

Yields and Gross Returns from New Slicing Cucumber Varieties

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Introduction

Early cucumbers bring the best prices, and every grower plans for the best returns, but weather usually dictates field activities. The 2003 growing season clearly demonstrated the importance of timing in planting spring slicing cucumber crops. Early slicing cucumbers continue to be profitable for growers in central and western Kentucky especially early in the season, when the market price is high. This is the second year of a fresh market slicing cucumber trial that compares new slicing cucumber varieties' yields and visual characteristics.

Methods and Materials

Fifteen slicing cucumber varieties were compared for yield, potential returns, and overall appearance in the spring of 2003 at the Horticultural Research Farm in Lexington. Dasher II was included as a standard (check) variety, as it is one of the most popular hybrids in the region. All the varieties were gynococious F1 hybrids with approximately 12% pollinators. All varieties are reported to have disease resistance although our trial did not evaluate disease.

Cucumbers were seeded in 72-cell flats in the greenhouse on 7 May 2003 and transplanted to the field on 10 June. Most cultural practices followed current commercial recommendations for Kentucky. A total of 60 lb N/acre was applied prior to transplanting; an additional 10 lb N/acre from ammonium nitrate was fertigated in 4 weekly doses. All P and K was applied preplant according to recommendations based on soil tests. The insecticide Capture 2 EC was used for cucumber beetles on the seedlings while they were hardening off. For insect control, Platinum was applied as a post-transplant drench one day after transplanting. Two applications of Pounce were applied after 24 June for cucumber beetle control. A fungicide regiment of Bravo, Quadris and Nu Cop was applied throughout harvest.

Plots consisted of 8 ft long beds with black plastic and drip irrigation. Bed centers were 8 ft apart. Single plants were spaced 12 in. apart within double rows (two rows/bed) with approximately 15 in. between double rows (16 plants/plot). Plots were replicated four times in a randomized complete block design. Cucumbers were harvested three times a week between 11 July and 1 August for a total of 10 harvests. After grading into either marketable fruit or culls, fruits were counted and weighed. Marketable fruits were sorted according to USDA grades US Fancy, US No. 1, US No. 1 Large, US No. 1 Small, and US No. 2.

Yields and gross returns. Average yields of each USDA grade were compared using Waller-Duncan's LSD (k-ratio t-tests, $P=0.05$) following an analysis of variance. Although yields for these grades are important, we have presented the data in a way that we think is practical for the grower. Making planting decisions based on total yield data alone is not recommended and could lead to disastrous results. Raw data were converted by multiplying the yield of each grade by that grade's actual price for that harvest date. Yields in lbs/acre were first converted to boxes/acre by dividing yield by the average weight of one 1 1/9 bushel box of slicing cucumbers (55 lb). Box yields were multiplied by actual average weekly wholesale prices received by a Kentucky cooperative, less box costs, packing charges and commissions. The resulting single variable "gross return" provides a better indicator of a variety's overall performance, taking into account yields of the different grades and their price differentials.

Trellising. All plots were trained on a simple trellis consisting of tomato stakes placed every 4 ft of row, and tomato twine wrapped around each stake to create a “fence” on both sides of the bed. Plants were then hung over the strings. The trellis consisted of 4 or 5 strings placed about 6-8 inches apart.

Fruit appearance ratings. All fruits of each variety harvested from all four replications were graded and laid out on tables for careful examination and appearance ratings on 28 July. Fruits were visually assessed for shape, extent of yellow color, and overall appearance. Appearance ratings took into account, in order of importance, overall attractiveness, shape, shape uniformity, and color.

Results and Discussion

Yields and returns. Varieties are ranked from highest to lowest yield of a combination grade of US Fancy plus US No. 1 fruits in Table 1. This combination corresponds to the trade designation ‘Superselect’. The US No. 2 grade corresponds to the ‘Select’ category while fruits of the US No. 1 large grade are usually packed as ‘24 count’ (24 fruits/box). Like last year’s study, Daytona, Dasher II, SRQ 2983, and Indy were in the 7 highest cultivars in this trial, along with General Lee, Greensleeves and Turbo (Table 1). None of the yields were significantly different from the others. Daytona, Greensleeves, General Lee, Turbo, Indy and Stonewall all had average percentages of Superselect (Fancy and No. 1) equal to or higher than 80, though all the varieties had average percentages above 70 (Table 1). Incomes for all varieties were not significantly different except that Daytona earned significantly more than Stonewall, the lowest earning variety.

Dasher II, General Lee, SRQ 2983, SXQ 2387, Speedway and Slice More received the best ratings for uniformity of shape. Daytona, Dasher II, General Lee Thunder and Panther, received the best ratings for degree of yellowing on fruit. The best overall appearance ratings were given to Dasher II, General Lee, Turbo, Indy, and Thunder. Dasher II and General Lee were attractive fruit, receiving some of the best scores in all three appearance rating categories (Table 2).

