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A GREEN ROOFS FOR HEALTHY CITIES PUBLICATION

VOLUME 17 / ISSUE 1 / SPRING 2015

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TORONTO, JUNE 1-2, 2015

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VOLUME 17
ISSUE 1
SPRING 2015

INSIDE

ON THE COVER: Rooftop garden at Ryerson University in Toronto.
Image provided by: Sammy Tangir.

LIVING ARCHITECTURE MONITOR®

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LIVING ARCHITECTURE MONITOR IS PUBLISHED FOUR TIMES PER YEAR BY
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INTEGRATING AGRICULTURE AND ARCHITECTURE FOR THE 21ST CENTURY

The food sector is at the epicenter of our lives, yet we have come to take it for granted. Rising global populations and catastrophic climate change pose new challenges and opportunities to our food systems.

Historically, many civilizations like the ancient Maya in Mesoamerica, have been devastated when climate changes have disrupted their food supply. Despite our technology and the abundance of fossil fuel inputs at all stages of food production, we wrongly assume that there will always be food available when we want it, and we continue to waste much of what we produce.

Access to sufficiently nutritious food is a foundation of personal and societal health. Food is also big business, all the way through its life cycle. How we deal with the production, processing, distribution, reuse and recycling of food has immense economic implications, some of which are brought to light in Wayne Roberts' article in this issue.

More than half of humanity is now living in cities. With access to food in cities hinged on far-flung supply chains, many reaching around the world, and access to food for millions tied to the price of oil, the time to embrace urban food production and resilience is now! Resilience discussions should incorporate the food sector and policies need to be implemented to move towards more local and regional production. Meet some of the leaders in Jennifer Foden Wilson's outstanding On the Roof With interview piece this issue. These leaders are integrating architecture and food production. They are developing community and improving social justice around food. Most importantly, they are developing economic models and practices that make food systems not only viable, but thriving.

The fusion of agriculture and architecture has given rise to the term "agritecture" and we explore how some of the leading designers are integrating food production capacity into their projects. Agritecture is a logical progression in green building design. Cities have under utilized urban plots—a real take on fresh and the elimination of long distance transportation requirements. Megan Aird's piece on Daniels Corporation, a multi-unit developer, describes how they have begun to embrace food production with their investments in multi-unit housing and how these have reaped numerous financial and other rewards. Opportunities are everywhere!

Urban agriculture and resilience are the themes of our *Grey to Green Conference* in Toronto, June 1-2, 2015 and this issue shares a few of the many emerging opportunities for positive changes to occur (www.greytogreenconference.org).

We invite you to join us in Toronto in June, where together we will bring food home—into our public spaces, our schools, on to our rooftops and walls and inside our hearts, minds and design practices.

Sincerely,

Steven W. Peck, GRP
Founder & President, GRHC

THE LAM INDEX: URBAN AGRICULTURE

50%

Close to half of all food produced worldwide is wasted

12

Species of plants that provide 75% of the world's food supply

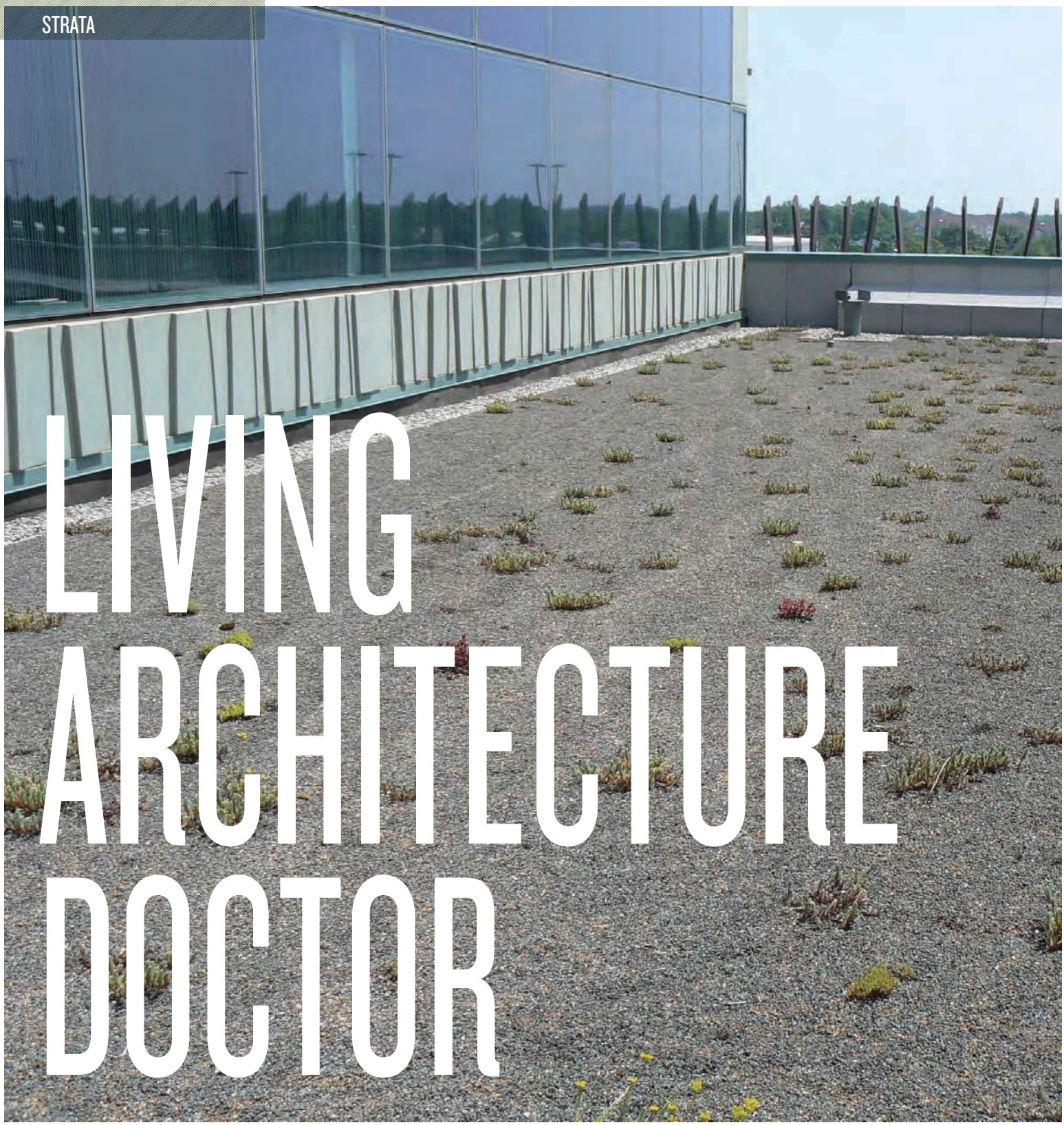
180 MILLION

Tons of organic waste North America generates every year, resulting in methane production

10,000 LBS

Amount of produce of produce that Whole Foods' award-winning rooftop farm generates per year, to be sold in the store below

Source list: http://www.goo.gl/jwNX6.



LIVING ARCHITECTURE DOCTOR

Image provided by: Chuck Friedrich

Attention readers!

Many green roofs and walls suffer from design and maintenance issues, creating an emerging market for diagnosis and treatment. The Living Architecture Doctor is a new feature that challenges you to figure out what went wrong and how to fix it. Test your skills—tell us what went wrong on this green roof? Diagnose the problem by emailing editor@greenroofs.org. Your response could be featured in the next issue of the *Living Architecture Monitor* magazine.

ABOVE: THE US CENSUS BUREAU BUILDING IN SUITLAND, MARYLAND. EXTENSIVE 4".

