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*Rooftop greens basking in the sun,
Uncommon Ground, IL*

what is rooftop agriculture?

Soaring food prices and obesity rates increasingly prompt North Americans to grow their own fruits and vegetables close to home. In cities, forgotten parcels such as vacant lots, sidewalk strips, and park fragments historically served as prime poaching grounds for urban farmers and gardeners to plant their seeds. During recent years, however, land insecurity and contaminated soils demand creative solutions that allow urban agriculture to creep up walls and balconies, and onto rooftops. Broadly speaking, rooftop agriculture is the cultivation of plants, animals and fungi *on rooftops* for the purpose of human use and consumption. This includes foodstuffs, fibers, animal products and medicinal plants. The hunger for local food has reached new heights, and you truly can't get more local than your own roof!

urban agricultural niche

Rooftop agriculture is one cog in the greater urban food system. The practice should not be viewed as a cure-all for hunger, nor should the assumption be reached that it will dominate food production in all cities. Rooftop agriculture works in concert with community gardens, farmers' markets, grocery stores and, of course, rural agriculture to feed hungry cities. A key principle of ecology states that diversity in any system breeds resilience. If one strand of the web fails, the others will hold the

web together. Food systems are no different. Rooftop agriculture is powerful in its ability to enhance the diversity, and therefore resilience, of the greater urban food system. Farmers and gardeners pursuing all types of urban agriculture, from planting sunflowers along abandoned railways to raising fish in basements, have the potential to learn from one another. Rooftop agriculture similarly absorbs lessons from other forms of urban production, and in turn contributes to the collective knowledge. There's always more to learn.

gardening vs. farming

The boundary between gardening and farming is a blurry one. Practitioners, academics and even policy makers qualify the distinction in varying ways, and no one can seem to agree upon a universal definition. One common and relatively compelling opinion describes gardening as the production of agricultural products for self-consumption, charity or gifting. Farming is often defined as the production of these same goods in exchange for money. *EAT UP* embraces this distinction and highlights inspirational gardens *and* farms on rooftops around North America. The book also explores the rooftop agricultural industry, as this scale of production encompasses both gardening and farming which involves rooftop farms and gardens with multiple locations.

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who's doing it?

As rooftop farms and vegetable gardens sprout up in cities across North America, restaurant patrons, community groups, individuals and families get to savor the bounty. But who's actually up on the roof growing all this food? Lots of people — that's who! People of all different ages and ethnicities, with varied skill sets, and dozens of reasons for growing food.

In North America, rooftop farmers tend to be between the ages of 22 and 55, with men and women equally engaged. Most skyline farmers migrate to rooftops from ground-level farms, some in urban areas, others in more traditional rural settings. Farmers who land these highly prized rooftop positions are generally very knowledgeable about their agrarian genre — whether it be row farming, beekeeping, hydroponics or some other form of production. It's rare that a newbie finds herself in charge of much on the skyline, as these farms can require large initial investments, which leaves little room for error with day-to-day operations. Less experienced apprentices, interns and volunteers often assist rooftop farmers, as do teams of directors, volunteer coordinators, marketing personnel, publicity coordinators and technical specialists. Other professionals that are critical during the rooftop farm's design and construction may include a landscape architect, green roof consultant, structural engineer, mechanical/electrical/

plumbing (MEP) engineer, architect, waterproofing membrane provider, greenhouse designer, hydroponic system designer and construction contractors from various trades. It takes a village.

Rooftop gardening, on the other hand, attracts enthusiasts with all levels of experience. Novice gardeners may enjoy planting rooftop containers with herbs, while a master gardener may forge an entire community garden by himself. Kids play an important role in rooftop gardening as well. From school and after-school gardens, to family plots, to community gardens, kids spark enthusiasm and soak up knowledge about rooftop gardening. They even teach their friends and parents! Other parties that may be involved during the inception and construction of a rooftop garden include a structural engineer, architect, carpenter, plumber, and possibly an electrician.

Whether well-seasoned or completely green, urbanites from all backgrounds increasingly seek out rooftop farming and gardening opportunities. As the trend continues, more and more individuals, communities and entrepreneurs will look toward the roof for a food solution.

This book highlights North American rooftop agriculture professionals and enthusiasts from Canada, Lebanon, India, France, Sweden, Australia and all corners of the US.



