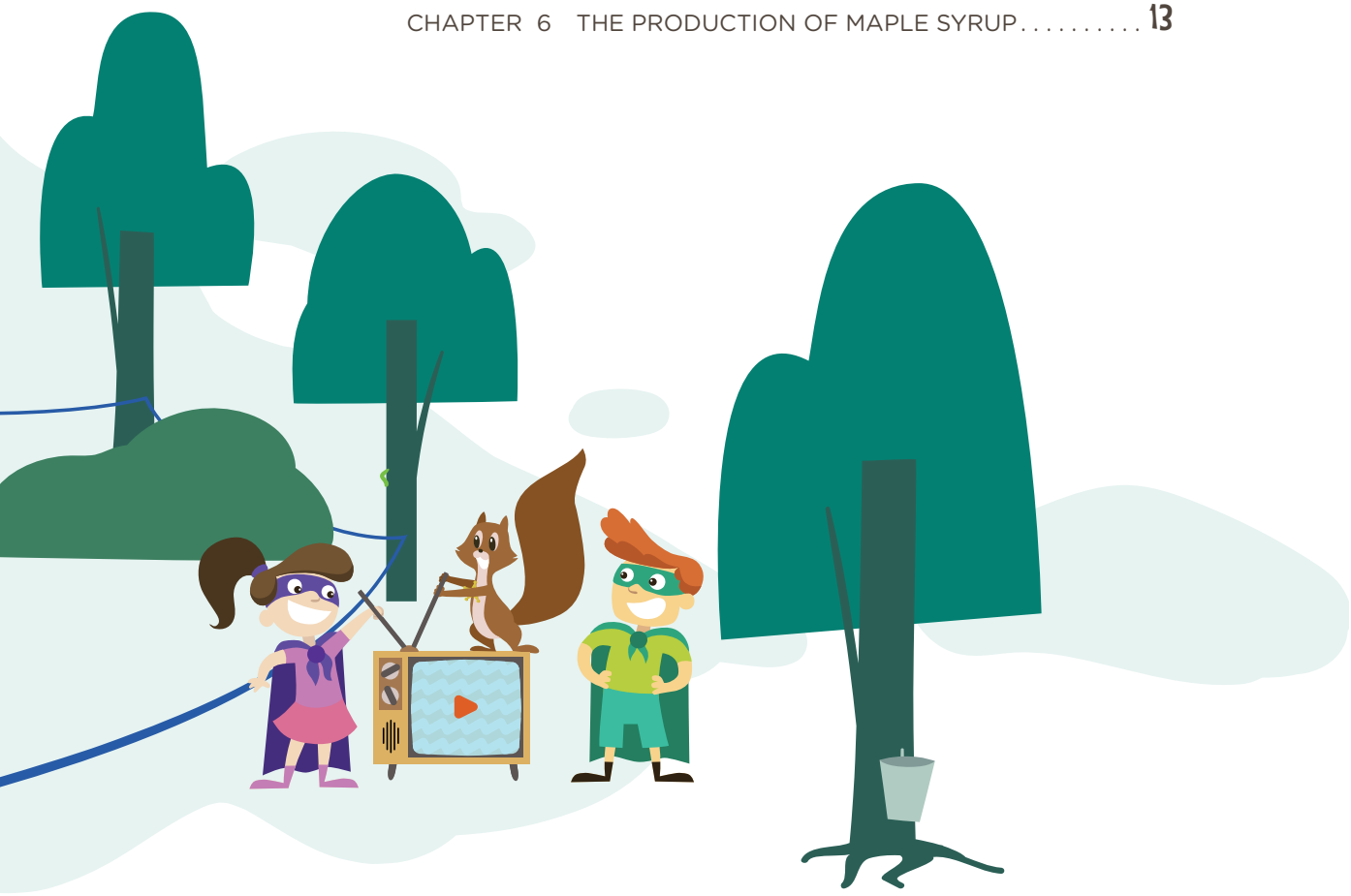

# TEACHING GUIDE

ELEMENTARY LEVEL

maple
FROM QUÉBEC

# Sections





INTRODUCTION

# MAPLE SYRUP

Goodday Educators:

This guide was made for you on behalf of the maple producers of Quebec, proud to stand up for—and continue the tradition of—one of our greatest inherited treasures: the sugar maple tree, and its coolest gift, maple syrup!