Image: Halifax Seaport Market, Halifax, NS (2012 Award of Excellence winner)

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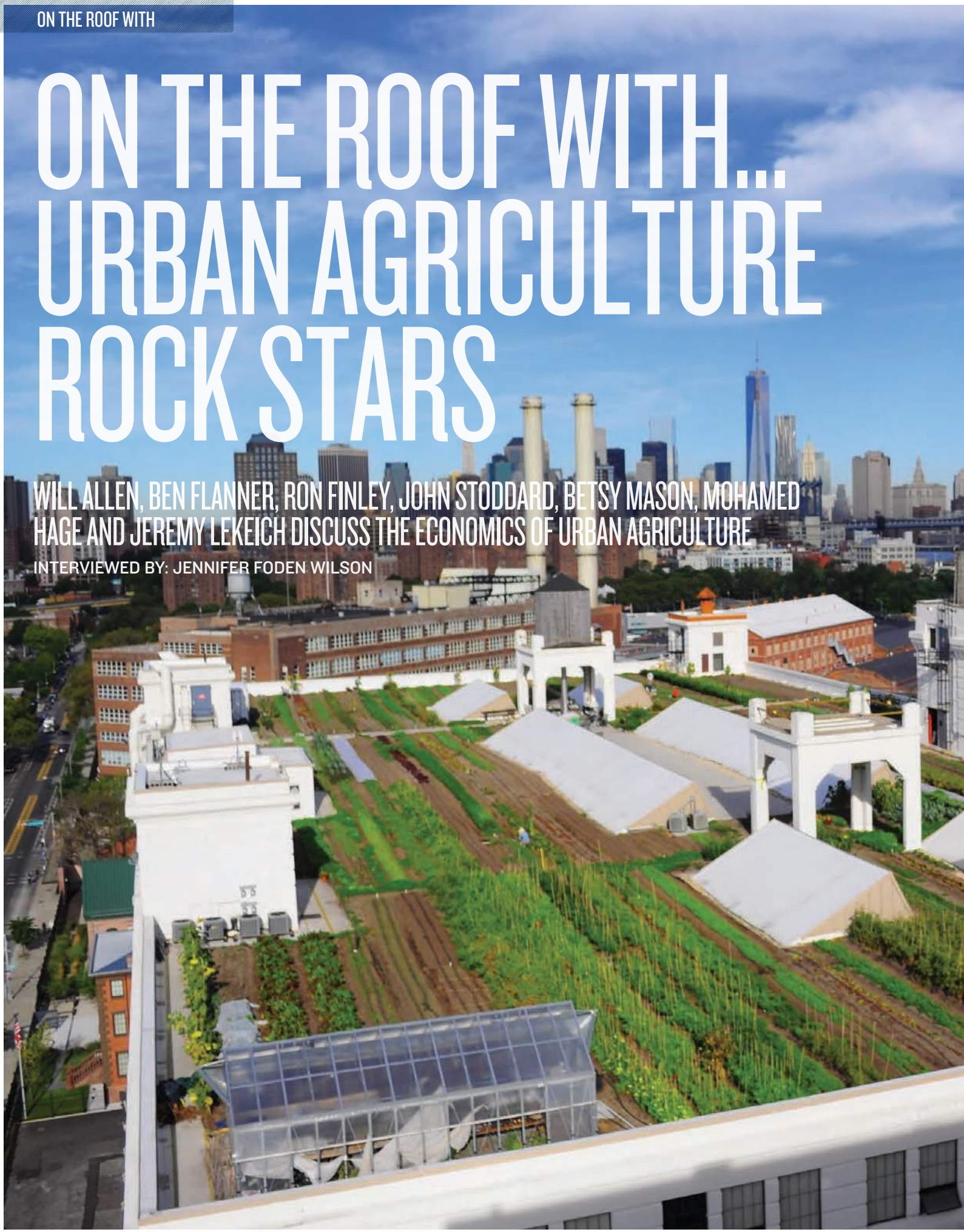
ON THE ROOF WITH... URBAN AGRICULTURE ROCK STARS

WILL ALLEN, BEN FLANNER, RON FINLEY, JOHN STODDARD, BETSY MASON, MOHAMED HAGE AND JEREMY LEKEICH DISCUSS THE ECONOMICS OF URBAN AGRICULTURE

INTERVIEWED BY: JENNIFER FODEN WILSON



IS THERE ECONOMIC VALUE TO EDIBLE ROOFS AND WALLS?

WILL: When it comes to agriculture, especially sustainable agriculture, it has to do with the experience one has in terms of being able to grow. You have to look at urban agriculture in a much different way than rural agriculture. You have to look as space in terms of square footage. How much money can you make per square foot?

BEN: Yes. The Brooklyn Grange has created a business which strives to fully utilize the value of a green roof. In our five years, we have carved out a path which will have a positive return on the capital employed in the construction of our green roofs. We grow and sell vegetables, keep bees for honey, host educational workshops, yoga classes, weddings, dinners, lunches and office retreats. We also use the rooftop farm as a marketing hub and demonstration site for green roof and urban garden installation business.

WILL ALLEN, CEO, Growing Power (a non-profit organization farming on 300 acres, with 25 acres of greenhouses in Milwaukee, Chicago and Madison, Wisconsin). www.growingpower.org
Cost: Declined to provide
Completion: Started in 1993, but has grown over time

BEN FLANNER, head farmer and president, Brooklyn Grange (two rooftop farms totaling 108,000 sf in New York—Brooklyn Navy Yard and Long Island City in Queens). www.brooklyngrangefarm.com
Cost: $800,000 (Brooklyn Navy Yard) and $200,000 (Long Island City)
Completion: May 2010 (Brooklyn Navy Yard) and May 2012 (Long Island City)

RON FINLEY, head trouble maker, Ron Finley HQ / Vermont Square Edible Experience (central hub for locals to meet, eat, relax and learn how to plant, grow, sell and cook their own food in South Los Angeles). www.crowdrise.com/ronfinleyhq
Cost: Crowdfunding $1.5 million
Completion: TBD

JOHN STODDARD, founding farmer, Higher Ground Farm (12,000 sf rooftop farm in containers, on 58,000 sf of space in Boston). www.highergroundrooftopfarm.com
Cost: $17,000
Completion: June 2013

BETSY MASON, cofounder, Green Leaf Aquaponics (an urban agriculture research and development business incubator created with partner Austin Littrell; known for their innovative 200 sf passive solar aquaponic greenhouse with tilapia fish tank, outdoor aquaponic system, garden and honey bee collective in Nashville, Tennessee). www.greenleafaquaponics.com
Cost: $12,000
Completion: July 2014

MOHAMED HAGE, CEO and founder, Lufa Farms (two rooftop greenhouses totalling 74,000 sf in Quebec—Montreal and Laval). www.lufa.com/en/
Cost: Declined to provide
Completion: January 2011 (Montreal) and August 2013 (Laval)

JEREMY LEKICH, owner/designer, Nashville Foodscapes (design firm that provides food solutions through landscaping; have worked on various projects, including 10,000 sf foodscape installed at the Ft. Campbell Military Base in Tennessee). www.nashvillefoodscapes.com
Cost: $10,000
Completion: May 2014

PREVIOUS: BROOKLYN GRANGE ROOFTOP FARM
Image provided by: Brooklyn Grange Rooftop Farm

ABOVE: TOMATO PLANTS AT LUFA FARMS
Image provided by: Lufa Farms

RON: Of course there is. There's economic value because you're growing your own food, so you're saving money. On top of that, you know where your food comes from. That is going to affect everything in your life—your health and your money.

JOHN: There is value associated with the ecosystem services that they provide such as stormwater retention and reducing energy costs. Building owners can also recognize value from protection of building surfaces and increased property value.

BETSY: Absolutely! Green infrastructure provides many diverse benefits such as stormwater management, biodiversity, shading and solar access, to name a few. Edible roofs and walls can greatly reduce a building's heating and cooling costs and energy loads, and help mitigate urban heat island effect.

MOHAMED: For cities, supporting urban agriculture is a way to create green collar jobs for people who want to work in farming, but don't want to leave the city. For building owners, it's a great way to take advantage of otherwise underutilized space. Most importantly, urban agriculture allows the farms themselves to connect directly with their customers, which lowers transportation costs and logistics.

