SKYLINE gardening

Inviting nature into the future of our cities.

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Could it be possible that as our cities both expand and densify, they could become more livable? Yes it could, as municipal planners become more creative. As more people reside within an urban landscape, new sets of issues have to be considered by municipal planners.

Green roofs, which have a strong foothold in Europe, are slowly becoming more popular in Canadian cities. A green roof has many benefits, which it bestows on the thriving community below; and as they become more popular, their benefits become better understood.

A green roof is simply an extension of an existing roof. It involves installing a waterproof layer on top of the existing waterproof roofing. This layer is part of a system that involves a root barrier, a drainage network with growing medium, and select plant species.

There are two distinct types of green roofs, which share similar benefits while having their own characteristics. The first is an intensive green roof where aesthetics are a great part of its purpose. These areas feel like gardens, home to trees and shrubs while providing ground cover. The relatively deep soil necessary requires detailed consideration for load bearing roofs. There is a high capital cost associated with this type of roof and the plant biodiversity commands high maintenance.

The second type is an extensive green roof involving a modular system that forms an interlocking grid. The growing medium is quite shallow and along with high temperatures leads to a desert micro-climate. The coarse mineral-based soil lends itself to low plant diversity. The plants need to be low to the ground and hardy to survive this harsher environment. Generally alpine, dry land and indigenous species are selected. This type of roof is not pleasing to the eye but it is functional, has a low capital cost and requires very little maintenance.

Green roofs provide numerous benefits to city dwellers, even if most people going about their daily business never see them. By adding plants into the urban landscape, architects are essentially installing massive air filters onto the tops of buildings. These additions are capable of filtering all sorts of particulate out of the air and also provide vast amounts of CO_2 exchange, acting as a carbon sink while releasing large quantities of oxygen.

Because of the vegetation and the growing mediums,

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green roofs provide dramatic temperature regulation. This is a key benefit because it helps deal with the Urban Island Effect where hard surfaces absorb heat, thus increasing city temperatures. The green material absorbs solar energy without the massive release of heat and it also actively cools the surrounding air with evaporation of dew, the water created by the plant's own transpiration. A planted roof can also cool a building in summer and warm it in colder weather, reducing dependence on a building ventilation system.

The flow of water in a city during a rain or snow storm is affected by all hard surfaces and their abilities to absorb water. This can put incredible pressure on the storm drains and the water system. The plants and soils of a green roof can retain huge amounts of water. This water is filtered, and is either used by the plants or released slowly into the city's drainage system.

From a purely social perspective, the aesthetics of rooftop gardens soften hard city lines and the tranquility they provide act as a sort of horticultural therapy for its residents. A green roof can provide future park areas by taking advantage of what is essentially wasted space. These mini ecosystems can even reduce the amount of noise that echoes through the loud dissonance of city life.

These rooftop gardens could also hold the key to better urban food production. By producing more food, a city becomes more sustainable and further decreases carbon emissions. In fact, there are now several hotels and restaurants across the country taking advantage of this "farm land".

Perhaps the most important aspect of the green roof is the ability to establish more urban wildlife habitats. Plant selection can have a dramatic impact on the amount and diversity of wildlife that can live with us in our cities, helping to reconnect us to the natural world.

A good example of a green roof is the Mountain Equipment Co-op building in Toronto. The company provided strong leadership for the green roof movement and completed their project in May 1998. The roof area is 903 meters squared and cost approximately $250,000 to install (approx. $104 dollars a square meter). The annual cost of maintaining the garden is less than $5000.

The soon-to-be completed addition on the Vancouver Trade & Convention Centre will provide a spectacular and very public green roof thanks to its low sloping roof line. There are an increasing number of examples of green roof now found throughout several Canadian cities.

Green roofs should become a priority, enroute to becoming the norm in city planning over the next decade, as society consciously moves toward more sustainable urban centres. They will reconnect city dwellers to the natural world while providing tranquility in the midst of concrete, glass and steel.