With its centuries of history and ongoing popular traditions, its health and ecological benefits, the sugar maple occupies a place as unique and important in our heritage as it does in our daily lives. When you think about it, what an incredible ambassador for our culture, and what a valuable learning tool about the reality of living in Quebec!

In your roles as educator, school teacher, and adult, you have the power to inspire children, to nurture their interests, and develop their abilities. In these pages, you will find the tools and resources to learn — and teach — all that needs to be known about maple. This guide is designed to be integrated into the elementary school curriculum. It contains a fascinating wealth of information about the Quebec sugar maple and the role it plays in the environment. Fun, informative and interactive, it will stimulate thoughts and discussions, and encourage action by building awareness and understanding of health and environmental issues. These will be the challenges faced by the coming generations ... your students.

In a world to be protected and discovered, this is a guide meant to educate and inspire, and with a beautiful story to tell!

SIROPCOOL

# THE CHARACTERS

## SIROPCOOL

With superpowers derived from the force of maple, Siropcool is the smartest superhero in the Galaxy. Ever in the company of his 2-legged and 4-legged friends, he lives in a sugar bush to stay close to the source of his power. Maple gives him lightning-quick reflexes and an unlimited supply of brilliant ideas. Ask him nicely, and he'll show you around his world. It's totally cool!

## SQUIRREL

Siropcool's best friend. A bit hyperactive with a tendency to spin in circles, Squirrel is a little rascal but he loves to help others as much as he does to play tricks. Luckily for him, he's really fast and can leap from tree to tree when he has to make a getaway! Want to law and have some fun? Just whistle and he comes!

## MR. OWL

The Sage of the Sugar Bush. Mr. Owl is Siropcool's most cultivated friend. Legend has it that he was born hundreds of years ago, and he's never left the sugar bush out of fear of losing his magic charm. He hunts by night and sleeps all day but don't be afraid to wake him and ask questions: he loves to tell everything he knows.

# THE CHARACTERS

## THE SUGAR FAIRY

She's the most rebellious fairy in the Galaxy and never misses a chance to spread her wings! The Sugar Fairy has a lot of character beneath that sweet exterior, and maybe even some magic powers. She loves to hide in the sugar maple trees and play jokes but psst! she's easy to spot: everywhere she goes, she's surrounded by a cloud of shooting stars...

## CARL

Everybody wants to be as brave as Carl, a bright and spirited young boy. And Siropcool has agreed to take him on one of his missions! Fortunately, Carl is super-athletic so he can keep up with Siropcool even without magic powers. If you dream of having a teammate that helps you win every time, you've found him!

## SIMONE

She's the ball of energy in this merry band of friends. Simone is always ready to go on an adventure, to solve riddles and share her discoveries with others who also have a healthy curiosity. She's the best at math and loves to read everything she comes across, especially treasure maps! If you like to play detective and track down mysteries, be sure to meet Simone.

# HOW TO USE THIS GUIDE

The guide to play and learning is both virtual and printable. Online, your class has access to a great web site about maple and the sugar shack, created for the sole purposes of entertaining and educating children between the ages of 6 and 11.

Click on THE ENCYCLOPEDIA OF MAPLE to find an encyclopedia of knowledge about the Quebec sugar maple, from the past to the present. This guide is more than a companion: it brings life to the learning in the encyclopedia by suggesting complementary activities, centred on reading comprehension, mathematics, geography, social history, even science.


## Printable Material

The Encyclopedia of Maple is available online at **www.siropcool.ca**.

If, however, your class doesn't have Internet access or computers for everyone, here are the texts on which the books' activities are based. Don't hesitate to photocopy or project them onto a screen.


## Activities by Age

Activities are intended for two target age groups:

**ACTIVITY BOOK A**
**for children in years 1 to 3; and**

**ACTIVITY BOOK B**
**for children in years 4 to 6.**

Borrow activities from either book, according to your students' capabilities.

**You can also:**

1. Simply use activities in the guide combined with student readings from the virtual encyclopedia; OR

2. Build on classroom learning with the complementary texts and exercises at the end of the books..

There are a few SCIENCE mini-sections — and a chemistry experiment! — exploring the mysteries of maple that you can share with your class.

