

WORLD AGROFORESTRY IN PRACTICE

Going from a forest ecosystem to a productive agroforestry association

NATURAL MAPLE ORCHARDS OF QUÉBEC

AUTHORS Alain Olivier

LOCATION North America, Québec

ORGANISATION Laval University

TYPE OF PRACTICES Arboriculture with herbs

PRODUCTION Syrup, wood, medicinal plants



3 DESCRIPTION AND INTEREST

Origins of maple syrup exploitation are still unclear. Thanks to writings by brother Sagard from 1636, we know that the Innus (a First Nation of Québec) were tapping the trees “to harvest a sweet juice, close to honey”.

The regeneration of the orchard happens spontaneously when young maple trees are receiving light thanks to the falling of old trees. Hence, the natural maple orchard is an uneven-aged system, with trees of all ages. Moreover, herbaceous plants also grow understory such as the American ginseng (*Panax quinquefolium* L.) or the wild leek (*Allium tricoccum* Aiton). However, these plants have suffered so much harvesting that they are now endangered and protected. Nowadays, some plants are cultivated in association with the maple trees, especially medicinal plants.

1 GENERAL CONTEXT

The maple orchard is a very specific ecosystem with high cultural value related to its strong attachment to Québec’s traditions, and even all North-eastern region of North America. In spring, the trunk of the maple is tapped to harvest its raw sap that will be processed into a syrup highly concentrated in sugar and other elements that gives it its unique taste. Some producers combine this sap harvest with the planting of medicinal plants in a unique agroforestry system.

2 ENVIRONMENTAL CHARACTERISTICS

The maple tree grows in natural forest ecosystems that have been called “maple orchards”. In Québec only, over 100 000km² are covered by maple orchards. Mean temperature varies from 2,5 to 7°C and yearly rainfall from 850 to 1150mm. Hence, this orchard exploited for the production of maple syrup is a natural ecosystem that has been arranged by man according to its needs.



Management of a natural maple orchard to include the cultivation of ginseng



4 TREE SPECIES

The sugar maple (*Acer saccharum* Marsh.) which mean height is around 25 to 30m, is the main exploited species. Others such as the silver maple (*Acer saccharinum* L.), the red maple (*Acer rubrum* L.) and the black maple (*Acer nigrum* L.) can also produce syrup, even if their sap is less abundant in sugar.

5 PRODUCTS AND USES

In 2016 in Québec, more than 13 500 producers operated 42,7 million of tapings that produced around 67 million of kgs of maple syrup. However, production varies from a year to another mainly driven by climate. Generally, sap flow is more abundant when relatively warm days follow freezing nights.

Apart from the maple syrup, maple taffy and other sugar candy products can be made. Wood that cannot be used as timber because of the tapings will be used as firewood.

Medicinal plants can be cultivated understorey: apart from the ginseng we can note the Canada wild ginger (*Asarum canadense* L.), the bloodroot (*Sanguinaria canadensis* L.) and the *Caulophyllum thalictroides*.



Canada wild ginger, bloodroot and *Caulophyllum*

6 LANDSCAPE MANAGEMENT

Ten days before the sap flow, which takes place in March in Québec, a small notch is made on the trunk with a diameter of 1cm, where a gutter is placed that will direct slowly the sap to a collecting bucket. Then the sap is transported to a place called “sugar cabin” where an evaporator concentrates it into a syrup. However, in lots of larger maple industries, traditional buckets have been replaced by vacuum pipes that takes directly the sap to the sugar cabin. Reversed osmosis is also more and more used to reduce the volume of water with little energy consumption.



Sap harvesting with buckets and sugar cabin



TAKE PART IN AN INTERNATIONAL EFFORT TO SHOWCASE AGROFORESTRY'S INCREDIBLE POTENTIAL BY SHARING YOUR EXPERIENCE ON OUR ONLINE PLATFORM!

www.agroforesterie.fr/World-Agroforestry-in-Practice

