

LANDSCAPES NORTH

NEWSLETTER

JULY 2014

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PARKING LOT LANDSCAPING AND STORMWATER MANAGEMENT

by Jay Lazzarin

We all agree that parking lots are important to our way of life. Easy, convenient parking within a short walking distance to our destination is our "taken for granted" way of life, and in many commercial projects it is often viewed as being essential to its success. The development of large parking lots has several environmental challenges, including firstly; altering the natural hydrologic cycle by replacing pervious areas with impervious pavements. The natural hydrologic cycle is altered by reducing infiltrations of rainwater and dramatically increasing surface runoff, and the need for elaborate, costly city storm drainage system. More importantly, surface runoff results in potential erosion of stream channels and downstream flooding. As these higher runoff volumes enter receiving waters, they carry with them a variety of pollutants collected from parking lots and roads, which ultimately degrade water ecosystems.

“Vegetation has been scientifically proven as an efficient storm water management tool.”

Secondly, solar heat absorption of the dark coloured asphalt impacts the microclimate and human and wildlife habitat dramatically by increasing temperatures on a sunny day, and thirdly can become a visual eyesore. As the development of more, larger parking lots impact the environment, we need to strive to develop parking lots in an environmentally sensitive and sustainable manner. Various provincial organizations, municipal bylaws, and energy conscious organizations such as Canada Green Building Council are laying the fundamentals and guidelines to mitigate environmental impacts

for community benefit. Several techniques and applications being utilized include:

1. **Reduce the area of impervious surfaces** - asphalt, being the most commonly used paving material can be replaced with more pervious materials such as interlocking concrete pavers



Parking lot with large shade trees

which permit drainage into the soil. In northern climates this is successful when the ground is not frozen.

2. **Shading** - installation of appropriate shade trees can significantly reduce heat build-up within a parking lot. If a tree is grown within an appropriately sized open space with a quality growing medium, it can grow to a significant size and provide a large tree canopy cover. Many municipalities are initiating bylaws specifying:

- number of trees per parking stall,
- Vegetative cover as a percentage of the paved area,
- maximum distance of parking stalls from a tree,
- canopy cover requirements which specify that a parking lot attains a specific percentage of shade cover by a specified amount of time after completion of construction.

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3. **Storm water management** - there are various techniques that engineers and landscape architects are presently utilizing to minimize the quantity of surface runoff and contaminants. Vegetation has been scientifically proven as an efficient storm water management tool. Trees, shrubs, ornamental grasses, reeds and sedges absorb not only water, but many of the



pollutants. Many parking lots are designed with water draining from the parking lot surfaces into bioswales, rain gardens, and granular recharge chambers. Reducing storm water runoff from a site also reduces the quantity of contaminants as well as the need for municipal infrastructure and maintenance to treat storm water. Storm water management techniques utilizing vegetation are effective only during the plant growing season in northern climates. For the remainder of the year, more conventional methods are used, or alternately, if the sub-base of the parking lot has a high permeability, recharge chambers can be installed which capture and return all the storm water into the ground.

A vegetated bioswale is a beautiful, functional addition to a parking lot

EDIBLE ROOFTOP GARDENS IN THE NORTH

BY Ana Chechulina

Edible gardens are planned outdoor spaces designed for growing fruit and vegetables, herbs, and other plants that can be consumed or used for medicinal purposes. The tradition of decorative edible gardens that combine the aesthetic function and practicality originates from the ornamental kitchen gardens or potagers that were cultivated in France in the 17th century. Modern edible gardens can be all sizes, even a small plot is enough to arrange it. Today, when a typical city dweller suffers from the lack of greenery displaced by concrete and asphalt, it might be a wise idea to revitalize the "dead" urban spaces, underutilized, barren rooftops and balconies by filling them in with plants. Edible rooftop gardens, sometimes referred to as roof farms seem to be a good choice because they have a number of benefits.

Comfortable cities: it has been proven by scientists that urban greenery, in general, positively affects the physiological state of urban citizens by increasing the overall aesthetic quality of urban areas; rooftop and balcony gardens create visually pleasing, soothing views.



"Eagle Street Rooftop Farm is a 6,000 square foot green roof organic vegetable farm located atop a warehouse rooftop owned by Broadway Stages in Greenpoint, Brooklyn." (farmingourcities.weebly.com)

Environmental protection: rooftop and balcony gardens have a great potential to improve urban ecology. They attract wildlife and enhance urban biodiversity, improve air quality by absorbing carbon dioxide, reduce urban heat islands in a downtown core and preserve sensitive urban green spaces.