Have your students successfully completed the activities? Go to the Siropcool web site and click "Play" to find fun games, perhaps to be used as a reward.

Finally, Siropcool reminds you not to forget this guide in the spring when it's time for the traditional pedagogical day at the sugar shack. It's the perfect time for these activities: fun and education in context.

OK... take it away!

LEARN

# THE ENCYCLOPEDIA OF MAPLE

CHAPTER 1

# THE CIRCLE OF THE SEASONS

Like everyone and everything in Quebec, the maple forest responds to the rhythm of the seasons, from the well-known sugaring time in spring to the festival of colours in autumn. Summer or winter, you'll find the flora and fauna content in the shade of the sugar maple trees or sleeping under a soft blanket of snow.

This document is your guide to explore the beauty of the four seasons in the sugar bush. Check them all out. Which is your favourite?

## SPRING

MARCH 21 to JUNE 20

When spring comes, it's sugaring time! Nature comes back to life. The snow melts. The ground warms up. The little drops of maple sap wake up and start their long journey with the help of STARCH, a molecule of energy that sweetens the maple sap. The heat of the sun and soil revives the sugar maple, and its sap rises through the tree's trunk. Along the way, a little bit seeps out the notch in the trunk and is collected to make maple syrup, the pride and joy of Quebec.

## SUMMER

JUNE 21 to SEPTEMBER 20

It's summer in the sugar bush! The birds, animals, insects, flowers, plants, and trees live, grow, and mature in the warm rays of the sun, as well as in times of rain and clouds. Everything plays its part because this is a forest that needs both heat and water to support the growth of all the tree species in it.

## AUTUMN

SEPTEMBER 21 to DECEMBER 20

In autumn, it's a festival of colours in the sugar bush. The sap is circulating very, very slowly in the trees and it's not reaching their leaves anymore, and they change colour. No, it's not because they're angry. They're turning red, yellow and orange because they're getting insufficient light to cause the photosynthesis that provides them with energy. One by one, they gently fall to the ground. The trees are going dormant... they're falling asleep.

## WINTER

DECEMBER 21 to MARCH 20

The sugar bush is under snow and nature seems asleep. The creek and the little pond are frozen. Deers scrape at the snow with their hoofs to find food. A fox walks lightly on the snow. Black-capped chickadees flit from branch to branch. Time passes slowly until winter ends and the maple producer pulls on snowshoes and goes out to make notches in the sugar maples once again.

CHAPTER 2

# THE ECOSYSTEM AND ITS FLORA AND FAUNA

Did you know that a sugar bush is an actual ecosystem? Its trees and plants absorb light and water (in a process called photosynthesis) and release the oxygen that the whole world and everything living in it need. That's pretty impressive!

The sun makes the sugar maples' roots grow, while rain waters the flowers, plants, and trees of the maple forest. Animals, birds and insects feed on these plants and, in turn, some of them are food for other animals, birds and insects. This is the circle of life...

## The sugar bush ... environmentally friendly!

The trees of the sugar bush have their own story. They serve as home and nourishment for the flora and fauna. They are born; they grow; and they die. They're then used to heat the evaporator in the sugar shack, or to make toys and furniture, or even to build houses.

You'll find a large variety of trees, flowers, plants, animals, insects, and birds in the sugar bush. Underground, moles and insects are at work decomposing the humus. In the underbrush, there are wood frogs, red-backed salamanders, mice, chipmunks, hares, partridges, raccoons, skunks, foxes, coyotes, bears, and deers. Look up in the trees, and you'll see many kinds of insects, woodpeckers such as the Northern flicker, black-capped chickadees, wood thrushes, owls like the Eagle owl, squirrels, and porcupines. The sugar bush is full of life!

Furthermore, the maple forest is home to a wide variety of plants and flowers, some of which are quite rare and in need of protection, such as the ramp (wild garlic), ginseng, and the trillium. Put all together, it's like a beautiful garden. And it smells so good!

CHAPTER
3

# THE HISTORY OF MAPLE SYRUP

According to Brother Marie-Victorin Kirouac, the celebrated botanist who founded the Botanical Garden of Montreal, an old First Nations legend traced the discovery of maple sap to seeing a squirrel full of energy after drinking it from a tree. That's quite a story!

