
Organic Farming Squash & Pumpkin Variety Trial

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Introduction

Four varieties of squash and four varieties of pumpkin were compared in a variety trial at the West Virginia University Organic Research Farm in Morgantown, West Virginia, in 2002 and 2003. Most vegetable varieties are tested for yields and other traits in conventional production systems. Thus, there was a need to test the suitability of these varieties in an organic production system.

Materials and Method

Soil type: Dormont and Guernsey silt loam

Experimental Design: Randomized complete block with 3 replications

Planting Method: Direct-seeded, 4 seeds per hill, 8 hills per plot (4 squash, 4 pumpkin).

Plot size: 25' x 8'

Planting dates: June 4, 2002 and June 30, 2003

Fertilizer: 10 tons/acre composted cow manure (dry weight).

Irrigation: None

Weed Management: and mulch (2 layers of newspaper and a 4" layer of hay). During the first year, the plots were mulched after the row cover was removed. During the second year, the plots were mulched before the row cover was put on and weeding was not needed the entire season.

Insect Management: Hand-picking, floating row cover, and a biological agent extracted from the seeds of a Neem tree (Aza-Direct[®], Gowan Company, Yuma, Arizona) were used in 2002. During the 2003 season, insect pressure was much lower, making hand-picking and neem unnecessary. This may have been due to a tighter seal of the row cover. The row covers were placed over the squash and pumpkin plots after seeding and were not removed until the first flowers were observed on the plants. The plants were damaged by the squash bug, vine borer, and cucumber beetle. Squash bugs suck juice from the leaves and stems of pumpkins and squash. For more information, please visit the Web (<http://www.vegedge.umn.edu/VEGPEST/CUCS/squabug.htm> or <http://www.attra.org/attra-pub/squashbug.html>). The squash vine borer overwinters in the soil and the emerging adults lay eggs in the base of the plant. As the larvae grows it burrows towards the base of the plant destroying the vascular tissue. For more information about the vine borer, please visit <http://www.attra.org/attra-pub/squashbore.html>, http://www.oznet.ksu.edu/dp_hfir/extensn/problems/squashvb.htm or <http://ohioline.osu.edu/hyg-fact/2000/2153.html>.

Disease Management: Row cover. There was incidence of bacterial wilt during the first year caused by the cucumber beetle. Bacterial wilt overwinters in the digestive tract of the beetle and infects the plants when the beetle feeds on the leaves in the spring. During the second year, there was less incidence since the row cover kept the cucumber beetle from infecting the plants. Bacterial wilt causes the foliage and vines to wilt since water cannot move through the vessels of the plant. For more information about the cucumber beetle and bacterial wilt, please visit <http://www.uvm.edu/extension/publications/gardendisease/gd12.htm>.

Squash and pumpkins were harvested one time during the season by hand on Aug. 30 in 2002 and Sept. 24 in 2003.

Winter Squash Cultivar	Description	Type	Source
Heart of Gold (semi-bush)	Hybrid	Acorn	J.W. Seed Co.
Sweet Dumpling		Small Striped	Johnny's Selected Seeds
Cream of the Crop (semi-bush)	Hybrid	White Acorn	Johnny's Selected Seeds
Table Ace (semi-bush)	Hybrid	Green Acorn	Johnny's Selected Seeds

Pumpkin Cultivar	Description	Type	Source
Ghost Rider		Jack O'Lantern	J.W. Seed Co.
Howden		Jack O'Lantern	Johnny's Selected Seeds
Orange Smoothie	Hybrid	Jack O'Lantern	Johnny's Selected Seeds
Racer	Hybrid	Jack O'Lantern	Johnny's Selected Seeds

For more information please visit <http://www.johnnyseeds.com> or <http://www.jungseed.com>

Squash Cultivar	Lbs/3 plots 2002	Lbs/fruit 2002	Number of fruit 2002	Lbs/3 plots 2003	Lbs/fruit 2003	Number of fruit 2002	Rating of fruit 1=worst 5=best
Heart of Gold	20	0.6	32	30	0.9	34	3.5
Sweet Dumpling	3	0.4	11	13	0.6	24	3
Cream of the Crop	15	0.6	28	28	0.8	37	4
Table Ace	21	0.6	34	28	1	29	3.5

Pumpkin Cultivar	Lbs/3 plots 2002	Lbs/fruit 2002	Number of fruit 2002	Lbs/3 plots 2003	Lbs/fruit 2002	Number of fruit 2003	Rating of fruit 1=worst 5=best
Ghost Rider	1.5	1.5	1	15	2	6	2
Howden	4	2	2	5	5	1	2.5
Orange Smoothie	30	2	15	49	2	24	3.5
Racer	33	4	9	45	3	15	4

Results and Discussion

Squash

Overall, the squash plants performed marginally better the second year because of less insect pressure. All squash, except for Table Ace, produced more fruit in 2003. However, the average fruit weighed more in 2003, and there was a greater yield weight. Overall, Cream of the Crop had the best-looking fruit, and Sweet Dumpling had the lowest rating for fruit quality.

Pumpkin

There were more pumpkins in 2003 than 2002, except for Howden, which produced one less pumpkin. Overall, the two hybrids (Orange Smoothie and Racer) had the highest yields.

The two types of acorn squash had the highest yields and best overall fruit quality. However, all the squash varieties performed well under the organic system. The pumpkins did not do as well. The hybrid pumpkins performed better than the two nonhybrid cultivars of pumpkin under an organic system. Using row covers and securing them tightly was an effective control measure for insects and diseases. For weed control, using newspaper and hay before putting the row cover on the plots was very effective, especially during the wet season of 2003.

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