WHAT HAVE YOU DONE TO MAKE YOUR WORK MORE ECONOMICALLY SELF-SUSTAINING?

WILL: We have about 40 different income streams. We're always looking for new

Most people in this country still shop in the box grocery store regardless of all the CSAs and farmers' markets that have popped up in the last 10, 15 years. I think when big box stores have rooftop farms; it's a little gimmicky. Rooftop farming is very difficult. To see a greenhouse on top of a building gives the illusion that all the food from the produce aisle is coming from that rooftop. In fact, still 99% of it is coming from further away or being flown in from other countries.

– Will Allen

income streams to be able to sustain ourselves because it's pretty tight every month.

BEN: We work continuously to increase the utilization of our rooftop spaces. We conduct analytics on our crop yields, which has led to substantial increases in revenue per square foot since our inception. In addition, we have branched into new crops and additional winter production, and tailored our production towards our urban demand. We have also launched other aspects of our business, which have created both an urban educational hub, bringing thousands more people to our farms, and additional revenue and jobs, which can function in parallel with farming.

JOHN: Still working on that, but we know we need to sell higher value farm products and/or increase our volume of product (and our season), and/or increase our revenues from other activities associated with the farm, like tours, consulting and holding events.

BETSY: Our passive solar aquaponic greenhouse is designed to operate with minimal energy usage to achieve maximum yields. Proper greenhouse orientation, insulated walls, automatic fan-assisted cross ventilation, solar greenhouse vents and a lack of supplemental lighting all help our greenhouse operate with minimal utility costs. Our system uses primarily gravity to move the water, which allows us to use small, cost-effective water and air pumps. The addition of productive green

LEFT (CLOCKWISE):

WILL ALLEN
Image provided by: Joe Picciolo

JEREMY LEKICH
Image provided by: Nashville Foodscapes

JOHN STODDARD
Image provided by: Dave Ludgin

BETSY MASON & AUSIN LITTRELL
Image provided by: Green Leaf Aquaponics

BEN FLANNER
Image provided by: Brooklyn Grange Rooftop Farm

MOHAMED HAGE
Image provided by: Lufa Farms

RON FINLEY
Image provided by: Stephen Zeigler

ABOVE: GROWING POWER GREENHOUSE
Image provided by: Joe Picciolo

facades allows us to use every inch of space for food production.

MOHAMED: The major thing for us is making the supply chain really short. Through our online marketplace, we've been able to not only sell directly to urban residents, but also be more transparent and harvest everything we grow on the same day it's delivered. This reduces uncertainty and waste, because if we sell 978 portions of cherry tomatoes, then we'll harvest those 978 portions and deliver them within just a few hours.

JEREMY: I replicated a business model, urban/suburban landscaping, shown to quickly attain economic self-sustainability and shifted some of the details within the model; we increase the diversity of the landscapes and incorporate food producing plants.

HOW CAN URBAN FOOD PRODUCTION BECOME SUSTAINABLE AND PROFITABLE?

WILL: I think we have to train more farmers. We don't have enough farmers that have the knowledge to be able to grow sustainably on small spaces. We have to use renewable energy to offset production cost. We have to grow our own soil

because the soil needs to be replenished. Also, I would say getting more people interested in what we're doing. Creating more partnerships with universities and corporate companies. We can't just do it with farmers like myself. We really have to have everybody.

BEN: We need to continue to grow smart crops, and also use our spaces to their fullest. Construction costs, rent and property values are extremely high in cities, thus creating at times a challenging environment for agricultural production when compared with rural situations, and thus it's crucial for urban farming businesses to activate under-utilized spaces, and then make the most of them.

RON: By making it local. Hyperlocal. Food doesn't need to

WE NEED TO CONTINUE TO GROW SMART CROPS, AND ALSO USE OUR SPACES TO THEIR FULLEST.

BEN FLANNER

ABOVE: HIGHER GROUND FARM
Image provided by: Dave Ludgin

travel from some city or country that is 5,000 miles away. It's right there. My objective is to educate people on how to take their lives into their own hands and teach people how to feed themselves, their families, their neighbors. If we can get people to grow their own food, they can take their food to market, to trade, it becomes their currency. It all has a value.

JOHN: It's tough when you are working against federal regulations that incentivize environmentally unsustainable and irresponsible farming practices that result in cheap, nutrient-poor, calorie-rich food. Maybe food production could also exist outside of the marketplace and be a government service like education. I refuse to believe that we as a society cannot figure out a way to produce healthy, fresh food for people in a way that does not destroy soil, water, bees and habitats. Come on! People need to be able to make a living from one of the most honest and noble professions—growing food!

MOHAMED: Scalability is key. With bigger farms you can feed a lot more people and get substantial economies of scale. There's also a lot to be said for finding creative ways of reducing waste. For example, we compost green waste on site and make the compost available to urban gardeners.

JEREMY: Urban food production becomes sustainable and profitable when healthy business and entrepreneurial skills are applied to the individual ventures. Additionally, there is need in creating awareness that government subsidies to industrial farming stands as the main obstacle to making urban food production and small farms undoubtedly more sustainable and profitable.

Jennifer Foden Wilson is the editor of the Living Architecture Monitor *magazine.*

FIND OUT MORE

During the month of March, we introduced all of the interview subjects in this article on social media via various YouTube videos and radio interviews. View them all at http://goo.gl/jwNX6.

GREY TO GREEN

EXPLORING THE ECONOMICS OF URBAN AGRICULTURE AND RESILIENCE

Toronto, ON **www.GreytoGreenConference.org** **June 1 - 2, 2015**

A Green Roofs for Healthy Cities Conference

Project Images: © William McDonough + Partners, Architects, 2014

Roger Schickedantz, Director,
McDonough + Partners

Debbie Field, Executive Director,
FoodShare Toronto

Ben Flanner, Head Farmer & President,
Brooklyn Grange

Lauren Baker, Coordinator,
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Liat Margolis, Director,
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CONFESSIONS OF A GREEN DESIGNER

PATRICK BLANC TALKS ABOUT GREEN WALL DESIGN CHALLENGES, WHAT HE SAYS TO CRITICS AND MORE

BY: STEVEN PECK

Patrick Blanc has for more than thirty years pioneered the idea of vertical gardens and green walls, completing beautiful and innovative projects around the world. Some have called him the Hundertwasser of our time, a man who is an extraordinary artist. At the World Green Infrastructure Network Congress in Sydney, Australia in October 2014, Partick was given a lifetime achievement award. One of his latest projects, One Central Park, a downtown Sydney condominium more than 33 stories high, also received an award for outstanding achievement of green walls. I had the opportunity to interview this pioneer during the awards dinner.

WHAT DO YOU CONSIDER TO BE YOUR GREATEST ACHIEVEMENT THUS FAR AND WHY?

One Central Park, because it's in a very windy location and the plants are 120 meters (394 feet) high. I used more than 200 native species and 150 exotic species with this installation and had to conduct a lot of research on suitable native species in Australia.

WHAT ARE THE BIGGEST DESIGN CHALLENGES FOR VERTICAL GARDENS?

Growing plants vertically is risky. There are many challenges. An adverse climate: too shady, too close to the sea, too hot (with desert like conditions) or too cold (which prevents the plants from absorbing water). Water failure can kill green wall plants very quickly.

