

Project Title: Processing Cucumber Variety Evaluation and Machine Harvest Studies

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Objective:

The objective of this study 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 industry can compete with U.S. markets. 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 and off station trials at Springford (Vic Hamm farm). Three hand pick trials were conducted in 2001. The **ADVANCED** trial evaluated 14 named varieties that are available commercially to compare how these varieties perform under the same environmental conditions.

The **MAIN** trial evaluated 19 named and experimental varieties that performed well in the 2000 trials conducted at Simcoe to see whether 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 was 30' long by 5' wide 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 6 times throughout the season.

Four machine harvest trials were evaluated in 2001. Two **ONCE-OVER MACHINE** harvest trials at Simcoe evaluated varieties that are grown commercially by growers and new numbered lines that have potential for mechanical harvest. The once-over harvested crop was 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 **MAIN MACHINE** harvest trial grown off-station (Springford) evaluated 13 named varieties. The plot sizes were approximately 0.35 acres. Hand samples were taken prior to harvest to obtain percent recovery information by the machine (FMC).

The **LATE PLANTING MACHINE** harvest trial was planted to assess fruit quality and yield of a late seeded crop.

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 plot 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, 2001.

Results:

Multi Pick Trials

Yields expressed in the following summary only include Grades #1 to 4 (including nubs and crooks). Fourteen varieties were examined in the ADVANCED hand pick trial. The top yielding varieties in this trial were Pik-Rite (\$2,873/Acre), Jackson C (\$2,796/Acre), Vlasstar B (\$2,731/Acre) and Eclipse (\$2,575/Acre). The lowest yielding variety in the trial was Picklet B (\$1,581/Acre).

In the MAIN trial, of named and numbered varieties, HMX 0467 was the highest yielding variety at \$2,448/Acre. This was followed by BJ99-3986 (\$2,389/Acre), SQRP 2734 (\$2,348/Acre) and BJ99-3984 (\$2,266/Acre). The lowest yielding variety in this trial, HMX 0469, yielded \$1,408/Acre. Hand harvest varieties that had good to excellent fruit quality in brining evaluation tests included Asterix F1, BJ99-3987 and BJ99-3983.

Machine Harvest Trials

Two once-over variety trials at Simcoe were harvested by hand to simulate machine harvest. Data from trials #1 and #2 rank varieties tested for yield potential based on \$/acre. It doesn't give any indication of the percent recovery that would be obtained in the field with a machine. The data from trials #1 and #2 is presented on a graded basis, which includes grades 1 to 4 (including nubs and crooks). From trial #1, ASR 04564229 is the highest yielding variety at \$1,388/Acre. This variety is followed by Lafayette Supreme (\$1,202/Acre), Vlaspek M (\$1,124/Acre) and SQR 1882 Classic (\$1,099/Acre). In trial #2 the highest yielding variety was XVC 5834 M (\$1,922/Acre), followed by Wellington (\$1,645/Acre) and Excel M (\$1,567/Acre).

Machine harvest varieties that had good brining evaluation tests from trial #1 included SQRP 2608, Royal and Atlantis. From trial #2 the highest ranking varieties were Discover M, XVC 5834 M and Vlaspek M.

At Vic Hamm's Springford farm, the highest yielding varieties included Lafayette (\$853/Acre), Eclipse (\$794/Acre), Vlasspear (\$771/Acre) and Wellington (\$762/Acre). The lowest yielding variety was Discover (\$393/Acre).

In the LATE PLANTING MACHINE harvest the highest yielding variety was Vlasspear (\$1,465/Acre) followed by Vlaspek M (\$1,377/Acre) and Discover M (\$1,272/Acre).