



Producing New and Improved Berries through DNA Genotyping

Consumer demand for high antioxidant producing berries and their products has increased dramatically over the past number of years. The collection, preservation and increased sales for wild berries have and will continue to play a pivotal role in the economies of rural areas in Canada.

Agriculture and Agri-Food Canada's Research Centre in St. John's, NL has developed the largest cool climate berry crop germplasm collection in North America which includes wild clones and cultivars of lingonberry, cranberry, cloudberry and lowbush blueberry.



These samples were collected throughout Atlantic Canada, Quebec, the USA and Europe. Scientists at the Research Centre are currently using conventional breeding and lab-based techniques to develop superior berry varieties.

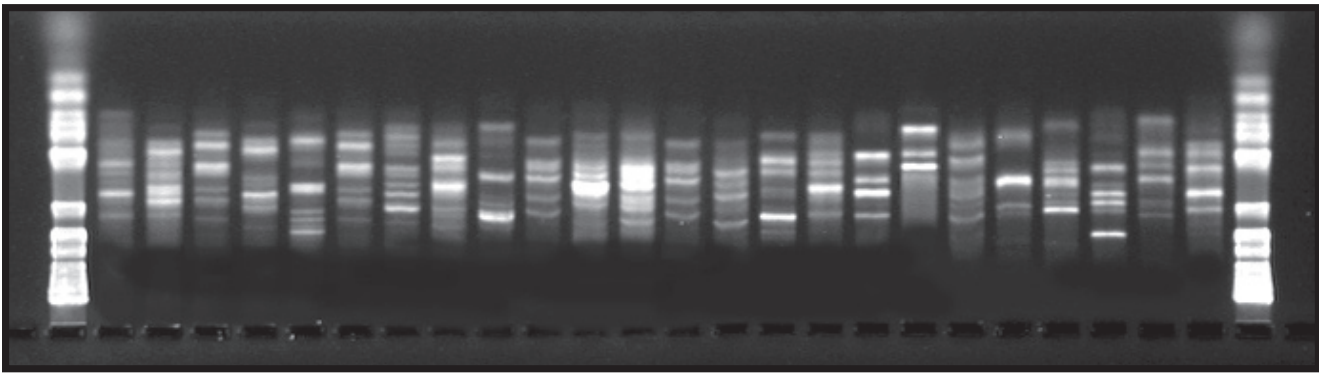
Commercial cultivation of wild berries can be challenging but with recent advances in molecular genetics, productivity can be increased through the selection of superior plants from natural populations followed by genetic combinations. Research at the centre involves developing techniques that will speed up plant breeding and the production of new cultivars. The research will help ensure accurate and rapid identification of wild berry varieties. Research is based on developing a quality-assurance tool for identifying and maintaining specific berry clones in a cool climate berry collection. Through the research, specific molecular identifiers will be recorded and can be used for pre-selection in growing wild berries. This pre-selection process will allow unfavourable varieties to be discarded prior to planting.

The storehouses of genes and genetic combinations at the research centre can be used in the selection process of new plants in anticipation of environmental or other changes. This will assist our existing fruit-based food industries in becoming more competitive through the use of better cultivars with high medicinal properties.

The use of molecular techniques such as DNA fingerprinting of wild berries provides an opportunity for the understanding of specific genetic characteristics that allows direct comparison of different genetic material independent of environmental influences. The technique initiated by AAFC scientists, combines biotechnology and classical breeding techniques which have been shown to have a great impact in developing cool climate berry crops. Scientists at AAFC developed a DNA isolation method and molecular fingerprinting protocol to study genetic diversity within specific berry species.

An increasing demand for high quality berries in Canada and the world has intensified the need to select superior wild-grown berry plants. The techniques

Genetic fingerprinting in 24 Canadian wild lingonberry clones. [Standard molecular size (1 kb ladder) on both sides]



being developed at the research centre in St. John's will assist industry growth and help improve the overall quality of the final product.

Dr. Samir Debnath is leading this research program at the Research Centre in St. John's in cooperation with Mr. Richard Oram, Alternative Crop Specialist, Department of Natural Recourses, Government of NL.

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