Case Study: economic viability of growing produce organically on-site at restaurants

Ester – Lower Dot Dining
Farm-to-Table Restaurant
Dorchester, MA
Owner: Eleanor Arpino

b.good Restaurant
Slow Fast Food Chain
Greater Boston
Owner: Jon Olinto

ABSTRACT

This study explores the economic viability of growing produce on-site at restaurants in urban areas, providing guests with a sustainable and organic farm-to-table experience. Not only does growing on-site decrease the cost of purchasing high-priced crops like herbs, it also captures the farm-to-table audience and fulfills the mission of sustainably-minded, environmentally-conscious restaurateurs, like b.good's founder Jon Olinto who set out to serve "*real food fast, made by people, not factories."* On-site growing is an affordable means to ensure customers are served the healthiest, freshest, most sustainably-grown food possible – and it tastes better.

"The herbs we get from even the best purveyors have lost flavor. Fresh herbs, straight from our Green City Growers garden, the flavors are still there; they just pop." – Head Chef Freddie, Tables of Content Catering, Green City Growers client, Roslindale, MA

Key words: urban farming, rooftop farm, milk crate farm, local food systems, restaurant garden, raised bed farm, farm-to-table, local food movement, indoor growing system, hyper-local, organically-grown

INTRODUCTION

Growing produce organically on-site at restaurant establishments satisfies increasing demand from consumers for reasonably priced locally and organically grown food. The combination of eliminating transportation costs, selecting premium priced crops like herbs, and lowering utility costs through building efficiency (in the case of rooftop farms), makes on-site growing economically viable for any establishment. Owners and chefs enjoy greater quality control of fresh produce grown on-site, as well as greater menu flexibility with the ability to grow heirloom and unconventional varieties not generally available through distributors or from local farms.

Consumer demand has launched a local food movement throughout the United States, despite no firm definition on what constitutes *local* other than its geographic connotation (Martinez et al.). The local food market has an 11 percent stronger growth rate than the organic segment (Ruehle et al.). Buzz words "farm-to-table" and "locally-sourced", synonymous with the local food movement, are increasingly used by establishments to market to their health- and environmentally-conscious customer base (Tortilla); with concentrations in urban areas throughout the northeast and along the west coast (Martinez et al.). In a national study prepared for the USDA, the significant reasons cited for seeking out "locally grown" were freshness (82 percent), supporting the local economy (75 percent), and knowing the source of the food (58 percent) (Martinez et al.). Among restaurateurs, chefs incorporate locally grown produce for superior quality and freshness, to meet customer requests, and to access unique products (Martinez et al.). Hyper-local sources (restaurant gardens) ranks sixth on the National Restaurant Association's "What's Hot" Chef Survey of the top ten menu trends for 2014 (Tropp). From the restaurants' perspective, featuring local produce adds customer appeal and is a differentiator from the competition (Martinez et al.).

A study conducted by the Food Marketing Institute (FMI) revealed 70 percent of consumers who value high-quality foods produced with low environmental impact are willing to pay a premium of 5-10 percent more for locally produced foods (Ruehle et al.), and seek out and remain loyal to restaurants that take locally-grown another step by growing on-site (Tortilla). Nutritional concerns further increase this willingness to pay a premium, as "local food systems may offer food items that are fresher, less processed, and retain more nutrients" (Martinez et al.). Urban singles, double income with no kids, and affluent families are the segments most attracted to local

food. However, 57 percent of low income families are inclined to buy local, as consumers across all segments associate locally grown produce with superior quality and taste (Ruehle et al.).

Growing organically on-site provides restaurants with greater press and marketing opportunities and the ability to attract and maintain a loyal customer base (Tortilla). Establishments would do well to inform their base of menu items using produce grown on-site (Ruehle et al.). Growing on-site is a unique niche in a high-growth market, which helps establishments stand out from the crowd and garner attention from media outlets.

The proliferation of on-site urban farms and edible "green" roofing systems can have multiple positive effects, including the alleviation of urban heat traps, reduction of storm water runoff, filtration of pollutants, and reduction of carbon emitted from transportation (Martinez et al.). On-site growing increases the desirability and value of properties, and creates unique, dynamic aesthetics for the enjoyment of guests (Tortilla).

