Agriculture and Agri-Food Canada
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Ground cherries: a new crop

Ground cherries, *Physalis pruinosa*, or Cape gooseberries, are annual fruiting vines which sprawl 30-60 cm high and 90-100 cm wide. They continuously produce yellow, husk-enclosed fruit from mid-August to the first killing frost. The ripe fruit, which resemble yellow cherry tomatoes, fall to the ground where they continue to ripen making regular harvesting a necessity.

Immature ground cherry berries

Ripe ground cherries

When ripe, the husk-enclosed fruit resembles to yellow cherry tomatoes

Ground cherries have long been a favourite of backyard gardeners because of their edible fruit. Recently, this nice yellow berry has grown in popularity among new cuisine chefs mainly for use in jams, as dessert decorations and for regional specialties such as aperitifs or liqueurs.

Collaborative research

Research into developing sustainable production systems for high-value crops is a key theme of Agriculture and Agri-Food Canada's research program.

Development of new crops for commercial production is an area of this research which will enhance the profitability of Canadian farmers and provide manufacturers with the opportunity to create new products.

Large-scale production of ground cherries is however, relatively new. In 1996, a two-year collaborative project was started between Agriculture and Agri-Food Canada Horticulture Research and Development Centre and ground cherry growers Ferme Granger et Fils at Saint-Jean-sur-Richelieu, QC, to look at growing this fruit for commercial production.

Plant density, fertilization, and mechanical harvesting were examined in 1996 and 1997 using the cultivar 'Golden Husk'. All plants were grown on black plastic mulch and watered using drip irrigation.

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Plant density and size of fruits

In 1996 and 1997, plants were transplanted from the greenhouse on June 22 and June 5, respectively. In 1996, three plant spacings were used: 50, 75 and 100 cm between plants on the row, while in 1997, the plant spacings were adjusted to 30, 45 and 60 cm. Three harvests were completed the first year, and five harvests the second year.

There was no yield difference when the ground cherry plants were grown at a spacing of 50, 75 or 100 cm within the row. Decreasing plant spacing further from 60 to 30 cm had no effect on yield, but a spacing of 45 or 60 cm allowed an easier harvest of larger-sized fruits.

Nitrogen fertilizer and pruning of plants

Ground cherries have a tendency to develop excess foliage, so care must be taken when applying nitrogen fertilizer. In a fertile heavy soil previously planted to soybeans, nitrogen fertilization of 35 kg/ha at flowering did not improve marketable crop yields compared to 0 kg/ha.

Excessive foliage can hamper harvesting efforts. Fairly late pruning of the plants had no impact on yields, but may be useful in improving harvesting efficiency.

Soil beds

Two soil bed heights, 7 and 15 cm, were examined on surface clay soil in year one. Plants were spaced 1 m apart on the row. Three harvests were completed with little effect of bed height on yield of marketable berries being observed. The higher beds did yield the larger sized berries, which are preferred by consumers.

Mechanical harvesting

Harvesting of ground cherries is very labour intensive. Not only do ground cherries require multiple harvests, but workers must bend over, lift the vine with one hand and pick the berries with their other hand. Only one side of a row can be picked at a time.

This project also developed a prototype to mechanically harvest ground cherries. A self-propelled, one row machine was built that would allow both sides of the row to be harvested simultaneously. The prototype harvested cherries at a rate of 1,080 liters per hour with only two or three operators as compared to a hand harvest rate of 55 liters per hour per worker. During multiple harvests, little damage was caused to the plant, the berries or the plastic mulch film.

The designed mechanical harvester requires that the crop is grown on good-quality mulch and mounds, the sides of which must be fairly free of weeds. Any overly large plants must be pruned, and the harvest must await dry conditions.

Luxuriant foliage only one month after transplantation

Mulched row in mid-August,before the beginning of harvest

Front view of selfpropelled harvester

Two lateral vacuum cleaners draw the berries up to a precleaning cylinder

information

Dr. Sylvie Jenni
Research Scientist - High-Value Crops
Agriculture and Agri-Food Canada
Horticulture Research and Development Centre
St. Jean-sur-Richelieu, Quebec
Tel. (450) 515-2055
Email: sylvie.jenni@agr.gc.ca

Roger Chagnon, B.Sc.A, Eng.
Research Scientist - High-Value Crops
Agriculture and Agri-Food Canada
Horticulture Research and Development Centre
St. Jean-sur-Richelieu, Quebec
Tel. (450) 515-2001
Email: roger.chagnon@agr.gc.ca

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