





IN THE GARDEN

The Community Economic Potential of the Food System

> Community Development Studio Edward J. Bloustein School of Planning and Public Policy Rutgers University

Elijah's Promise and Unity Square May 2016

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# Introduction

Elijah's Promise enlisted the Spring 2016 Community Development Studio at the Edward J. Bloustein School of Planning and Public Policy at Rutgers University to explore the feasibility of expanding its apiculture, farm to table culinary training, and composting projects. Elijah's Promise seeks to build on its strengths to expand community economic development opportunities such as job training, job creation, and business development, as well as produce revenue to fund their work. To explore the potential to expand Elijah's Promise's current efforts, studio team members conducted interviews, searched the Internet to learn about similar efforts across the country, and read books and journal articles. Students also met with Elijah's Promise staff to better understand their current efforts and vision for the future.

## Elijah's Promise

Elijah's Promise, which started as a soup kitchen in 1989, today serves an average of 300 meals daily and operates a multi-faceted community food organization. Their motto, "Food Changes Lives," is evident in their programs to end hunger, help people leave poverty, provide job training and other opportunities, and build community.

## Apiculture

Elijah's Promise started Shiloh Community garden in 2010 and later installed a hive in June 2015 that now has two brood supers and two honey supers, and they will soon install a second hive with one super. Their initial beekeeping effort was made possible by a Rutgers University Community-University Research Partnership grant that funded research to understand whether community gardens can improve the physical and mental health of underserved people in New Brunswick. The 15-week project worked with 12 Community Soup Kitchen guests who have chronic medical conditions to cultivate and harvest healthy foods. Guests participated in social, creative, and educational activities related to gardening and healthy eating. Gardeners, volunteers, and soup kitchen quests helped with hive installation and maintenance, which included moving frames, installing a second super, filling the feeding tray with simple syrup, treating the hive for mites and foulbrood, checking for the queen, and checking for brood. Shiloh gardeners will help remove the honey supers, empty them of bees, and extract honey from the frames during the 2016 season. Gardeners who assist with the hive will receive a jar of honey from Elijah's Promise as a token of appreciation. Local businesses have expressed interest in buying the remaining honey and any revenue generated will be reinvested into Shiloh Community Garden or Elijah's Promise. The hive is also part of a project with the Lower Raritan Watershed Project to improve New Brunswick's ecosystem for pollinators.

Elijah's Promise uses the apiary to demonstrate the importance of pollinators and how beekeeping improves the health of local flora. They have woven the hive into their community gardening program and built relationships with people who use other Elijah's Promise programs to improve physical and mental health as well as food security. They would like to expand these opportunities in ways that increase job training, job creation, business development, and revenue expansion. Elijah's Promise hopes to build relationships with other community gardens and nearby farms to expand beekeeping (Interview with Anthony Capece).

## Farm to Table Culinary Training

Elijah's Promise opened Promise Culinary School in 1997 and added a baking and pastry arts program in 2010 to decrease poverty by expanding job opportunities. Promise Culinary School provides culinary job training to support low-income residents transition into new careers. Elijah's Promise would like to expand these efforts by developing Farm to Table modules to enhance students' competitiveness as restaurants are increasingly incorporating Farm to Table elements in their menus. Elijah's Promise is also interested in developing entrepreneurial and small business programs. They envision a Farm to Table program that will teach students about the food system, how and where plants grow, seasonality, how to grow food, and how to prepare fresh food as well as canned, frozen, and fermented value-added products. In addition to helping students get jobs in the culinary and/or agricultural fields, enhanced gardening skills may inspire them to grow food themselves.

Promise Culinary currently has daytime and evening culinary training programs and a bakery and pastry arts program. Students already learn about fresh food by visiting the culinary school's garden, the New Brunswick Community Farmers Market, farms, and grocery stores. Over the years, Promise Culinary has developed components that could be incorporated into a more intentional Farm to Table Program. They have worked with the Rutgers Student Farm to provide monthly student visits and classroom instruction. They also offered a six-evening "Seed to Table" program that taught community residents about the food system and how to prepare the food they grew. Course topics included kitchen techniques, canning, drying and freezing produce, fermentation, pickling, and creatively using one ingredient; the program also touched on composting (Yadin, 2013). Elijah's Promise's A Better World Market hosted a Farm to Table series in 2015 that included four evening chef- and agricultural professional-led culinary programs. The series offered recipes and tips on how to use farm fresh food available during New Jersey's summer harvest for meals and other summer occasions.