CASE PRESENTATION

Ester Restaurant

In 2013 Eleanor Arpino was looking to start a "family dining" farm-to-table restaurant in Dorchester, MA, with a fresh and affordable menu. *"Growing up, we always had a vegetable garden,"* explains Arpino. *"Even though we didn't have a lot of money, we ate well."* Living in Dorchester, Arpino missed having access to fresh food that was also affordable, and saw an opportunity to provide this access to the larger community. *"I wanted to be able to serve fresh food without having to charge premium prices,"* Arpino says. *"When a former restaurant in Lower Dot came on the market with an existing rooftop farm, I was thrilled."* Purchasing the former Ledge Kitchen and Drinks presented Arpino with the opportunity she was looking for to supply her establishment, Ester restaurant, with produce grown on-site on the five thousand square-foot rooftop farm.

By growing the restaurant's own herbs and custom mix of produce on the roof, variety and freshness are assured, and Arpino no longer pays a premium for these items. Because of the green roofing system, Arpino is able to reduce the building's heating and cooling costs. Along with a reduction in transportation costs, restaurant profitability has increased. Ester restaurant makes further use of the rooftop farm by ensuring that 100% of the produce is used and nothing goes to waste, pickling and canning any surplus for use at a later date.

Ester restaurant grows for variety. Growing on-site offers Arpino and Ester's chef the freedom to select which herb and vegetable crops to grow and serve to their guests. This includes unusual and heirloom varieties as well as hard-to-find and expensive varieties such as pearl onions, broccoli raab, and baby arugula. Being able to harvest and serve immediately ensures a quality and freshness unparalleled by even the best local suppliers.

b.good Restaurant Chain

Since inception in 2003, co-founder of the b.good restaurant chain Jon Olinto has been on the cutting edge of what it means to serve *"real.food.fast"* to b.good customers. The b.good tag line goes straight to the heart of their mission, and Olinto is continually pushing the boundaries, redefining what it means to serve local food. In 2009 Olinto partnered with Green City Growers in an effort to infuse hyper-local ingredients into b.good's menu by growing on-site. The challenges lay with finding suitable growing space, particularly in urban areas, and growing enough volume of produce in the space available to be economically viable.

b.good now grows on-site at seven different locations throughout Greater Boston (three sites added in 2014); each site custom designed to make the most of available space. A variety of growing systems allows for creative use of even the smallest spaces. *"I think we've tried every possible way of growing vegetables*," Olinto says proudly. Each design addresses a specific challenge, whether that's lack of outdoor space, snow load in winter, or the natural space limitations of an urban setting. *"We always want to create a community in our restaurants,"* explains Olinto, *"and we thought having a closer connection between the food we serve and the customers would be a great way to do that.*"

GCG Growing Systems at b.good:
Washington St, Boston, *parking garage rooftop farm*

Hingham, MA, *parking lot raised bed farm in a shopping plaza*
Harvard Square, Cambridge, *indoor milk crate growing system*
Summer St, Boston, *indoor planter boxes*
Nashua, NH, (2014) *ground-level raised bed farm*
Bedford, MA, (2014) *indoor milk crate growing system*
Boylston St, Boston, (2014) *indoor container system and outdoor patio planter boxes*

b.good's efforts to serve hyper-local food to customers have garnered attention. *"I didn't know how excited people would get about it,"* Olinto admits*, "but the response has been overwhelming. Everyone is so interested in how we're growing our own food, especially in urban areas where that's not something people are normally exposed to."*

b.good grows only three crops so as to maximum production. The larger outdoor sites grow kale for smoothies and quinoa bowls, and tomatoes for salads and burgers. The smaller indoor sites grow mint for iced tea, smoothies and quinoa bowls.

