COMPARISON OF *CUCURBITA MOSCHATA* GERMPLASM TO COMMERCIAL PUMPKIN VARIETIES

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Introduction

Pumpkin (*Cucurbita pepo* & *C. maxima*) is an important crop in the United States particularly for fall Halloween sales. Georgia only produced 510 acres of pumpkins in 2001 with a value just under $2 million (Doherty and Mizelle, 2002). The top five producing counties that year were Dawson, Bacon, Brooks, Mitchell, and White Counties, which represents 263 acres with about half of this produced in Dawson and White Counties in north Georgia.

In 2001, the U.S. harvested 35,600 acres of pumpkins concentrated in six states, California, Illinois, Michigan, New York, Ohio, and Pennsylvania (USDA, 2004). This does not include the smaller acreage that is produced throughout the U.S. primarily for fall harvest.

Although south Georgia is the primary vegetable-producing region of the state, conditions are not conducive for fall pumpkin production. Diseases such as mosaic viruses, downy mildew, and powdery mildew preclude fall production due to the high susceptibility of most pumpkin varieties.

Several years ago, seed of *Cucurbita moschata* was obtained from Brazil and a program of selection was initiated to select for material with high disease resistance and fruit characteristics suitable for the fall Halloween market.

The objective of this study was to compare this material to commercial pumpkin varieties under south Georgia fall production.

Materials and Methods

Seed from the Spring 2003 season selections were sown on 21 July 2003 in a randomized complete block design with three replications. Each plot consisted of 10 hills planted with an in-row spacing of 6 feet and a between-row spacing of 12 feet. Fertilization and weed control followed University of Georgia Cooperative Extension Service recommendations. There was no disease control program used. Plots were harvested on 22 Oct. 2003 with each fruit weighed individually. Yield data was calculated based on a 360 square foot plot.

Plots were rated on 3 Sept. 2003 for disease incidence. Each plot was assigned a disease severity rating of 1-5, with 1 indicating no disease symptoms and 5 severe symptoms. Although both downy mildew and mosaic disease symptoms were present, no attempt was made to identify specific diseases. The disease rating was primarily based on mosaic disease symptoms.

Results and Discussion

Because we wished to use the most recently selected material (spring 2003), we did not sow seed for this trial until 21 July, which only allowed approximately 90 days to harvest. This material, we feel, would have performed better if it were sown one month earlier allowing for 120 days to maturity. Consequently, the fruit were smaller and yields lower than expected**.**

The disease rating information was the most dramatic development of this trial. The commercial varieties, Merlin, Gold Strike and Magic Lantern all had severe disease infections particularly to virus diseases, which affected yield. All of the experimental material had significantly lower disease incidence than the commercial varieties. This is important because this is the most limiting factor to south Georgia pumpkin production. There is no virus control measure that is effective in all cases therefore; host-plant resistance will be an important attribute in this material.

Yields ranged from 1,416 lbs/acre for Gold Strike to 30,278 lbs/acre for #8 (Table 1). These yields are considerably lower than have been recorded in recent trials. A trial held at Blairsville, GA in 2002 had yields ranging from approximately 30,000 lbs/acre to over 100,000 lbs/acre (Kelley, 2003).

Experimental varieties #8, #6, and #17 all had significantly greater yields than the highest yielding commercial variety, Magic Lantern. The high yields of the experimental varieties are the direct result of higher disease resistance. Commercial varieties exhibited virus disease symptoms early on which appeared to dramatically reduce growth and yield.

We plan to continue the selection process during the 2004 spring and fall seasons. In addition, variety trials with the most promising material are planned for both spring and fall. It is hoped the spring trial will give us a good idea on yield potential in comparison to commercial varieties under favorable growing conditions, while the fall trial should give us another assessment of disease resistance along with production potential.

Citations

Doherty, B.A. and W.O. Mizelle. 2002. Vegetable Acreage and Value Estimates 2001. Univ. of Ga. SR-02-02.

Kelley, W.T. 2003. Phenomenal pumpkin yields recorded in Georgia variety trials. In: W.T. Kelley and D.B. Langston (eds.). Ga. Vegetable Ext.-Res. Rep. 2002. Ext. Publ. No. 5-2003.

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Table 1. Pumpkin yield and fruit characteristics.

Entry	Source	Yield (lbs/acre)	Yield (No./acre	Average Fruit Weight (lbs)	Fruit Size Range (lbs)	Disease Rating[z]
Merlin	Harris Moran	3,081	484	6.4	2.5-10.2	4.3
Gold Strike	Rupp	1,416	202	7.0	3.6-12.3	4.0
Magic Lantern	Harris Moran	7,365	1,210	6.1	1.7-12.7	4.0
#12	Experimental	13,544	1,734	7.8	1.4-15.7	2.2
#17	Experimental	24,567	3,630	6.8	2.4-13.9	1.0
#6	Experimental	23,817	4,638	5.1	1.4-16.6	1.6
#8	Experimental	30,278	3,832	7.9	1.8-18.7	1.0
	CV	36%				10%
	Fisher's Protected LSD ($p \leq 0.05$)	9,423				1.0

[z]Virus Disease Rating: 1-5, 1-no visible symptoms, 5-severe symptoms.