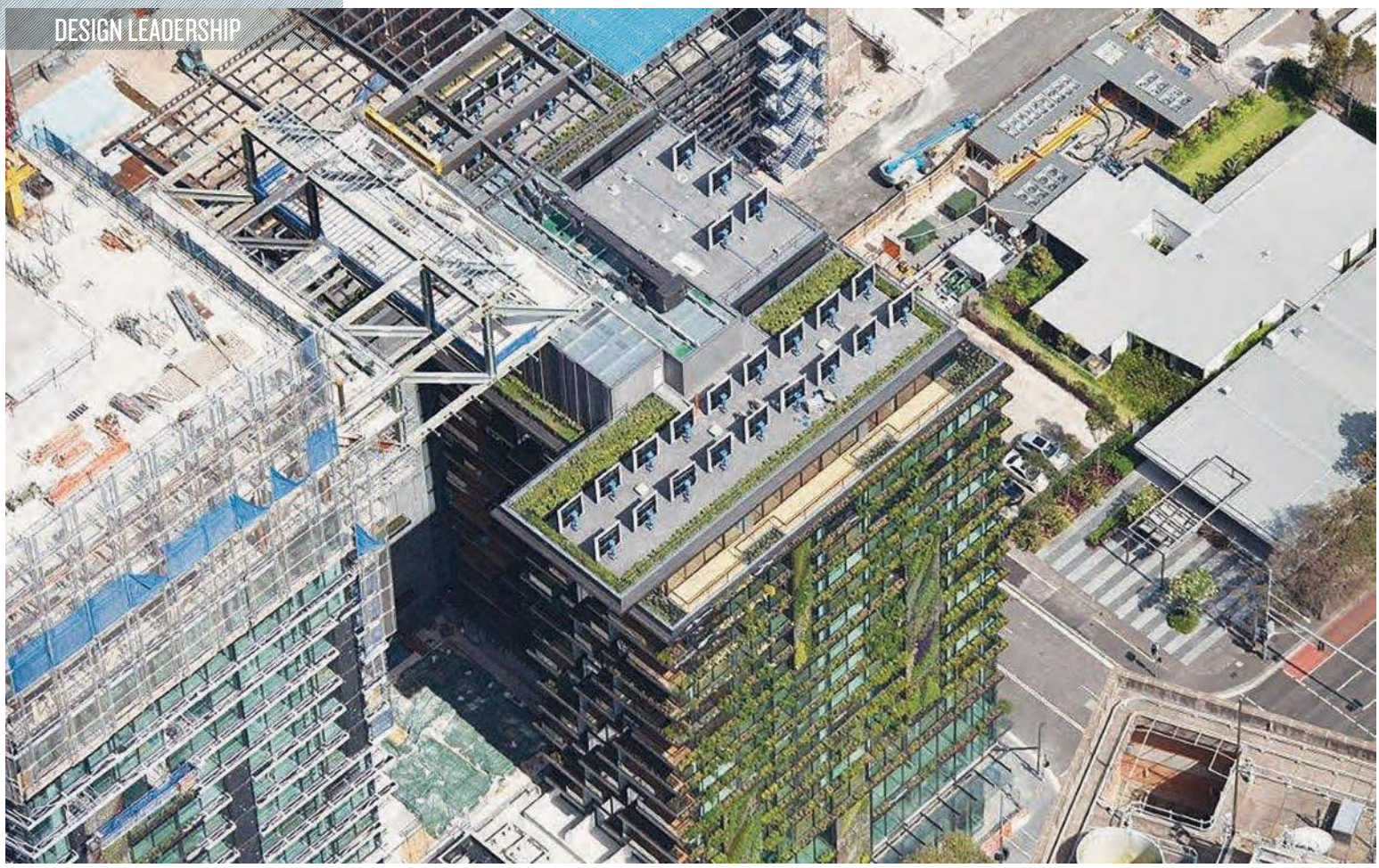
WHAT DO YOU THINK THE BIGGEST OPPORTUNITIES FOR GREEN WALLS ARE?

I think that there are opportunities in poorer areas, like the suburbs of many cities. It should be possible to create a green wall that is 1.5 meters (5 feet) wide and that can be accessed from the windows of multi-story buildings. This access gives people a chance to garden, to grow food and other plants.

SOME PEOPLE HAVE CRITICIZED GREEN WALLS FOR USING UP TOO MANY RESOURCES AND NOT PROVIDING ENOUGH BENEFITS. WHAT DO YOU SAY TO THOSE CRITICS?

Many green wall systems on the market now are too expensive. We can install green walls at less than $180 per square meter (3.3 square feet). We need to develop lower cost systems that fit with the local environment.

Also, you should not change out the plants on a vertical garden. You need to specify the right plants from the beginning. Some vertical garden systems are designed for maximum maintenance. Maintenance can be abusive—changing out plants for no reason. If you choose the right plants you



ABOVE: ONE CENTRAL PARK
Image provided by: Jean Nouvel

PREVIOUS: PATRICK BLANC
Image provided by: New York Botanical Garden / Ivo M. Vermeulen

can significantly reduce maintenance to as low as only 2 times per year.

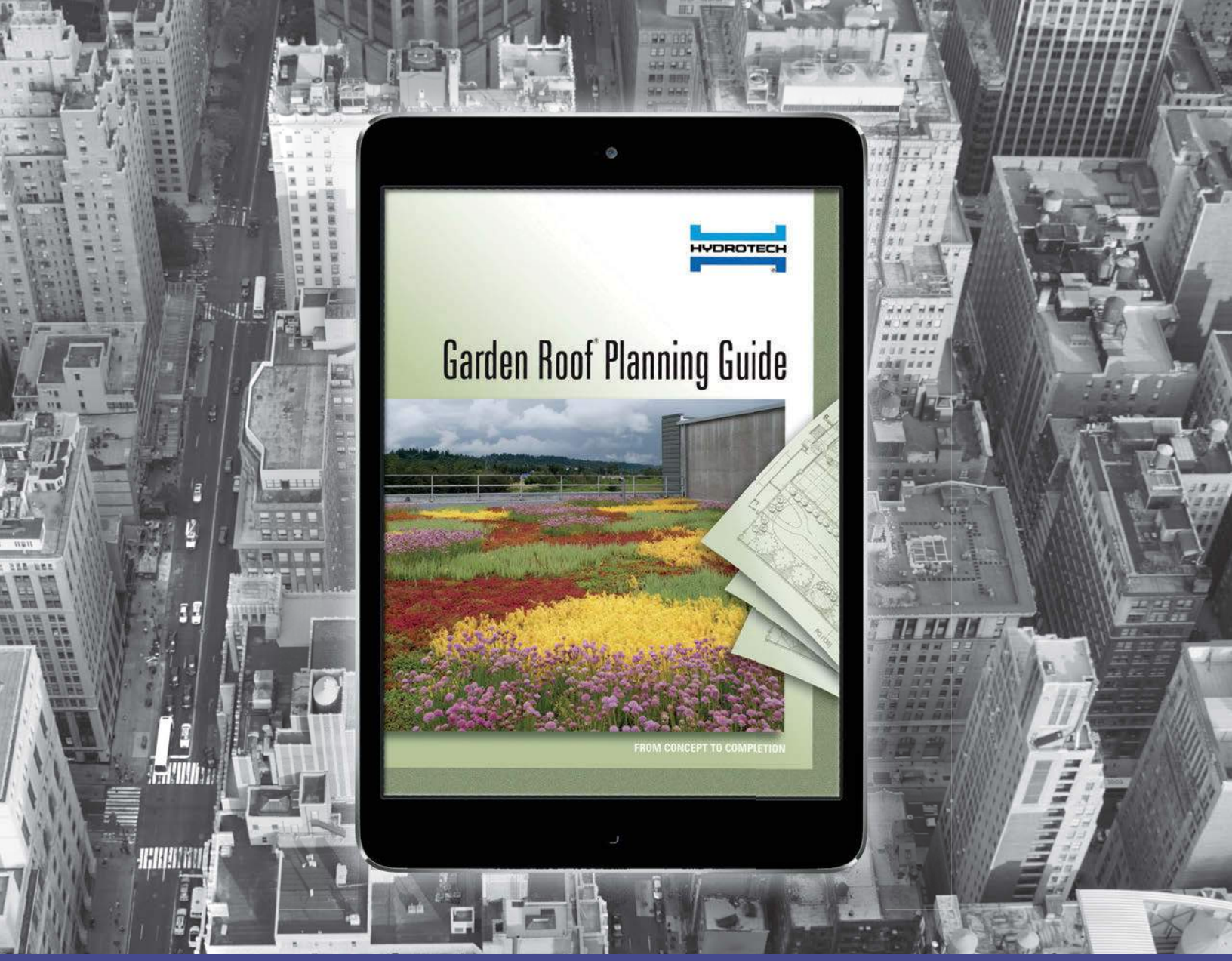
WHAT IS THE GREATEST BENEFIT FROM GREEN WALLS?

