

Project Title: Processing Cucumber Variety Evaluation and Machine Harvest Studies

Researcher: Dr. John O'Sullivan, Dept. of Plant Agriculture, University of Guelph, Simcoe

Objective:

The objective of these studies was to evaluate new cucumber varieties for yield performance, quality (fresh and brined), disease tolerance, adaptability and acceptability to Ontario processors for hand-pick and machine harvested applications. New superior yielding cucumber varieties are required to ensure that the industry can compete effectively. Many new varieties are being introduced by seed companies each year, therefore, variety evaluation is essential in order to recommend these varieties to the industry in Ontario. In particular, varieties that have local adaptability and market acceptance, together with higher yields, improved fresh quality, improved brining quality and better disease tolerance are needed.

Methodology:

Trials were conducted at the University of Guelph, Dept. of Plant Agriculture, Simcoe. Two hand-pick trials were conducted in 2003. The **ADVANCED** trial evaluated 13 named varieties that are available commercially to compare how these varieties perform under the same environmental conditions. The **MAIN** trial evaluated 11 named and experimental varieties that performed well in the 2002 trials conducted at Simcoe, to see if they have potential for introduction into the Ontario market. Each cultivar was replicated 3 times in the advanced and main trials. The plot size for these trials were 30 ft by 5 ft and the plants were thinned to 6" in the row to give a plant population of 18,000 plants/acre. All hand-pick trials were harvested 7 times throughout the season.

Two machine harvest trials were evaluated in 2003. One **ONCE-OVER MACHINE** harvest trial at Simcoe evaluated varieties that are grown commercially by growers and new numbered lines that have potential for mechanical harvest. The **LATE PLANTING MACHINE** harvest trial was planted to assess fruit quality and yield of a late seeded crop. Both trials were grown in rows 28" apart and thinned to 4" in the row to give a plant population of 58,000 plants/acre. These trials were harvested by hand in a once-over pick to simulate machine harvesting. This gives an indication of how these varieties will perform relative to each other within a trial, but this does not give an indication of the percent recovery that would be obtained in the field with a machine.

The crops were grown according to accepted commercial practices used in Ontario. Data was taken on fresh fruit quality such as fruit shape, length to diameter ratio (L:D), fruit colour, firmness, seed size and overall fruit quality. In addition, yields were measured at harvest as fruit weights, fruit number per plant and dollar value per acre. All varieties were brined at Simcoe, for evaluation by the industry and seed companies in November, 2003.

Results:

Multi Pick Trials

Yields expressed in the following summary only include Grades #1 to 4 (including nubs and crooks). Thirteen varieties were examined in the ADVANCED hand-pick trial. The top yielding varieties in this trial were Pony O (\$4,949/Acre), Patton Supreme (\$4,909/Acre), Fancipack M (\$4,799/Acre) and Pik-Rite (\$4,627/Acre). The lowest yielding variety in the trial was Endeavour (\$4,081/Acre).

In the MAIN trial, of named and numbered varieties, SXQP 2391 Supreme was the highest yielding variety at \$4,737/Acre. This was followed by SRQP 2391 Classic (\$4,724/Acre), SXQP 2627 Supreme (\$4,565/Acre) and SRQP 2608 Classic (\$4,527/Acre). The lowest yielding variety in this trial, SRQP 1864 Classic, yielded \$3,794/Acre.

Machine Harvest Trials

The once-over variety trial at Simcoe was harvested by hand to simulate machine harvest. Data from this trial ranks varieties tested for yield potential based on \$/acre. It does not give any indication of the percent recovery that would be obtained in the field with a machine. The data from this trial is presented on a graded basis, which includes grades 1 to 4. The highest yielding variety was Eclipse at \$2,141/Acre. This variety was followed by Arabian O (\$2,049/Acre), XP4506116 (\$1,959/Acre) and SXQP 2686 (\$1,954/Acre).

In the LATE PLANTING MACHINE harvest trial the highest yielding variety was Papillon (\$1,428/Acre) followed by Discover M (\$1,361/Acre) and Colt O (\$1,315/Acre).

At Tom Hasket's farm, the highest yielding varieties from the first harvest date (Aug 15/03) were SXQP 2686 (\$1,677/Acre), Papillon (\$1,479/Acre), SXQP 2391 C (\$1,452/Acre), and SXQP 2391 S (\$1,271/Acre). The highest yielding variety from the second harvest date (Aug 15, 03) was Vlasnik M (\$1,062/Acre).

Project Title: Processing Cucumber Cultivar Evaluation - 2003

Researcher: J.W. Zandstra, R.C. Squire, Ridgetown College, University of Guelph

Objectives:

1. To evaluate new cucumber cultivars for yield performance, quality (fresh and brined), disease tolerance, and adaptability and acceptability to local processors.

Methodology:

Cucumber cultivar trials were established on a Brookston clay loam sand spot phase soil on the Ridgetown College research farm. Multipick trials had row spacings of 1.5 m and plants were spaced 15 cm in the rows for a final population of 17 777 plants/acre (44 444 plants/ha). Simulated machine harvest trials had row spacings of 0.5 m, and plants were spaced 10 cm in the rows. Multipick trials were initially seeded on 06 June, but emergence was poor the trials were re-seeded on 19 June. Machine harvest trials were seed on 20 June.

Weeds were controlled with Alanap applied preplant incorporated. Weed escapes were controlled by hand hoeing. Harvested cucumbers were graded according to Ontario commercial standards. Samples of each cultivar of the main and advanced multipick trials were collected and transported to the Department of Plant Agriculture, University of Guelph in Simcoe, where they brined, and later evaluated for brining quality.

Results:

Summer rainfall was more consistent in 2003 and overall the trials were good. Yields were higher and culls were lower than in 2002. Many new cultivars were evaluated in the multipick trials in 2003. The multipick plots were harvested 8 times, beginning on 31 July and finishing on 25 August. In the advanced multipick trial, Eclipse and Patton Supreme produced the highest value early yields**(\$ 751, \$746 per acre respectively) and total yields (\$3 788, \$3 652 per acre respectively). Patton Supreme was also one of the yielding varieties in 2002. In the main multipick trial, SRQP 2608C and MacArthur C produced the highest value early yields ** (\$769 and \$658 per acre respectively) while SRQP 2608C and SRQP 2391C produced the highest value total yields (\$3 540 and \$ 3 292 per acre respectively).

Eighteen cultivars were evaluated in a once-over machine harvest simulation. HMX 9465 and Wellington produced the highest returns per acre (\$1 897 and \$1 839 per acre respectively). Fruit per plant ranged from 0.4 to 1.1 fruit across all cultivars.

** - includes grades 1-4.