Elijah's Promise is ready to expand these efforts by integrating these ideas into their existing culinary training program. They are also interested in creating a vision for a more substantial Farm to Table training program that could include greater emphasis on growing and cooking fresh food. The most expanded vision would include entrepreneurial and business development expertise.

## Composting

Elijah's Promise "stacks" their programing to make the most of limited resources. The philosophy behind stacking is based on interconnectedness, treating the organization and its enterprises as an ecosystem: nothing is wasted and everything feeds into something else. This idea is realized in Elijah's Promise's composting operations. The organics waste stream from Elijah's Promise's operations roughly follows best practices laid out in the Environmental Protection Agency's food recovery hierarchy: leftover food that will not feed people should be used to feed animals, and only the remainder should be composted (with virtually nothing being placed in landfills). At Promise Culinary, students are taught to separate organic from inorganic waste. This is an opportunity to improve current compost practices and to more fully integrate the culinary training and compost programs.

Elijah's Promise also organizes compost in Shiloh Community Garden. The current composting practices are typical for community garden scale. The approach is known as a "passive pile." Organic matter from the garden (dead plants, grass clippings, fall leaves, and unharvested/spoiled fruits and vegetables) is piled up in an out-of-the-way spot not used for growing food and is left there for extended periods of time. This past year, grant funding paid for some sporadic work turning or agitating the pile to encourage decomposition. This is a good first step as it means the community understands composting is a part of gardening. The best practices for community gardens indicate the next step for Shiloh would be the construction and maintenance of actively managed compost bins. A compost bin is an enclosed pile, which provides a powerful shift in processing capacity and positive public engagement. Conversely, a compost pile is exposed: "vectors" like insects, rodents, raccoons, and other nuisances have ready access. A properly constructed compost bin precludes these nuisances and, thereby, improves public perception of composting and of the garden in general. Compost is actively managed if it is monitored and turned when appropriate, which processes waste organics into useful compost much more quickly than a passive pile. Furthermore, the end product of an active pile will likely be more valuable for plants (and gardeners) than that from a passive pile because fewer nutrients have been lost over time through leaching.

Elijah's Promise would like to improve and expand its compost program at Shiloh Community Garden and connect this program more fully with the Promise Culinary training program. Given that local governments are increasingly committing to compost programs, Elijah's Promise is also interested in exploring the potential to expand composting operations, what it would take to do so, and which opportunities there may be in the future to expand job training, job development, and compost-related revenue generation.

## **Report Organization**

This report is divided into three sections: apiculture, farm to table culinary job training, and composting. Each of these is considered a potential foundation for food-related

community economic development. The sections follow a common layout. First, the topic is explained and explored. Second, the topic is linked to Elijah's Promise's work in a three phase plan. Third, the report concludes with a discussion about what Elijah's Promise would need to do to move forward. We turn next to consider apiculture and community economic development.



# Food-System Community Economic Development

## Apiculture

Apiculture is the practice of maintaining and raising bee colonies, which is usually done in a hive or apiary.<sup>1</sup> Elijah's Promise is considering expanding its beekeeping efforts to enhance its education, community building, jobs, job training, environmental improvement, and revenue generation efforts by weaving the beekeeping efforts. It may do this by expanding Promise Culinary job training program, creating bee-related businesses, and generating revenue through honey and value-added product sales.

In this section of the report, we discuss the importance of beekeeping and how bees and urban communities can benefit from beekeeping and beekeeping programs. We also provide examples of community based organizations that use beekeeping to meet community development objectives. Many bee-related community development programs, unfortunately, are not self-sustaining. Being profitable requires maintaining many hives or layering projects such as pairing a culinary job training program with beekeeping. Even if it is not profit generating, beekeeping can help Elijah's Promise meet other community development objectives such as developing job-related skills, expanding knowledge about the food system, and enhancing community building.

## Bees 101

Bees are an integral part of the pollination system. While beekeeping has traditionally been thought of as a rural activity, it is increasingly playing a role in urban environments. A community development organization considering beekeeping will need to learn the bee basics such as funding, bees, equipment, beekeeping, and business development. It will also need to develop a bee support network. In this section we walk through what a hive produces and what those products can be turned into, as well as what bee keepers need such as equipment, a strong support network, education, understanding of regulations, funding, business acumen, and access to markets.