Thirty years ago everyone was interested in how to introduce plants into buildings. Now benefits include insulation, taking out the VOCs, and most recently, biodiversity. For me, what is most important is when people see many, many species, it is positive for them. There is a strong emotional effect. I am trying to conserve plants that are endangered through my vertical gardens.

Steven Peck is the president and founder of Green Roofs for Healthy Cities.

FIND OUT MORE

The World Green Infrastructure Network is having its annual congress in Nagoya, Japan in October 2015. www.worldgreenroof.org



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Green Building Certifications That Promote Urban Agriculture

LEED awards points for buildings with an on/off-site garden.

Living Building Challenge requires projects to integrate opportunities for agriculture "appropriate to its scale and density."

Sustainable Sites Initiative awards points for producing food on the building site's vegetated area. An extra point is given if the food is then distributed within the community. Points are also awarded for composting food waste from the building.

Green Globes awards points for creating or integrating opportunities for urban agriculture on site.

Image provided by: Sammy Tangir

GROWING POLICY

EXPLORING THE URBAN FOOD POLICY LANDSCAPE IN VANCOUVER, WASHINGTON AND BEYOND

BY: JONATHAN SILVER

If rising fuel prices suddenly made it prohibitively expensive to transport food into your city, what groceries would you find in the supermarket after one week? One month? One year? A city with a resilient food system can handle this very possible scenario. The key to urban food resilience is urban agriculture—rooftop gardens, community gardens, public edible landscapes, food forests, pollinator gardens, farmers' markets, backyard chickens, aquaponic farms, composting facilities, and the like.

Cities With Explicit and Comprehensive Urban Agriculture Policies

Canada
Burnaby
Calgary
Edmonton
Gatineau
Hamilton
Kamloops
Montreal
Richmond
Saskatoon
Toronto
Vancouver

United States
Baltimore
Boston
Chattanooga
Chicago
Cleveland
Denver
Detroit
Fayetteville
Fort Collins
Fort Lauderdale
Milwaukee
Minneapolis
Portland
Saint Paul
San Diego
San Francisco
Seattle
Washington, D.C.

URBAN FARMING IS ON THE RISE IN NORTH AMERICA. ITS RATE OF GROWTH IS LARGELY DETERMINED BY SUPPORTIVE CITY POLICY.

Urban farming is on the rise in North America. Its rate of growth is largely determined by supportive city policy. At best, policy is a trellis that guides and facilitates urban agricultural projects. At worst, policy stunts developments that would otherwise enhance food security. Unfortunately, the latter is more often the case than the former; our cities seem to have been built on the assumption that agriculture belongs only in rural areas. Here are two cities working hard to update bylaws so they support urban agriculture.

Vancouver hopes to become a "global leader in urban food systems," which is part of their plan to be the world's greenest city by 2020. To ensure success, they created the Local Food Assets Task Force. Food assets include any urban agriculture infrastructure that makes the city's food system more resilient. An overarching goal of the plan is to increase Vancouver's food assets by a minimum of 50 percent over 2010 levels by 2020. To date, they have already increased these levels by 30 percent. Highlights from the plan include five to six new community gardens plus one new urban farm per year over the next three years. Vancouver is currently updating their 2005 Urban Agriculture Policy for Parks (in proposal stage) to expedite the Task Force and to encourage a broader range of projects.

Washington, DC is updating their Food Production and Urban Gardens Program Act of 1986. City Council passed changes to prepare the groundwork for an "urban farming land leasing initiative" that allows district residents to apply to farm vacant, government-owned land. Washington's Mayor will identify at least twenty five potential sites for such farms. Also, urban farmers will be able to legally sell their food on- or off-site, a permission that will help finance urban agriculture development, and is missing in many other cities. A new bylaw also will create a 50 percent deduction in property tax in certain cases, and tax credits for produce donated to food banks or shelters. Other recent policy developments include allowing urban beekeeping within the city.

Jonathan Silver is a volunteer at Green Roofs for Healthy Cities. Follow him on Twitter at @silverjonsilver.

FIND OUT MORE

For more information on cities with explicit and comprehensive urban agriculture policies, visit http://goo.gl/jwNX6.

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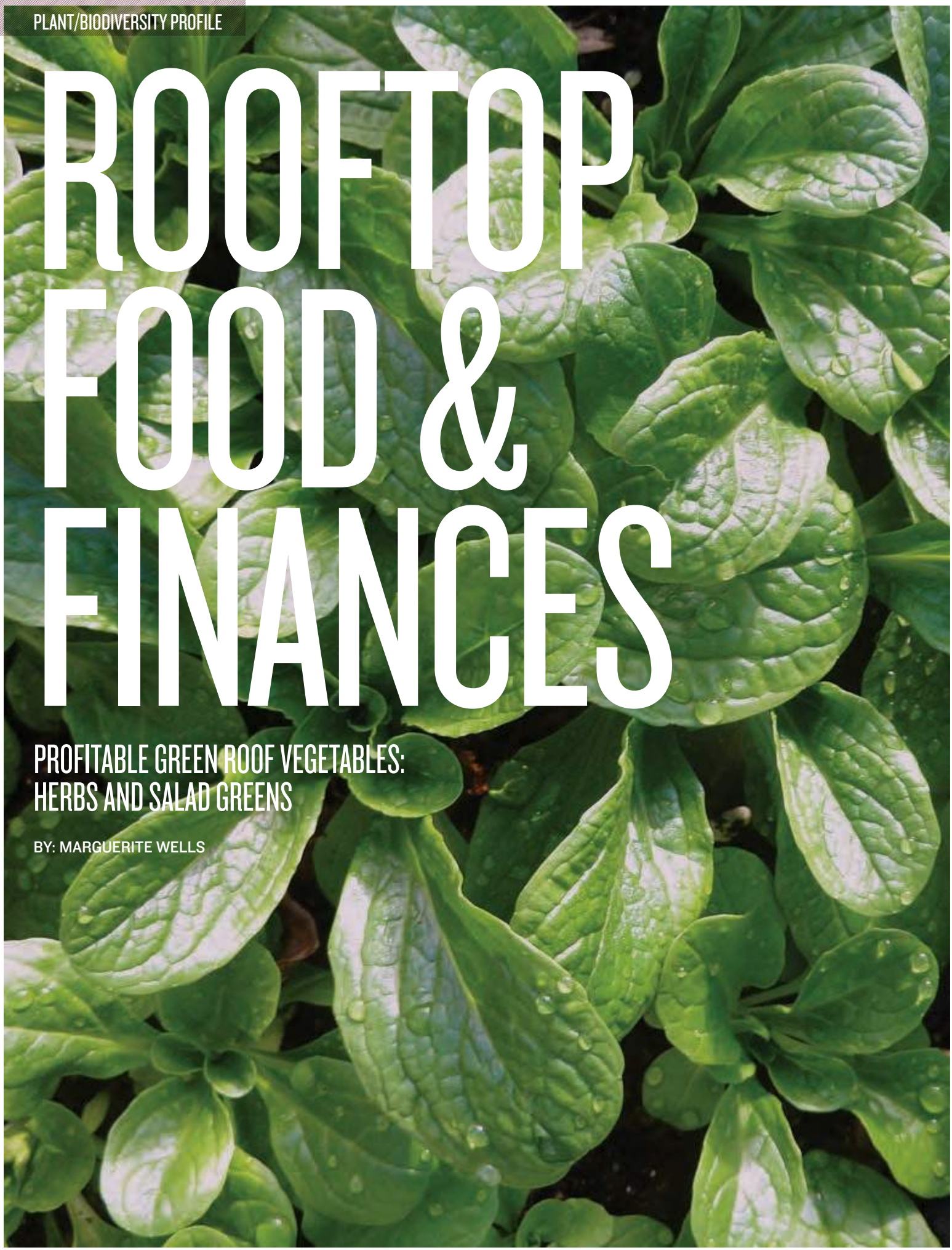
ROOFTOP FOOD & FINANCES

PROFITABLE GREEN ROOF VEGETABLES: HERBS AND SALAD GREENS

BY: MARGUERITE WELLS



With no space to waste, a roof garden looking to maximize profitability needs to think about crop revenues per square foot. The densest and most high-value crops are best for this, and at the top of the list are herbs and salad greens.

