the last 14 trials conducted since 1999. Varieties evaluated include Blue Max (same as Hi Crop), Champion, Flash, Georgia, Heavi-Crop, Morris Heading, Top Bunch, Top Pick, and Vates. A detailed description of each variety will be provided later. Planting dates were 16 Nov 1999, 14 Dec 1999, 13 Jan 2000, 22 Feb 2000, 20 Sept 2000, 5 Feb 2001, 24 Sept 2001, 23 Jan 2002, 1 Oct 2002, 8 Jan 2003, 9 March 2004, 24 Sept 2004, 11 Jan 2005 and 3 Oct 2005 and harvest dates were 13 March 2000, 11 April 2000, 19 May 2000, 25 May 2000, 12 Dec 2000, 30 April 2001, 28 Nov 2001 17 April 2002, 3 Dec 2002, 18 April 2003, 21 May 2004, 30 Nov 2004, 25 April 2005 and 14 Dec 2005 respectively. Soil type in each planting date was Orangeburg loamy fine sand. In-row spacing was 12 inches and between row spacing was 3 feet. Total fertilizer applied was 160-80-80 lbs/A of N-P_2O_5-K_2O. Pesticides were applied as needed. Design was a randomized complete block design with 4 replications. Data collected included yield, plant weight and percent plants bolting.

Results. The results are presented in 2 tables. Table 1 has data from trials where no bolting occurred and Table 2 has data from trials were bolting occurred. A mean separation was not used because not all varieties were present in all trials. Top Pick, a new variety, was only included in the last 4 trials.

Variety Descriptions

Blue Max (Fig. 2.) (same as Hi Crop) is an F_1 hybrid collard from Takii Seed Company. It has very attractive, slightly savoyed, blue-green leaves. Leaves have close internode spacing and can be a little more difficult to bunch than some varieties. Under good growing conditions Blue Max has high yield potential (Table 1). This variety had the most severe problem with bolting (Table 2).

Figure 2. Blue Max Collards

Champion (Fig. 3) is a selection from Vates. It is very uniform for an open pollinated (OP) variety. It has smooth, dark-green leaves with short internodes. Plant habit is low growing. Yield potential is moderate (Table 1). Of all the varieties trialed Champion had the least severe problem with bolting (Table 2).

Figure 3. Champion Collards

Flash (Fig. 4.) is a F_1 hybrid from Sakata Seed Company. It is a very uniform Vates type with smooth, dark-green leaves. Unlike Vates, growth is upright and lends well to bunching. Yield potential is excellent under many different planting conditions (Table1, 2). Of the hybrids (4 planting dates), Flash had the least problem with bolting (Table 2).

Georgia (Fig. 5) is one of the older OP varieties available. It is also known as Georgia LS and Georgia Southern. These may be selections but a reference to this was not found. It has blue-green and slightly savoyed leaves. Plant type is not very uniform. Yield potential is low to moderate depending upon growing conditions (Table 1, 2).

Figure 4. Flash Collards

Georgia had the most severe problem with bolting among the OP varieties (Table 2).

Figure 5. Georgia Collards

Heavi-Crop (Fig. 6) is a F_1 hybrid from Takii Seed Company. It has very large, slightly savoyed, blue-green leaves. Leaves have close internode spacing so bunching can be more difficult. Yield potential is moderate (Table 1, 2). Incidence of bolting is moderate (Table 2).

Figure 6. Heavi-Crop Collards

Morris Heading (Fig. 7) is an old OP variety. It is also know as cabbage collards. It has medium green and slightly savoyed leaves. Its main use at this time is for home gardens and local sales. Yield potential is medium to low depending upon growing conditions (Table 1, 2). Of the OP varieties, only Georgia had a greater problem with bolting (Table 2).

Top Bunch (Fig. 8) is a F_1 hybrid from Sakata Seed Company. It is a very uniform Georgia type

Figure 7. Morris Heading Collards

with slightly savoyed, medium blue-green leaves. Plant habit is tall and semi-erect and lends easily to bunching. Yields average near the bottom of the hybrid varieties (Table 1, 2). Of the hybrids only Blue Max had a greater problem with bolting (Table 2).

