

Developing Elderberry Production

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Box – Elderberry products

The berries...

Are sold frozen or dried and as juice, jelly, liqueurs, syrups, wines, beers, fruit bars, granola bars, pies, etc.

Are used as food colouring and colouring for marking meat, in natural medicines, etc.

The flowers...

Are sold dried and used in syrups, liqueurs, carbonated drinks, throat lozenges, etc.

Are used in floral water/infusions, natural medicines, etc.

A native Canadian shrub, American elder or elderberry, is capturing ever-greater attention among producers and consumers. Whereas consumers see its berries as a unique and healthy food item, producers are keen to exploit the plant's considerable potential as a source of functional foods, including food colourings. Functional foods, also called health-enhancing foods and nutraceuticals, are recognized as having a beneficial health effect that extends beyond nutritional effects. A nutraceutical can be defined as a product made from food substances that is beneficial for health. To capitalize on the benefits associated with elderberry, it may become crucial to develop guidelines for managing elderberry production and ensuring the profitability of this undertaking in Canada.

Whereas elderberry production is well established in Europe, it remains marginal here. There are a few operations, such as *Le Ricaneux*, that grow, harvest and process the berries, but they are very small. And while a few hectares may be sufficient for a small secondary processing enterprise like *Le Ricaneux*, they will not meet the needs of a large tertiary processing enterprise aiming to sell its products widely.

This predicament is illustrated by the situation of Colarôme, a Quebec-based enterprise that recently introduced an orangey red food colouring that is extracted from elderberries. Last year, the firm barely managed to obtain 3% of the 500 tonnes of berries needed for its production. The demand, which is centred in Japan and the United States, is so strong at present that this shortage of raw material is the only roadblock to Colarôme's expansion. The secret of the firm's success: A high-quality food colouring that is very light- and heat-stable, much more so than the colouring agent obtained from European elderberries.

At the urging of Colarôme, the Agriculture and Agri-Food Canada (AAFC) research team led by Claude Richer and Denis Charlebois initiated a project in 2003 to develop efficient elderberry production methods (see Box) that would help to ensure profitability. Since the start of the project, about ten producers have joined forces with the AAFC to try their hand at growing this relatively new crop.

Nicole Houde, a former maple syrup producer from the Beauce region, said that elderberry can provide the opportunity to derive value from a farm field that would otherwise not be used. She hopes that growing elder will help her amass a nest egg for her retirement but has a cautious outlook, given the uncertainty surrounding yields. She is hoping to sell her crop to Colarôme but may process the fruit herself if the yield falls short of expectations.

For Robert Patenaude, elderberry production is a way to diversify his farm's crops and income as he moves toward organic certification. He is moreover hoping to develop some new products. At present, Mr. Patenaude is exploring various avenues for processing elderberries: jams, jellies and syrups, elder blossom drinks and an additive for cider. If Colarôme were offering higher prices, he would consider selling his surpluses to this firm. As it is, the \$800 to \$1000 they are paying per tonne of fruit may not cover the costs and labour associated with establishing and tending an organic crop. Over the past few years, he has had to devote 10 hours a week to his one-hectare experimental plot.

The long-term results of this project should lead to an efficient and profitable elderberry production system. Luc Urbain, an agronomist with MAPAQ, sees three key factors emerging in relation to the establishment of elderberry crops:

- 1) The quality of the plants that are initially selected appears to have a significant impact on the success of elderberry establishment; this varies with geographic origin and where the cuttings are taken on the parent plant.
- 2) Weed control is crucial for establishment of the plants during the first few years of growth. A protective cover of plastic mulch may reduce the time that has to be devoted to weeding. It is not yet known what effect the mulch will have on the roots' susceptibility to frost.
- 3) The native species appears to perform less well than several of the varieties evaluated, particularly with respect to fruit abundance and physical characteristics.

Obviously, these are just preliminary results and it will take a few more years of research before the knowledge that is acquired can be put into practice, in the field!

Developing a production system...

Issues that need to be addressed!

- Which cultivars are best suited to each of the climatic regions in eastern Canada?
- Which types of soil are suitable for growing the plant?
- Should elder be planted with plastic mulch or wood chips as a protective cover or with no protection?
- Will these plantings be economically viable for producers?
- How can fruit yields be improved and made consistent from one year to the next?
- Will pollination intervention help to improve berry quantity and quality?
- What fertilizer and irrigation regimes are most suitable for elder?
- What planting density will be most conducive to plant growth while optimizing the available space and facilitating harvesting?

The AAFC study should provide answers to these questions. Experimental production is under way at the farms of more than 10 producers in the Montérégie and Beauce regions and at the AAFC experimental farms in Summerland, St. Jean sur Richelieu, Normandin and Delhi.