Since First Nations peoples passed on their knowledge orally, there is no written confirmation of when or how maple sap was really discovered. One thing is certain: it happened centuries ago...

**DID YOU KNOW THAT?**
Jacques Cartier discovered Canada but did you know he was also the first European to write about the sugar maple and maple sap? It happened as early as 1557 and quite by chance during one of his voyages to Canada. Cartier cut a tree from which, to his astonishment, flowed a sweet-tasting sap. The First Nations inhabitants told him they called the magical tree "couton". Today, we know it as the sugar maple.

## The invention of Maple Syrup

For a long time, the new inhabitants of Canada consumed maple sap in sugar form, making it into candies and other things. Until 1850, production techniques didn't change much: for instance, they made cuts in the trees with an ax! Little by little, methods advanced with the invention of the sap spout and building of sugar shacks. Books tell us that meals were first served in Quebec sugar shacks in 1861.

Maple syrup didn't make its first appearance until the 20th Century, but preserving it remained a problem. Finally, in the 1920s and 1930s, it was found to keep well in cans and jars, that is, by canning it. For those with a sweet tooth, it was a turning point in history!

CHAPTER 4

# HEALTH AND SPORT

The First Nations people of eastern North America have long known about maple sap, and drank it for its fortifying qualities. They also boiled the bark of various maple species for the treatment of wounds, abscesses, and eye ailments. As you can see, the health benefits of maple have been known since the dawn of time!

The First Nations people later revealed these energizing virtues to the famous *coureurs des bois*. These travelling woodsmen, on their long voyages in the wilderness, drank maple bark tea and ate bannock, the native bread made of corn flour and maple sugar. It packed easily and was a handy source of quick energy for men on the move.

We now know that the First Nations and *coureurs des bois* were absolutely correct! Maple is a very special sugar that contains plenty of vitamins and minerals such as manganese, riboflavin, zinc, magnesium, potassium, and calcium (so important to growing bones). Researchers at Université Laval in Québec City have even recently discovered that maple syrup contains tiny agents, called antioxidants, that may protect against heart disease, diabetes, and other health problems. **In fact, maple syrup holds five times more of these elements than honey.**

## Maple Syrup, the Choice of Champions!

Did you know that many Quebec athletes, like snowboarder Ariane Lavigne and cyclist Hugo Houle, count on maple syrup for better performance? It's a fact that consuming maple syrup before, during, or after sport or exercise provides the carbohydrates (namely, sugar) that the body needs to maintain a good level of energy.

Clearly, maple syrup has its place in a healthy diet. It's important, however, to consume it in moderation because, while it's a "good" sugar, it's still sugar!

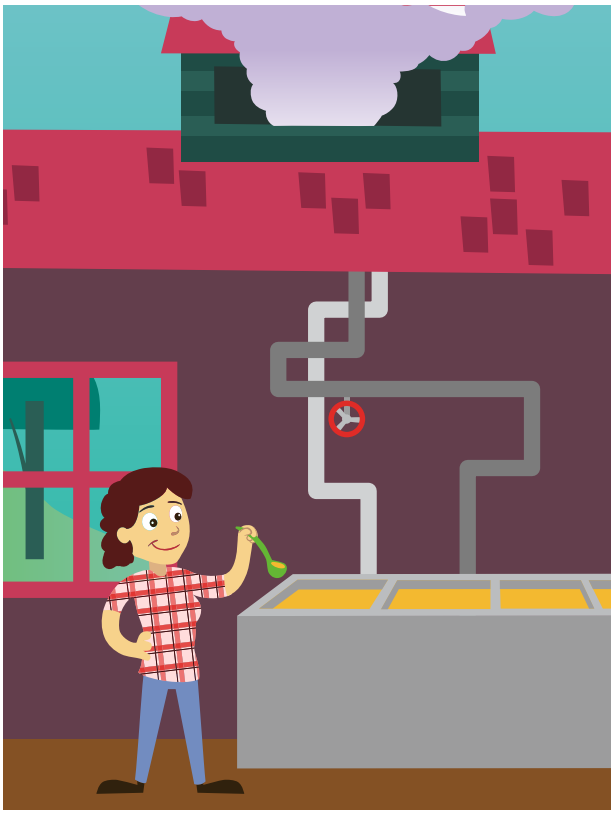
CHAPTER 5

# THE MAPLE PRODUCER

A sugar bush is a forest, and the maple producer is its keeper. A nature-lover (and maple-lover), he or she has the responsibility to watch over each and every tree: to trim its branches and heal it when it's sick; to replace those that are too old or broken by the wind; to plant baby sugar maple trees that will, in time, feed new generations of young Quebeckers, just like you!