Although no one variety significantly outperformed the others, this trial illustrates the importance of planning a crop for optimal return. In this case, rain delayed the planting, thus delaying the first harvest until July 11, after the prices started to decrease (Table 3). Daytona, Dasher II, General Lee, Turbo, Indy, Speedway and Panther remain on the list of suggested slicing cucumber varieties for Kentucky growers. SRQ 2983, Greensleeves, Cobra and SXQ 2387 are good for grower trial.

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Table 1. Marketable yields and gross returns of slicing cucumber varieties and advanced breeding lines; data are averages from four replications at Lexington, KY, 2003. Entries ranked from highest to lowest yield of US Fancy plus US No. 1 grade fruits.

Entry	Seed Source	Marketable yields ¹				Gross returns ² \$/acre	Overall appear.
		US Fancy+ US No. 1 (tons/acre)	% Fancy+ No. 1 (%)	US No.2 ----tons/acre----	US No. 1 large		
Daytona	SW	20.7	83	2.4	1.8	8864	5.0
Dasher II	SW	20.4	79	4.0	1.5	7619	7.5
General Lee	SW	20.1	80	3.3	1.6	7463	7.5
SRQ 2983	SS	19.4	79	3.7	1.4	7166	4.5
Greensleeves	HM	19.1	81	3.1	1.4	6877	6.0
Turbo	RU	18.8	82	3.1	1.0	6663	7.5
Indy	SW	18.8	82	2.8	1.3	6700	7.5
Cobra	UA	18.5	78	3.4	1.7	6959	5.5
SXQ 2387	SS	18.5	73	3.8	3.1	7639	7.0
Speedway	RU	18.4	79	3.3	1.7	6907	5.0
Stonewall	SW	18.0	82	2.6	1.3	6353	7.0
Thunder	SW	17.9	75	3.9	2.2	6999	8.0
Panther	SW	17.8	76	2.7	2.9	7097	5.5
Slice More	SW	17.4	75	3.9	2.0	6852	5.5
SXQ 2389	SS	16.3	71	4.5	2.1	6852	4.5
<i>Waller-Duncan LSD (P=0.05)</i>		5.9	7.9	1.7	1.2	2327	---

¹The combined yields of USDA grades Fancy and US No. 1 are equivalent to the Superselect marketing category while US No. 2 grade is equivalent to Select; yields of US No. 1 Large are equivalent to yields of cucumbers used in 24 count packs.

²Gross returns are calculated for each entry by multiplying yields of each marketing category (Superselect, Select, and 24-count) by its appropriate price for a given harvest date (9 harvests). Prices used were actual average weekly prices received by a Kentucky cooperative from June 22 –August 10, 2003. Higher returns may reflect earlier yields and/or higher yields of Superselect cucumbers. Prices are shown in Table 3.

Table 2. Fruit shape, color, and overall appearance assessments for slicing cucumber varieties; scores are averages for all fruits of each variety from four replications harvested on 28 July, 2003; varieties are listed from highest to lowest US Fancy + US No. 1 yields.

Entry	Shape¹	Fruit yellowing²	Appear. rating³
Daytona	2.0	3.5	5.0
Dasher II	4.5	3.5	7.5
General Lee	4.0	3.5	7.5
SRQ 2983	4.0	2.0	4.5
Greensleeves	3.5	2.0	6.0
Turbo	3.5	3.0	7.5
Indy	3.5	3.0	7.5
Cobra	3.0	2.5	5.5
SXQ 2387	4.5	2.5	7.0
Speedway	4.0	2.0	5.0
Stonewall	3.0	2.0	7.0
Thunder	2.5	4.0	8.0
Panther	2.5	4.0	5.5
Slice More	4.5	2.5	5.5
SXQ 2389	3.0	3.0	4.5

¹Shape ratings: 1 = worst (large percentage of misshapen fruits) to 5 = best (most fruits uniform, long, straight, cylindrical).

²Extent of yellowing: 1 = worst (large percentage of fruit surface yellow on most fruits), 5 = best (no yellow color on most fruits).

³Appearance ratings: 1 = worst; 9 = best taking into account, in order of importance, shape, shape uniformity, and color.

Table 3. Average weekly wholesale prices received for slicing cucumbers during the period from 29 June-27 July, 2003. The first trial harvest was July 11. Prices are before packing charge and marketing commissions are subtracted. Prices are dollars per standard 1 1/9 bu (55 lb) carton.

Week ending	Market grade¹	
	Super-select+ Select	Small
June 29	14.65	11.25
July 6	10.25	8.60
July 13	7.30	5.25
July 20	7.20	5.25
July 27	7.05	5.00

¹Market grades correspond to the following USDA grades:

Superselect = US Fancy + US No. 1;

Select = US No. 2; Small = US No. 1 Small.