WHAT WE DO

Green City Growers (GCG) has been installing and maintaining organically-grown, production-level urban farms on-site at restaurants throughout Greater Boston since 2009, and currently maintains production sites for sixteen different restaurant locations. Ester restaurant (formerly Ledge Kitchen and Drinks) is the largest rooftop site GCG maintains for a restaurant, at five thousand square feet, though they also maintain a seventeen thousand square foot farm for Whole Foods Market Lynnfield. This site is unique in that GCG partnered with the prior owner of Ledge and is now partnered with the current owner of Ester – the rooftop farm was a significant selling point. b.good is the largest restaurant chain GCG is partnered with, maintaining seven different b.good locations. b.good and GCG work closely to develop new growing systems designed to accommodate the needs of each separate location, maintaining economic viability. GCG's goal is two-fold: maximize produce production in the space available to achieve economic viability for growing on-site, and maximize visibility of restaurants engaged in the unique endeavor of growing their own produce.

GCG keeps a detailed weekly log of every harvest by weight, and includes the going market value of each crop harvested for restaurateurs to closely evaluate the economics of growing on-site (Table 1A).

TABLE 1A: Yield Estimates for a Rooftop Farm

Crop	Plants / sqft	Yield(lbs.)/ plant per succession	Yield(lb.)/ sqft per succession	Sqft dedicated	# of successions	Total Est. Harvest (lbs.)	Harvest Weeks	Ave. Weekly Harvest (lbs.)	Produce Price	Value of Produce from Farm	Range of Harvest
Thyme	1.5	0.5	0.75	183	1	137	25	2.00	16.00	2,196.00	May-Oct
Basil	2	0.5	1	363	1	363	14	25.9	12.50	4,537.50	Mid July-Oct.
Cilantro	n/a	n/a	0.25	574	2	144	6	23.9	8.00	1,148.00	May, Nov
Cucumbers	1	3	3	244	1	732	12	61.0	3.00	2,196.00	Mid July-Oct
Mint	1.5	0.7	1.05	183	1	192	25	7.7	16.00	3,074.40	May-Oct
Cherry tomatoes	0.5	0.4	0.2	333	1	67	25	2.7	5.00	333.00	Mid May-Oct
Peppers, Hot	1.5	0.5	0.75	183	1	137	10	13.7	4.00	549.00	Mid Aug.-Oct.
Radishes	6	0.05	0.3	574	2	172	5	34.4	2.50	430.50	April-May, Nov
Arugula	n/a	n/a	0.25	575	2	144	6	24	24.00	3,450.00	May, Nov
					TOTAL WEIGHT:	**1,950lbs**		**TOTAL VALUE:**		**$17,914.40**	

As shown, growing high priced produce and unique varieties on-site dramatically reduces the cost of purchasing this produce from an outside vendor.

TABLE 1B: Annual Savings for a Rooftop Farm

Annual Maintenance + Soil Amendments:	$10,800
Annual Savings (by growing on site)	**$7,114**

Following the recuperation of the initial one-time cost of installation, GCG restaurant clients show significant annual cost savings year over year by growing a portion of the restaurant's produce on-site, achievable by the third year (Table 2). Recuperation of initial installation cost is dependent upon the size and location of the installation (indoor, ground level, rooftop), and the output and value of the produce.

TABLE 2: Cost Benefit of a Container Farm

Equipment & Maintenance	**Cost**
Baby Pools (40) & Raised Beds (includes irrigation systems, trellises, & soil)	$5,740.00
Tomato & Collard plants ($1,000 / year for 3 years)	$3,000.00
Maintenance (includes fertilizers, labor, pest & fungal management) ($2,000 / year for 3 years)	$6,000.00
Total Costs	$14,740.00
2011	
650 lbs Tomatoes ($3.25)	$2,112.50
45 lbs. Collards ($2.75)	$123.75
2012	
1,200 lbs. Tomatoes ($3.25)	$3,900.00
155 lbs. Collards ($2.75)	$426.25
2013	
3,000 lbs. Tomatoes ($3.50)	$10,500.00
496 lbs. Collards ($3)	$1,488.00
Total Value of Produce	$18,550.50
Total Savings	$3,810.50

DISCUSSION

Growing produce on-site at restaurant establishments offers numerous benefits to the owners, chefs, guests, and the broader community as a whole. On-site growing systems and farms provide multiple value-added benefits; a vehicle to decrease costs, increase profits, generate press, and market to a high-growth market segment. With the right blend of growing high-priced, high-yield crops, and maximizing available growing space for production, growing on-site is not only economically viable for restaurants, but ultimately a significant driver to increasing visibility, and building and retaining a loyal customer base.

RESOURCES

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