### **Beehive Products**

The amount of honey hives produce varies depending on weather, the number of honey supers, exposure to pesticides, availability of plants for foraging, exposure to pests and disease, and other environmental factors. If the hive is healthy, bees will continue to produce



<sup>&</sup>lt;sup>1</sup> An apiary is a place where bees are kept; it can refer to a collection of hives (Paska, 2014).

honey to fill the honey supers available. While the question, "how many pounds of honey does a hive produce?" seems straight forward, it is difficult to predict. On average, the Rutgers beekeeping instructor estimates is 50-100 pounds of honey per super installed. Honey can be sold in liquid and comb form and is usually measured by weight. Liquid honey is extracted on its own, while comb honey is sold inside the comb. The other types of honey product are cut comb, naturally crystallized honey, and whipped honey. Cut comb honey is liquid honey that contains chunks of comb. Naturally crystallized honey and whipped honey are crystallized forms of honey; whipped honey is more processed to make it spreadable. Honey can be sold "raw", which means that it has not been pasteurized; it has been removed and strained from the comb.

Aside from honey, hives produce wax; propolis, a resin-like material bees use to fill holes; bee pollen; and royal jelly, a substance fed to bee larvae that is used in beauty and health products. All of these can be sold as is or in value-added products (Paska, 2014). Some think that propolis, bee pollen, and royal jelly have health benefits and have more of a niche market, especially because they are more expensive. While they can be incorporated into cosmetics and food products, they are often sold in their original state as extracts or in supplements. Wax can be sold on its own, but it is often included in value-added products.<sup>2</sup> Most value-added products use honey and wax. Wax is incorporated into candles, lip balm, and other cosmetic and body care products. Honey can be used in cosmetics and in food products like mead, other alcoholic beverages, candies, spreads, and baked goods.<sup>3</sup>

Tending one to three hives requires approximately 25-30 hours of work a year (Belknap, 2010).

#### Beekeeping Equipment

Keeping bees requires a hive, equipment to examine the hive, protective clothing, and bees. Costs are approximately \$500 for one hive and equipment during the first year. A new hive with two supers, costs approximately \$200 and starter kits, which include equipment like gloves, a smoker, hat and veil, hive brush, hive tool, range from \$100-\$200. These dollar amounts vary widely. There will also be second year costs because the hive will start producing honey and may need a honey super and new bees and treatment costs. Equipment should be bought new to reduce the risk of pests and disease transfer (Wenning, 2012).

#### Hive

The hive is where bees live, reproduce, work, and produce honey. The hive is made up of an outer and inner cover, honey super boxes, brood super boxes, and a queen extruder. The

<sup>&</sup>lt;sup>2</sup> Appendix B lists some farms and retailers that sell these products, with pricing details.

<sup>&</sup>lt;sup>3</sup> For more information regarding value-added beekeeping products see the Food and Agriculture Organization of the United Nation's "Value-Added Products from Beekeeping" (http://www.fao.org/docrep/w0076e/w0076e00.htm).



super boxes contain frames where the bees create comb, store honey, and lay eggs (see hive diagram). Hives should be installed in early spring and, since the time commitment is similar, beekeepers should start with at least two hives to provide a point of comparison and in case of hive death (Belknap, 2010). The Langstroth is the most commonly used. Its moveable frames makes hive maintenance easier and reduces damage during examinations and extraction.

#### Tools and Equipment for Hive Inspection

Examining and maintaining the hive requires equipment and protective clothing. Necessary tools to examine the hive are a smoker, a hive tool, and a hive brush. The smoker makes the bees more docile, which makes the inspection process easier. The hive tool is used to break through propolis, a resin material bees produce to close gaps in the hive, and to open the hive cover. Once the hive is opened, the beekeeper may use a hive brush to brush bees off of the frame to examine the comb for honey, brood, eggs, and health. While examining the hive, it is a good idea to wear smooth light-colored protective clothing. This may include a bee suit, bee jacket, hood, veil, and gloves. An extractor is needed to extract honey, which many local beekeeping associations rent to members and other beekeepers.



#### **Bee Acquisition**

Bees can be acquired in a few forms: beekeepers may purchase a package, a nucleus, an established colony, or capture a swarm or feral colony. Bee packages are screened boxes containing bees and a queen. Unlike a nucleus, they are not an established colony and lack organization. This makes packages easier for beginner beekeepers since they do not have a home or honey to defend (Sanford and Bonney, 2010). A nucleus contains established frames, and it can be difficult to fit the nucleus frames into the hive. A three-pound package with a queen costs approximately \$150-175 (Interview with Anthony Capece).