ABOVE: CILANTRO
Image provided by: Shout it From the Rooftops

OPPOSITE: MACHE
Image provided by: Kevin Hayes

Cilantro tops many growers' lists of high value crops, and it's an easy plant to grow. Planted in succession over most of the season, cilantro grows quickly and can be harvested as soon as 50 days from planting. It is remarkably frost-tolerant once mature, so it can be harvested well into the fall. It bolts in hot weather though, so midsummer is not its best time.

Cilantro is best suited to direct seeding in the place it will grow. It is sensitive to transplanting, so if you must transplant it, I recommend biodegradable pots that can be planted directly in the soil so as not to disturb the roots. After several weekly harvests of the larger leaves, the plant will finally flower. The seeds it yields are the herb known as coriander. Although some catalogs offer multiple varieties of cilantro, most are content to simply offer one. The differences are slight, and the seed is widely available.

The world of salad greens is much more varied. Lettuces are but one small component of the dozens of species and varieties that make up salad green mixes. They can also include arugula, mustards, pak choi and its kin, baby cabbages and kales, mizuna, cress, sorrel, mache and others. These are planted most commonly in wide mixed beds of many varieties and harvested when quite young and tender. Once harvested, they rarely regrow, and are generally replanted to another crop of mixed greens immediately. If left a little longer, the same plants turn into a braising mix; not as tender as needed for a salad, but they sell for nearly the same price per pound. However, the same crops grown to maturity require much wider plant spacing, and profit per square foot plummets. Heads of lettuce or bundles of leafy greens have lower value per pound and take twice as long to mature. Like turning tables in a restaurant, profitability is dependent on throughput. Due to the dense bed nature of salad green growing, they are well suited to raised beds, but poorly suited to transplanting.

If you are concerned about harsh weather on the roof you would like to be planting, you can always cover the seedbed with a fabric row cover to help warm the soil and encourage germination. Mache, a tiny lettuce-like leafy plant, can be harvested throughout the winter, even under snow. But heat is not its strong suit, so if hot weather is your challenge, heat specialists like New Zealand spinach might be in order.

Growing profitable crops on a green roof is challenging, because the environment can be harsh, soils dry, sun fierce and often reflective, and winds stronger than on the ground. That said, with some extra attention paid to irrigation, wind protection and soil fertility, the most profitable food crops on the ground can also yield cash on the roof.

Marguerite Wells is the owner of Motherplants.

WALL-TO-TABLE

GRAND RAPIDS CHEFS EXPERIMENT WITH PRODUCE FROM A 700 SQUARE FOOT EDIBLE WALL

BY AMBER PONCÉ

PROJECT:
The B.O.B. (Big Old Building) Wall-to-Table – 700 square foot vertical garden

LOCATION:
Grand Rapids, MI

BUILDING OWNER:
The Gilmore Group

SYSTEM MANUFACTURER
LiveWall, LLC

SYSTEM DESIGN:
Dave MacKenzie, LiveWall, LLC

PLANT SUPPLIER:
Hortech, Inc.

The summer of 2014 was exciting for patrons of the B.O.B. (Big Old Building), an urban entertainment complex in Grand Rapids, Michigan, as fresh produce, hand-picked from a large outdoor vertical garden, enhanced their cuisine. With 700 square feet of produce, the edible wall was the largest wall-to-table initiative in the region, perhaps the nation.

The vertical garden, loaned by LiveWall to the chefs of the B.O.B. for the summer months, contained about 500 square feet of herbs, which yielded approximately an ounce of herbs per square foot per week (approximate retail value of $1,500 per week). About 200 additional square feet of peppers, tomatoes, carrots and leafy greens provided a bumper crop which the facility's chefs used for making seasonings, dressings, salads and garnishes. The team of chefs was so excited about the opportunities the wall would provide that they happily volunteered to plant and harvest.

Daily, chefs used the green wall produce to enhance their dishes in the restaurants and catering of the urban entertainment complex. One of the restaurants featured a "wall salad" containing

RIGHT: CHEFS HELP PLANT LIVING WALL SYSTEM AT THE B.O.B
Image provided by: LiveWall

LEFT: 700 SQUARE FOOT VERTICAL GARDEN
Image provided by: LiveWall

greens, vegetables and herbs harvested fresh from the vertical garden. "This is the first time we have grown produce on a wall, and the first time we have done it in an urban setting," said head chef Jared Miller. "We use a lot of herbs, a whole lot of peppers and tomatoes, and we always have to watch our budget and look after flavor and freshness. This wall planting took into account all of that, and at the same time added greenery and artistry to the facility and to downtown."

On the shady sections of the wall, additional perennials were planted which provided season-long color and a popular backdrop for wedding parties and other groups visiting the facility. The entire living wall system surrounds the mechanical and waste disposal features of the B.O.B., masking the sight, odor and sound of this equipment. It literally transformed the space, and helped to restore some of the natural elements lost to steel and concrete—not just plants, but birds, bees, butterflies and other insects as well.

In the fall, the herbs were removed to allow for the structure to be modified for a new planting pattern that was entered into the world's largest art competition, ArtPrize. At that time, the culinary staff of the B.O.B.'s restaurants had a "harvesting party," where they cut whatever produce they could and dried the remaining herbs for use in the winter months.

The ArtPrize entry entitled 'Breathe,' which replaced the edible garden, was designed by horticulturalist and LiveWall, LLC president Dave MacKenzie. At the end of the three week long international competition, the living work of art earned a spot as a finalist in the top 20 of over 1,500 entries.

Amber Poncé is the business development manager at LiveRoof and LiveWall.

In addition to their Waterfront Vancouver location, the Fairmont has rooftop gardens and urban agriculture integrated into many of its other hotel locations, including Toronto, Dallas, San Francisco and Hawaii; and internationally on properties in Singapore, China and Kenya.

EDIBLE RESERVATION

THE CLIENT SPEAKS! THE FAIRMONT WATERFRONT'S EXECUTIVE CHEF SHARES HER EXPERIENCE WORKING WITH THE HOTEL'S ROOFTOP GARDEN

BY: DANA HAUSER

Located just a few blocks from the harbour, and three stories up, rests a 2,100 square foot, 11 bed herb garden on the south-facing terrace balcony at the Fairmont Waterfront Hotel in Vancouver. Created in 1996, this urban agriculture project was ahead of its time, becoming one of Vancouver's first green roofs.

Reflecting the Fairmont's eco hotel philosophy, the garden plays home to several varieties of herbs, vegetables, fruits and edible blossoms, as well as over 10 different species of local birds. We use the bounty from the garden daily to create culinary masterpieces in the kitchen. No herbicides or pesticides are used. Herbs include rosemary, lavender, bay leaves and tarragon. Fruit and vegetables include garlic, apples, rainbow chard, kale, leeks, carrots, peppers, green onion, strawberries, figs and new this year—a pumpkin patch. We also have hay that is used to smoke chicken.

WHY DID YOU DECIDE TO IMPLEMENT THE ROOFTOP GARDEN? HOW DID YOU JUSTIFY THE INITIAL COSTS?