Healthy sustainable living: growing your own organic food allows a healthier diet and reduces the carbon footprint of the food you consume. It also promotes direct contact with nature in an urban setting, and provides a relaxing outdoor activity.

Stronger communities: growing food provides an opportunity for sharing, mutual aid and interaction between people.

Positive social change: home grown food can be donated to people in need or to the organizations who help them.

Educational opportunities: an accessible community rooftop garden provides opportunities for experiments and exploration for all categories of gar-



Restaurant chef John Mooney grows his produce in the hydroponic rooftop garden, located on the restaurant roof. (bcradesign.com)

deners including school students or those professionally interested in urban agriculture.

If you are considering your own edible garden, the first thing you should determine is what type of a roof farm is the most suitable for you. The rooftop gardens are differentiated according to its structure. There are several ways to organize a garden on a roof:

Traditional green roof farms are fairly complex structures which include a thick layer of growing medium spread across a roof and isolated from it by

waterproof membrane layer, root barrier and drainage. Typically, a green roof farm should be equipped with an irrigation system for satisfactory performance. These type of projects can increase the real estate value of a building, but might be quite costly and require the involvement of landscape architects and civil engineers. This method of organizing an edible rooftop garden is more suitable for larger commercial or institutional buildings.

Rooftop farms on **hydroponic systems** are gardens where plants are grown in an artificial growing medium with an integrated automatic water, pH and nutrients supply. This method is targeted to maximize the practicality of a rooftop garden and to focus on the crop production. This type of gardening is most suitable for commercial operations.



Container gardens are rooftop or balcony gardens where plants are grown in all sorts of containers including raised beds. This method is recommended for existing smaller scale

rooftops as it is more economical, easy to install and maintain. The two primary concerns in installing container gardens on existing rooftops are (i) the ability of the existing building structure to support the additional weight of the growing medium and container (s), and (ii) the integrity of the roof structure and drainage is not impeded. Professional assessment of your roof is recommended to determine the quantity and size of containers that are suitable for your particular roof, however, the benefits and rewards are well worth it.



Featured project—NRRM Tree Book

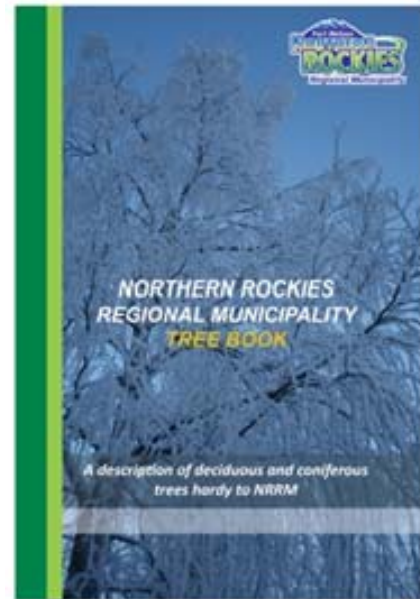
Client: Northern Rockies Regional Municipality

Representative: Doug Tofte, Community Resource and Planning Officer

Authors: Anastasia Chechulina, Jay Lazzarin

Completed: Spring 2014

The reference book provides a diverse detailed list of trees which will fulfill various functions and aesthetics to any garden and urban setting within Northern Rockies Regional Municipality known for its "Zone 2" cold climate and challenging growing conditions. One of the primary goals of the tree book is to assist homeowners, business owners, developers and municipal staff in selecting appropriate trees for specific growing conditions and uses. The book is divided into two categories of deciduous and coniferous trees. A brief description of each tree includes general information about the tree origin, its cultural significance, physical characteristics, ornamental features, as well as preferred habitat and growing conditions. Each description is supplemented with images of various elements of a tree such as leaf, bark, fruit or flower and overall habit. In addition, a list of cultivated varieties with unique attributes provides alternatives to several popular landscape trees such as Birch, Ash and Poplar. A plant index is provided that describes terms, design considerations, and a tree selection guide based on characteristics and requirements of the trees.



FEATURED PLANT—MAPLES



No other tree is associated with Canada like maple. A generic maple leaf has been featured on the national flag since 1965 representing several species of maples that grow naturally across Canada and are an integral part of the Canadian forest border to border. In 1996, a maple tree became an official symbol of

Canada. We would like to dedicate this featured plant section to this patriotic tree.