*Volunteer harvesting herbs,
Eagle Street Rooftop Farm, NY*

a brief history

urban agriculture

The earliest record of food production within cities dates back to **3100 BCE**, when home vegetable gardens were commonplace in China.¹ Some historians believe that in addition to providing food, these gardens were built as outlets for recycling organic waste generated by the household. Early Latin American communities may also have practiced urban agriculture, predominantly as a means of promoting food security within cities. Throughout the rest of the developed world, urban populations commonly relied upon locally produced food until the Industrial Revolution of the late eighteenth and early nineteenth centuries. This age of mechanization and industry changed everything for food production, as factories and urban development began taking the place of agricultural plots. The result? Agriculture moved outward from city centers to form rural “belts.” Urban agricultural planner Jac Smit suggests that this agricultural migration away from cities directly leads to a need for food importation *into* cities.²

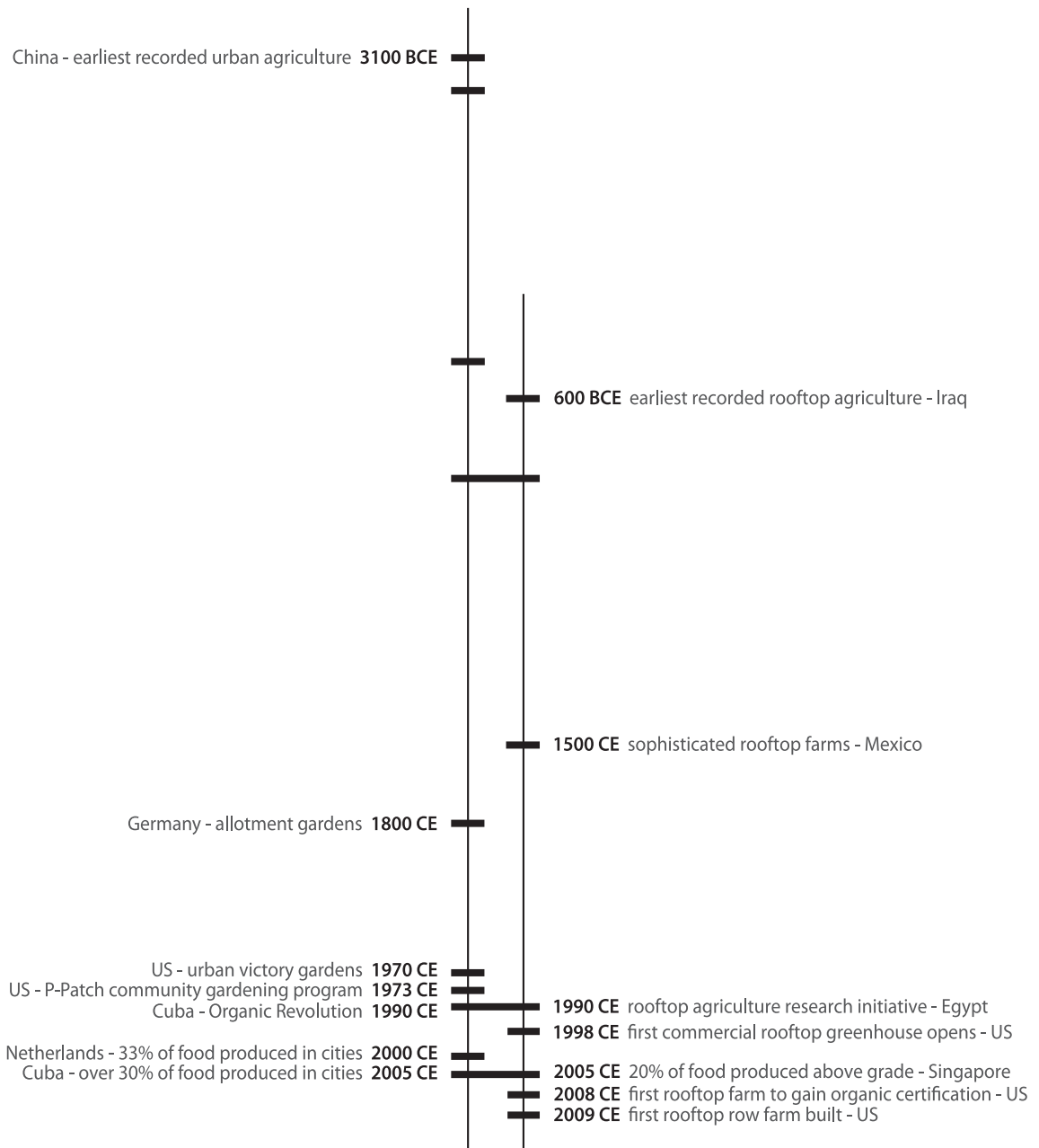
Since the Industrial Revolution agriculture has periodically reentered cities, most notably, perhaps, with the planting of Victory Gardens during World Wars I and II to supplement the public food supply. Currently, the urban agriculture trend is gaining steam, as cities around the globe recognize the benefits of food

localization. The Netherlands, for example, produced 33% of its domestic agricultural needs within urban areas in 2000,³ and the Institute for Food and Development estimated that in 1999, **14% of the global food supply was produced in cities.**⁴ As cities densify, expand and multiply in number, agriculture’s reoccupation of urban space will continue to spread.