Winter is the time for maple producers to pull on their snowshoes and go out to start tapping the sugar maples. "Tapping" means making small holes in the bark of the tree, into each of which is inserted a spout (also known as a tap or spile) to allow the sap to drip out. It's captured by a bucket or a long tube that's part of a tubing system that takes it right to the sugar shack.

The taps and tubing system must be monitored all year round. The wind may sometimes cause them to break or fall. The animals who live in the forest — and don't know what these tubes are for! — may pull on them and cause damage.



## The Sugaring Season

The maple producer collects the maple sap during a period of about 20 days in spring called the sugaring-off season. The producer's family — grandparents, parents, children — friends, everybody ... come to lend a hand because, once the maple sap is flowing, it's often necessary to work day and night! Inside the sugar shack, the evaporator (a kind of mega-boiler) awaits the maple sap to turn it into maple syrup which can then be converted into taffy or sugar.

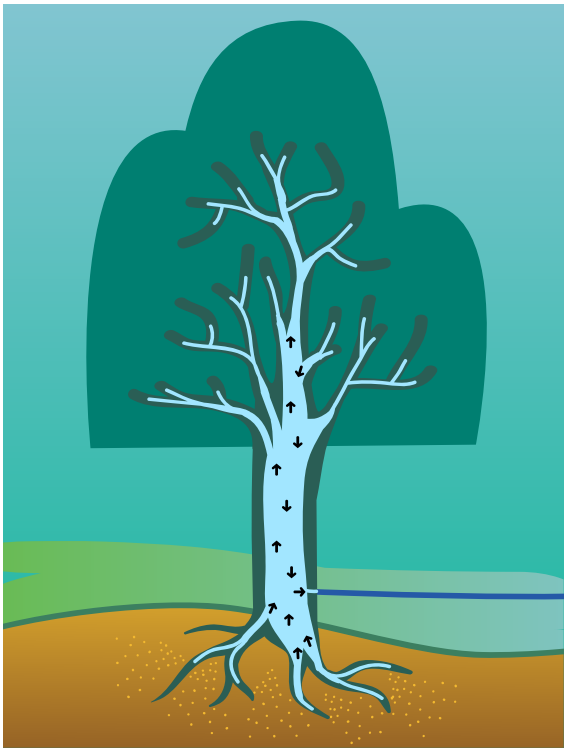
By the time summer comes, the sugaring season is over for another year. The maple producer puts everything back in its place, washes the buckets and tubing, and finally goes home for some rest!

CHAPTER
6

# THE PRODUCTION OF MAPLE SYRUP

Did you know that a sugar maple tree has to reach the age of about 40 before it's able to produce enough sap to make maple syrup? It all starts beneath the ground, with a tiny molecule of energy hidden in the tree's roots, called STARCH. It's the beginning of a fascinating process!

In the springtime, the warm sun and its bright light wakens the sugar maple tree. This starts changing the starch in its roots into a sugar that mixes with the water absorbed by the roots. That sweetened water then travels up to the top of the tree. And that's what we call "maple sap".



## Warm during the day, cold at night

The rise of maple sap to the top of the tree is known as "sap flow". This phenomenon can only happen if there are alternating nights of cold temperatures (between -7 and -4 degrees Celsius) and warm days above the freezing point (0 to 7 degrees Celsius).

### A looooong trip

In total, the sap will circulate through the tree for about six to eight weeks from early March, providing all the energy it needs to grow. Some of that sap is collected by the maple producer through the taps inserted into it. But don't worry! This spring harvest takes no more than about 5% of the sugar maple's reserves; it'll still have all that it needs to stay healthy.

The maple sap collected by the buckets or tubing system goes to the sugar shack. It goes into an evaporator there to be heated for the transformation of many elements — the minerals, amino acids, and vitamins in the sap — into a sweet, smooth liquid: maple syrup!

Did you know it takes 40 litres of maple sap to make just 1 litre of maple syrup?