It was a chef's dream to have fresh, organic herbs to use in the restaurant. It also fit in with

TOP: APIARY
Image provided by: Kristyna Vogel

BOTTOM: ROOFTOP GARDEN
Image provided by: Kristyna Vogel

PREVIOUS: EXECUTIVE CHEF DANA HAUSER HARVESTS HERBS FROM THE ROOFTOP GARDEN AT THE FAIRMONT WATERFRONT IN VANCOUVER.
Image provided by: Kristyna Vogel

the environmental philosophy of the hotel, and the return on investment indicated that there would be a long term cost saving. It also provided another opportunity for guests to enjoy the hotel's facilities. It is great for team building and a great opportunity for teaching apprentices the fundamentals and a true appreciation for food from the roots. It's a huge contribution to our sustainability initiatives given the cut down on carbon emissions.

HAS THE INVESTMENT PAID OFF?

We save approximately $10,000 annually on herbs and produce. This continues to grow year over year with our growing patterns.

ANY ADVICE YOU WOULD GIVE TO OTHER HOTELS AND COMMERCIAL CLIENTS WHO ARE CONSIDERING A SIMILAR INVESTMENT?

Guests and colleagues find it a relaxing area to spend time—so be sure to share the space! Our garden continues to grow in scope and ideas. We have recently added mason bee houses to the garden in addition to the half a million bees we have hosted in our apiary since 2007—producing over 600 pounds of honey annually. Our passion for sustainable food has led to amazing partnerships with local providers and organizations like Hives for Humanity.

Dana Hauser is the executive chef at the Fairmont Waterfront in Vancouver

www.citiesalive.org

URBAN AGRICULTURE FOR SALE

URBAN GARDENS A SOUGHT-AFTER AMENITY IN NEW HOME AND CONDO COMMUNITIES

BY: MEGAN AIRD

In early 2010, in response to the trend of eating local food for health and environmental benefits, The Daniels Corporation, a residential developer, started including urban gardening opportunities in all of its low- and high-rise developments across the Greater Toronto Area wherever possible. There are currently urban gardens established in nine new Daniels communities, with more to come. This unique natural amenity has been embraced by residents and is now a key selling feature for Daniels.

According to Daniels' director of project implementation, Jacob Cohen, the company's pioneering efforts in urban gardening began in Toronto's Regent Park. The 69-acre Toronto neighborhood located just east of downtown is currently undergoing revitalization. "We

RIGHT: RESIDENTS GARDENING AT DANIELS LOW-RISE IN MISSISSAUGA.
Image provided by: The Daniels Corporation

started with a few raised planting beds on the tenth floor terrace at One Cole Condominiums," Cohen says. "What followed was a very passionate and dedicated gardening committee who came together over a shared interest in growing food. The appeal is universal, with people of all ages, genders, ethnicities, backgrounds and economic statuses participating. Neighbors who plant and harvest together, share a true sense of community."

Cohen adds that the benefits go beyond enhancing health, encouraging neighborly interaction and helping the environment. "From our corporate standpoint, community gardens have also become a selling tool. What we offer is unique. This sought-after amenity gives us a competitive advantage by enriching the social fabric of our neighborhoods and buildings, making it more desirable for potential purchasers."

Daniels has found urban gardening to be incredibly successful at Regent Park that they have expanded to nearly 40 plots at their most recent condominium, One Park Place. In addition, they have taken the concept on the road to condominiums in North York, Mississauga and High Park. In their low-rise collection, Daniels welcomed community gardening and a greenhouse to Mississauga's Erin Mills neighborhood.

Typically in a condominium, residents maintain their own suites and entrust the care of common amenities to the condominium corporation and property management. With community gardens, residents become stewards of the property outside of their own units,

and their work may result in lower maintenance fees. "Just as front lawns in a low-rise community can display pride of ownership, so can garden plots in a condominium," Cohen says. As residents become engaged in the care and upkeep of these common elements, they develop a sense of ownership that often extends to the rest of the building. Common areas are no longer seen as something that someone else looks after, but as something where the community has a role to play. Instead of having a landscape maintenance crew looking after passive planter beds, the garden committee takes on the responsibility of seeing the plots flourish and there are inherent cost savings for the condominium corporation in this approach.

Megain Aird is the communications and social media coordinator at The Daniels Corporation.

GREEN ROOF LEADERSHIP

MARK DALSKI AND LENOX HILL COMMUNITY HOUSE

NAME: Mark Dalski, GRP

POSITION/COMPANY: Partner and Cofounder, Highview Creations LLC

LOCATION: New York, New York

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In 2011, Highview Creations constructed three green roofs at the Lenox Hill Community House on E 70th Street in New York City. There are two extensive penthouse roofs and one intensive and agricultural roof. The project has multiple points of outreach to the community, acting as a recreational area for seniors and staff, as well as a demonstrative and educational component for the children that are served though Lenox Hill. The project was awarded a green infrastructure grant from the Department of Environmental Protection due to the ability to easily manage over a I" storm event. The grant covered much of the projects overall cost with the Lenox Hill Community House putting up the rest of the funding.

TOP: LENOX HILL COMMUNITY HOUSE GREEN ROOF
Image provided by: Highview Creations

BOTTOM: MARK DALSKI
Image provided by: Highview Creations

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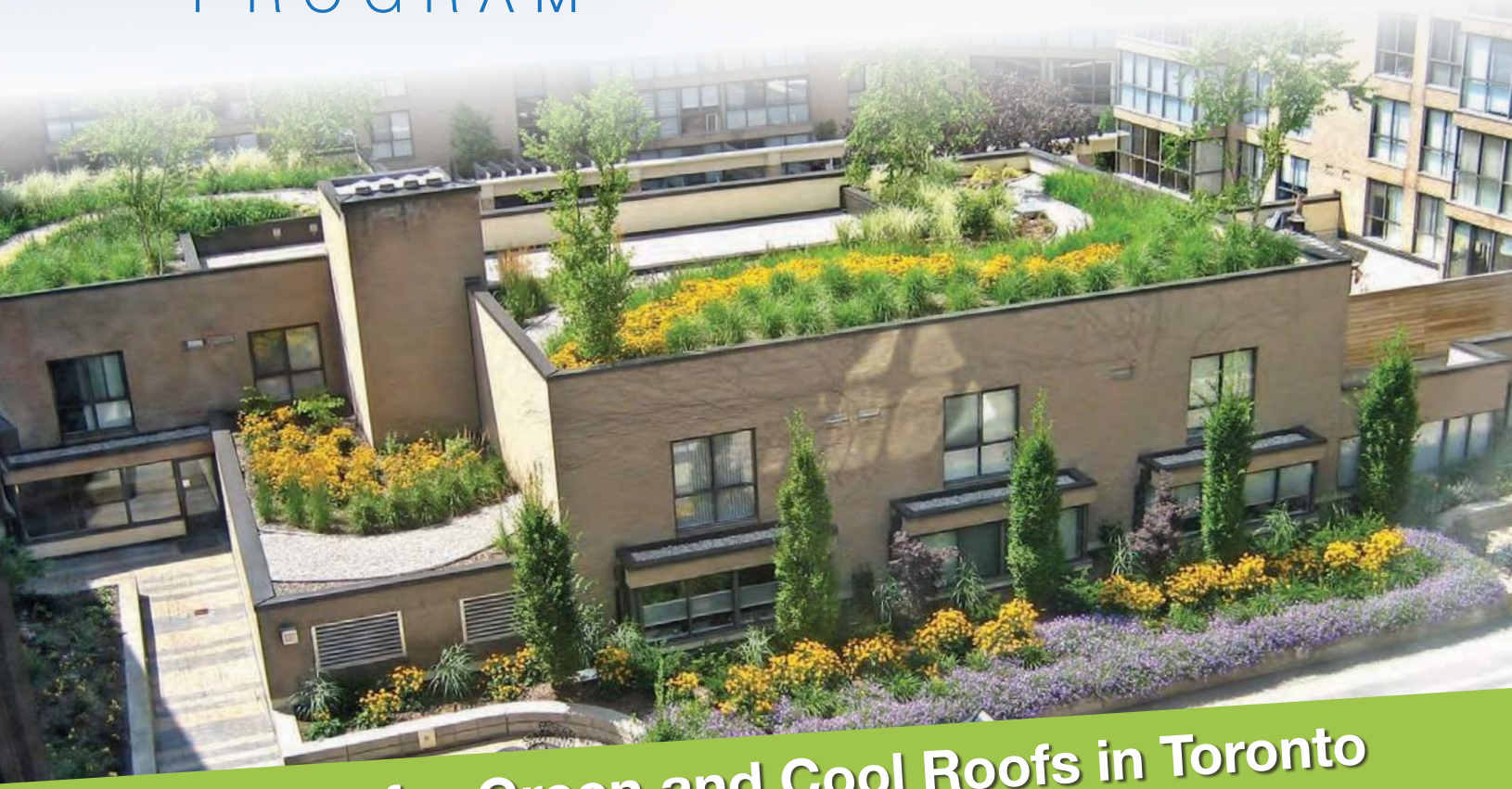