rooftop agriculture

As with urban agriculture, rooftop agriculture possesses a lengthy history, which likely dates back to **600 BCE Babylon** (present day Iraq). Geoff Wilson, a noted authority on urban agriculture, believes that the Hanging Gardens of Babylon were likely “the world’s first rooftop farming project.”⁵ Archeological evidence suggests that these terraced roof gardens were used to produce fruit, vegetables and possibly even fish! During the 1500s, the Aztecs may have also built sophisticated rooftop farms, which incorporated waste management strategies. The current trend in rooftop farming is predominantly fueled by Canada, the US and Singapore. Other countries around the world, such as Australia, Senegal, Russia, Italy, India, Egypt and Hong Kong, are also beginning to explore rooftop food production within cities. The agricultural methods used within each country reflect local climatic, culture, socioeconomics and building characteristics.

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today's rooftop farms + gardens

Rooftop farms and gardens address more than just subsistence.

Today's rooftop farms and gardens address more than just subsistence. They are built to foster healthy eating, community building, stormwater management, business development and the occupation of underutilized space. Many of these skyline gems fulfill multiple goals at once, such as an educational rooftop garden that teaches kids about nutrition while supplying the cafeteria and improving local food security.

Furthering the rooftop agriculture movement as a whole benefits everyone.

From schools to roof decks, churches to restaurants, apartment buildings to warehouses, rooftop farms and gardens sprout up in all types of neighborhoods and engage people from all walks of life. They occupy industrial zones, high-rent districts and even financial centers. Rooftop farms and gardens appear in various shapes and sizes, and consequently produce a wide range of yields. Generalizing about such dynamic spaces is tricky, and so *EAT UP* groups these farms and gardens by scale of operation and whether or not the sites are commercial in nature. The resulting typologies are therefore: Rooftop Gardens (small-scale, non-commercial), Rooftop Farms (medium-scale, commercial) and the Rooftop Agriculture Industry (large-scale, commercial). The following pages discuss these typologies in more detail, so for now, just keep in mind that rooftop farms and gardens are diverse places intended for a variety of purposes.

In my travels around the country

visiting sites for this book and meeting the men, women and children behind the rooftop agriculture movement, growers often ask my opinion about whether their agricultural production technique (e.g., row farming) is superior to “the other guy’s technique” (e.g., hydroponic greenhouse production). I consistently respond that no one technique is better than any other; they’re just different, and used to achieve different goals. This message is important to remember, as each type of operation fulfills specific objectives, and benefits specific types of people, but furthering the rooftop agriculture movement as a whole benefits everyone.

With that said, the existing North American rooftop agriculture movement, as well as the industry, is in a fledgling state. The current “boutique” industry, if you will, predominantly consists of independently operated farms and gardens dotted across the skyline. No organizational entity coordinates the effort, and some cities possess policies that are detrimental, or even prohibitive, to moving the industry forward. A few exceptions exist in New York City, where several farm operations are opening second and third rooftop locations. These farms will serve as guinea pigs, to see if organized rooftop networks (sprinkled with some progressive policy) can help propel the current niche industry into an integral facet of the urban food system.



*Commercial greenhouse hydroponics,
Gotham Greens, NY*
Photo by Ari Burling, courtesy of Viraj Puri



rooftop gardens [small-scale]

Whether planting a few roof-deck tomato plants or starting a community garden atop an apartment building, rooftop gardeners can't resist getting their hands dirty. These small-scale growers cultivate vegetables, herbs, flowers and sometimes even fruit to enjoy for themselves and share with others. Throughout *EAT UP*, a garden spade icon (left) will key you into relevant information for rooftop gardeners. Keep your eyes peeled!



rooftop farms [medium-scale]

Entrepreneurs, restaurateurs and urban farmers are often drawn to the commercial scale of rooftop farming. Whether growing food in soil or hydroponically, rooftop farmers must consider labor, marketing and distribution strategies in order to ensure the economic stability of their skyline farms. A fork icon (left) represents the “beans-to-bucks” approach that you can follow throughout *EAT UP*.



rooftop agriculture industry [large-scale]

The rooftop agricultural industry at large demands attention from city planners, policy makers, architects, landscape architects and academics who are interested in how rooftop agriculture can “feed the masses.” A fountain pen icon (left) reminds us of the power of progressive policy and organized initiatives.

Photo by Anastasia Cole Plakias,
courtesy of Brooklyn Grange





Photo by Ari Burling, courtesy of Viraj Puri



Photo by Allen Ying

The Fairmont Waterfront

Noble Rot

Graze the Roof