Figure 8. Top Bunch Collards

Top Pick (Fig. 9) (trialed as SCO 0104) is an F_1 hybrid from Sakata Seed Company. Plant appearance is described as between Vates and Georgia. It has deep green and slightly savoyed leaves. Plant is tall and semi-upright and lends to bunching. Because this is a fairly new variety, we have limited experience (4 planting dates) but yield potential appears to be very good (Table 1, 2). There is also limited data on bolting potential (Table 2) since bolting was only a minor problem on 1 planting date.

Figure 9. Top Pick Collards

Vates (Fig. 10) is an OP release from the Virginia Truck Experiment Station many years ago. Plant is compact and leaves are smooth and dark green. For an OP variety, it is fairly uniform. Yield potential is moderate (Table 1, 2) and only Champion had fewer problems with bolting (Table 2).

Figure 10. Vates Collards

Other varieties that have been evaluated over the years are America, Carolina and Green Glaze. America and Carolina are no longer available for the commercial trade. Green Glaze can still be found at times but has little commercial value due to its light green leaves and greasy appearance of the leaves. Green Glaze, also know as greasy collards, has excellent resistance to worm pests. Green Glaze also has a problem with a high percentage of off-types that appear to be normal colored.

There does not seem to be a distinct advantage to using the hybrids over the OP varieties based on yield (Table 1, 2), though the top 5 varieties are hybrids (Table 1). One advantage that the hybrids do have is that they produce a very uniform crop as to maturity and plant type (few off-types). Many of the OPs have a lot of off-types present. One disadvantage is that the hybrids cost 10 to 20 times more than the OP varieties but majority of large growers have switched to the hybrids.

Table 1. Yield and plant weight of 9 collard varieties when grown under good to optimum conditions[Z]. NFREC-Quincy.

Variety	Seed Source	Open-pollinated (OP) or Hybrid	Yield (25 lb crates/A)	Plant weight (lbs)
Flash	Sakata	Hybrid	1934	3.44
Top Pick[Y]	Sakata	Hybrid	1932	3.32
Blue Max	Takii	Hybrid	1830	3.46
Top Bunch	Sakata	Hybrid	1761	3.34
Heavi-Crop	Takii	Hybrid	1640	2.87
Vates	Many sources	OP	1553	2.81
Georgia	Many sources	OP	1525	2.86
Champion	Many sources	OP	1480	2.65
Morris Heading	Many sources	OP	1457	2.76

[Z] Planting dates were 20 Sept 2000, 5 Feb 2001, 24 Sept 2001, 23 Jan 2002, 1 Oct 2002, 8 Jan 2003, 9 March 2004, 24 Sept 2004 and 3 Oct 2005.
[Y] Only planted on last 3 dates.

Table 2. Yield, plant weight and percent bolting of 9 collard varieties when grown under conditions conducive to bolting[Z]. NFREC-Quincy.

Variety	Seed Source	Open-pollinated (OP) or Hybrid	Yield (25 lb crates/A)	Plant weight (lbs)	Bolting (%)
Flash	Sakata	Hybrid	2302	4.24	10.4
Top Pick[Y]	Sakata	Hybrid	2203	4.15	8.0
Champion	Many sources	OP	1979	3.70	4.5
Heavi-Crop	Sakata	Hybrid	1914	3.87	16.0
Top Bunch	Takii	Hybrid	1746	3.29	38.3
Morris Heading	Many sources	OP	1730	3.63	19.5
Vates	Many sources	OP	1680	3.34	9.8
Georgia	Many sources	OP	1459	3.59	30.6
Blue Max	Takii	Hybrid	1162	2.18	40.6

[Z] Planting dates were 16 Nov 1999, 14 Dec 1999, 13 Jan 2000, 22 Feb 2000 and 11 Jan 2005.
[Y] Only planted on last date.