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Photo courtesy of Columbia Green Technologies

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GETTING FOOD RIGHT

WHY FOOD ISSUES NEED TO RISE TO THE TOP OF THE URBAN SUSTAINABILITY TO-DO LIST

BY: WAYNE ROBERTS

As I see it, successful cities are crowded cities; and cities where the price of buying or renting one square foot is very high. That makes urban agriculture an almost impossible enterprise, since very few legal crops can pay the rent on a decent-sized city lot. The answer, I believe, is to integrate food production into green infrastructure and green buildings. In addition to the many benefits already provided, the food sector offers additional benefits that no other sector can match.

First, food is rich in what's called "low-hanging fruit"—possibilities to save huge amounts of money quickly, and make a big dent in sustainability problems, after modest start-up investments. The most compelling place to start is food waste, which costs North Americans $192 billion a year to dispose of. It's not rocket science to save a major portion of that cost is by reducing waste, or to make back a major portion of that cost by converting food waste into a resource—be it feed for livestock, feedstock for biofuel or material for high-quality compost.

Second, food sector reforms reduce the direct harm that is done to the environment. When food is allowed to rot in a landfill site, food waste generates methane, a very heavy hit against climate stability. But when composted and reintegrated into degraded soils, the regenerated soils actually absorb more carbon from the atmosphere than they did before.

Third, food changes can have multiple indirect impacts on the environment, as well as health and well-being. For example, a more pedestrianized food retail environment, where most people could walk to an adequate food retail outlet, has a direct impact on the amount of fuel burned when consumers take a car to shop for food. Since one-fifth of all car trips revolve around buying food, a huge reduction in car trips to grocery stores will have a huge impact on traffic jams, which waste enormous amounts of car fuel. Also, people who walk to a store can buy for one or two days ahead, and are less likely to waste food by buying what's estimated as a full week's supply at one shot when they take the car. Plus, the walk is good for one's physical health.

Fourth, a well-designed food program can address the social and economic realities of a community. To take the pedestrianized food retail example again: it provides access to healthy and affordable foods to people who can't afford a car, and brings the vitality that a grocery store adds to a neighbourhood that may well lack such an enterprise. On the economic side, more pedestrianized food outlets create jobs in a neighborhood.

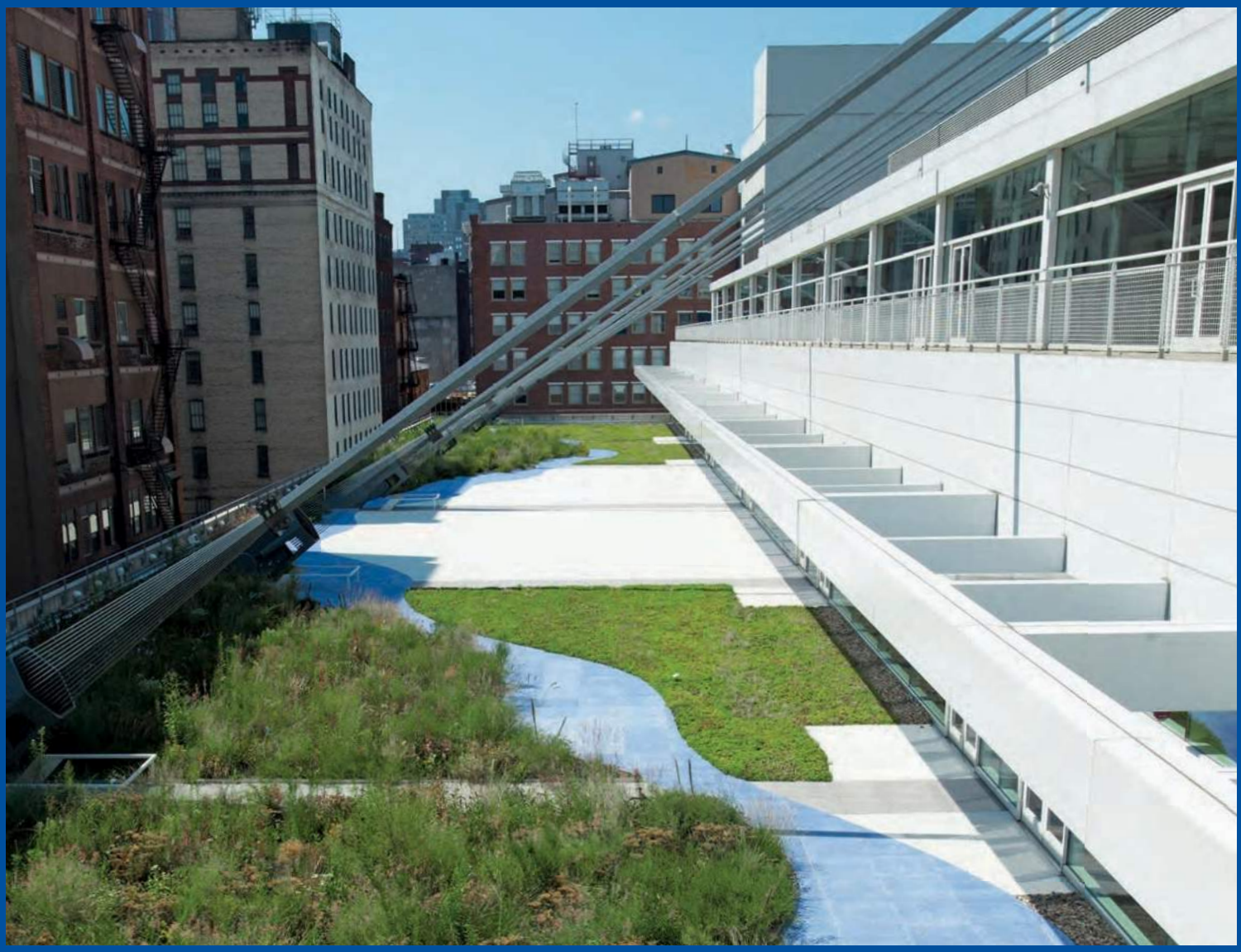
Fifth, food engages and empowers all levels of society. The individual can do many things to reduce waste, eat healthier foods and buy more food from the local area. Community groups can pitch in, by supporting rooftop community gardens for example. And state, provincial and federal governments can all add to the 'stone soup'—to use that famous children's story about how everyone can contribute to food.

Sixth and last, food opens gateways to other areas of activity and invites collaboration. This is what really excites me as a food enthusiast about working on projects to boost green infrastructure.

I believe that as we discover more ways that green infrastructure and green buildings benefits to a city—green walls, swales, tree plantings and so on—we will discover more ways to enhance the value of these green technologies with food production. If a tree provides economically valuable ecosystem benefits, why not make it a fruit or nut tree? The package deal that food offers is what demands attention of people eager to move cities toward sustainability.

RYERSON UNIVERSITY ROOFTOP GARDEN
Image provided by: Vincent Javet

Wayne Roberts is the author of The No Nonsense Guide to World Food *and* Food For City Buildings.



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