The only indigenous maple species in northern British Columbia is Douglas Maple (*Acer glabrum*). Douglas Maple is a large shrub or small tree widespread throughout the province. This tree had been traditionally used by the First Nations people for a number of purposes including

shoemaking. It is famous for its amazing red fall colour and has a potential to be grown as an ornamental tree. Unfortunately, this tree is not easily available in commercial nurseries. However, if you think you might be interested in planting a maple tree, you might consider the following maples hardy to zone 2, that are cultivated for general landscape use and are available in local nurseries:



Autumn Blaze Maple

(*Acer × freemanii* "Jeffered") This is an interspecific hybrid that combines the best qualities of Red Maple (*Acer rubrum*) and Silver Maple (*Acer saccharinum*). Grows rapidly to a mature height of 15 m (50'), has a regular round canopy and is notable for its outstanding bright red fall colour. This tree is better grown in full sun to partial shade, in moist, well-drained soils.

Amur Maple

(*Acer ginnala*)

One of the hardiest maples introduced to Canada. A small, compact tree that reaches 5 m (16') in height and spread at maturity and grows at a medium rate. This low-maintenance, shade tolerant maple with spectacular red fall colour will fit into a typical residential garden or can be planted as a street tree. Its cultivar Flame Amur Maple is also available on the market.



Baron Maple

(*Acer negundo* "Baron") This is an improved cultivar of Manitoba Maple that is suitable for urban parks and boulevards. Baron Maple is an excellent shade tree for a residential garden. This is a vigorous tree that grows up to approximately 12 m (39'). Unlike Manitoba Maple, this cultivar is seedless and has a well-balanced, rounded canopy. Leaves turn yellow in the fall. Prefers full sun and grows well in a wide range of soil types and pH levels. Hardy to Zone 2.

Other varieties that are hardy to zone 3b-4a, which you may wish to consider in sheltered areas include **Red Maple (*Acer rubrum*)**, and **Sugar Maple (*Acer saccharum*)**.

Red Maple reaches 18 m (60 ft.) in height on average. There are several smaller cultivars such as hardy Northwood Red Maple (*Acer rubrum* "Northwood") that grows up to 12 m (40 ft.) Red Maple is a fast-growing tree with a rounded canopy, its leaves turn magnificent red in the fall. Prefers sunny spots with moderately acidic soils.

Sugar Maples (*Acer saccharum*) grow up to 30 m (100 ft.) under ideal conditions. There are several hardy compact cultivars such as Legacy Sugar Maple (*Acer saccharum* "Legacy") and Fall Fiesta Sugar Maple (*Acer saccharum* "Bailsta") which do not exceed 18 m (60 ft.) in height. Sugar Maple has an upright canopy and yellow fall colour, does best in full sun and is highly adapted to various soil types.

Supplemental Lighting in a Garden

Do you feel that there is not enough light in your garden when it gets dark? Do you think that your garden could be enhanced by highlighting walkways or illuminating a flower bed or a rock garden? Do you want to illuminate the area around your pool or do you just want to light up a remote corner of your garden? You might consider adding some solar yard lights to your garden. They typically consist of a photovoltaic cell that converts solar energy into electricity, a rechargeable AA battery that accumulates that electricity, and a LED lamp that starts to emit light when the photoresistor mounted into a light changes its resistance after the sun has gone down. Solar lights have a number of advantages and might be an optimal choice for supplemental lighting of a residential garden. Their quality has been significantly improved in recent years and you now can get efficient, low maintenance lighting that doesn't require power generators or potentially hazardous cords or wires. Secondly, solar lights are mobile, you don't need to go through a complicated installation process and can easily position them in the remotest corner of your garden or relocate them at any time. Thirdly, solar lights are cost effective as you

won't have to worry about the increasing amount of your hydro bill. Different models range in price depending on the quality of their components. For example, lights with NiMH (Nickel-metal hydride) batteries are more expensive than lights with NiCd (Nickel-cadmium) batteries but will last several times longer and produce more light. For your convenience, you can choose between motion activated models with a mounted halogen motion detector and models that can be switched on and off manually. Finally, solar lights are eco-friendly and come in various shapes and sizes. You'll find the widest variety of solar garden lights online, on ebay.ca.



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