

Hemp Variety Development for Northern Ontario

Crop diversification and access to new markets is important to improve the resiliency of the agricultural industry in the North – the Northern Ontario Farm Innovation Alliance, PhytoGene Resources and the New Liskeard Agricultural Research Station have collaborated over the past year on a project to develop an elite industrial hemp variety suited to Northern Ontario.

PhytoGene Resources has been involved in hemp breeding in Northern Ontario since 2000 and have successfully developed and released two short season varieties (CanMa in 2010 and GranMa in 2014), both of which are currently grown in Quebec and Western Canada. These are dioecious varieties, meaning that there are separate male and female plants. The males degenerate soon after pollen shed and are reduced to dried out stalks by harvest time. It is these stalks that cause most of the problems at harvest, since they can become wrapped in the equipment. This problem can be avoided with the use of monoecious varieties, which have the male and female flowers on the same plant

PhytoGene Resources evaluated four new monoecious populations at New Liskeard in 2015. In addition to the agronomic evaluation, a collaborative project was undertaken to develop protocols for an innovative breeding method. This approach should increase the efficiency of selection and reduce the time required for variety development very significantly.

The goal was to develop a protocol to recover elite plants near maturity from a breeding nursery. Traditional propagation using cuttings is not effective, but tissue culture recovery has potential. The New Liskeard Agricultural Research Station has expertise in tissue culture propagation of several species, and was an obvious collaborator for this initiative.

Explants taken from 99 superior monoecious plants were used to develop protocols for sterilization, callus induction and then root and shoot initiation.

Due to systemic plant-borne contamination, a series of trials had to be initiated to select the appropriate doses and exposures of a broad-spectrum biocide. Despite this contamination challenge, over 20% of the plantlets that did form rooted within three weeks once cultured on a rooting medium. A series of recommended steps and procedures to combat the plant-borne pathogen and promote the formation of plantlets from leaf explant calli from mature hemp plants has been developed to support variety development by PhytoGene Resources.



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