### **Beekeeping Community**

In and near New Brunswick, there is a strong network of beekeepers that Elijah's Promise can work with and learn from. The university and local beekeeping associations provide education, mentorship, and community. Prospective beekeepers can learn the ins and outs of beekeeping from books and workshops hosted by beekeeping associations or they can take a course. Rutgers University provides education and support through the New Jersey Agricultural Experiment Station (NJAES). In 2006, the NJAES Office of Continuing Professional Education partnered with the New Jersey Beekeepers Association to rebuild the bee population and to engage the community in this effort (NJAES). NJAES offers a two and a half day "Bee-ginner's Beekeeping, the Basics of Apiculture" course for \$215 that covers bee biology, hive management, purchasing queen bees, honey extraction, beekeeping in urban environments, disease and mite prevention, and hands-on hive assembly. An advanced bee class is offered for those who complete the introductory course and want to further develop their skills (Beekeeping Courses) (See Appendix for course list).

#### Rutgers University and the New Jersey Agricultural Experiment Station

Meredith Taylor, Javier Robles, and Todd Mittleman are affiliated with Rutgers University and are in the process of reigniting The Hive, an apiary club at Rutgers, to support local beekeepers and involve students. Rutgers has land, tools, supplies, and expertise, and several hives are being established at the Rutgers Horticulture Greenhouse in Spring 2016 to further this effort. The growing interest in beekeeping at Rutgers presents an opportunity for collaboration between university and community to meet common objectives. Possible opportunities include partnerships to expand beekeeping education, hive construction seminars, mentoring, value-added product development, and small business development (Interview with Taylor, Robles, and Mittleman).

#### **Beekeeping Associations**

Beekeeping associations provide education and a network for beekeepers. For a small annual membership fee, many associations provide workshops, information sessions, equipment, and experienced beekeepers who can mentor new beekeepers. The New Jersey Beekeepers Association (NJBA) is a non-profit volunteer organization that promotes and supports beekeeping through education. The NJBA sponsors scholarships for youth ages 12 to 22 who attend the Rutgers Bee-ginners Beekeeping Course or any other course branches offer (The New Jersey Beekeepers Association). Of the ten active regional chapters, Raritan Valley Beekeepers Association (RVBA) and Central Jersey Beekeepers Association (CJBA) are the closest to New Brunswick. The RVBA meets every third Thursday of June, August, September, October, November, and December. CJBA meetings are held monthly at the Monmouth County Agricultural Building. Most meetings focus on beekeeping skills or value-added products. CJBA also provides or supports hive inspection, swarm protection, extraction, and winter preparation. Membership for those under 18 is \$8 and \$20 for all others, and gives access to state and local meetings, a newsletter, and a local network of experienced beekeepers (The New Jersey Beekeepers Association).

#### Raíces Cultural Center

Raíces Cultural Center in New Brunswick began an Apiculture Initiative two years ago to improve the environment, educate the public, and foster community. As part of their effort, beekeepers have constructed their own Langstroth hives. They have also faced many of the challenges new beekeepers confront (Gómez, 2014). If Elijah's Promise chooses to build its own hives, Raíces would be a valuable resource to call upon. Even if they do not, Raíces is an important bee community partner.

#### Beekeeping Laws and Codes

New Jersey has enacted laws and codes that govern many aspects of beekeeping. This section touches on the most applicable state laws and codes.

- A beekeeper must notify the State of how many hives they tend and register if they overwinter bees (N.J.S.A. 4:6-16; N.J.A.C. 2:24-3.1(a)).
- Hives must have movable frames that the State can inspect for disease (N.J.S.A. 4:6-10).
- To sell honey yielded from a hive at a small scale, a beekeeper must process and store it in a sanitary facility and label the container with the name and address of the seller, the name of the product, a list of ingredients, and the net weight of the product (Farm Market Guidelines, 2007).
- A license is necessary to sell wholesale (N.J.A.C. 8:21-9.5).
- A beekeeper interested in incorporating honey and other bee-related harvests into food must do so in a commercial kitchen (see N.J.A.C. 8:24-3.2). A beekeeper who rears and sells queen bees must have their apiary inspected at least twice each summer to ensure the hives are healthy (N.J.S.A. 4:6-5, 4:6-6). Queens intended for sale must be shipped with a certificate of inspection (N.J.S.A. 4:6-14) (See Appendix B for more information).

#### Funding

Although beekeeping has a relatively low upfront cost, it is unlikely to become a selfsustaining enterprise. New beekeepers can pursue funding to get their operations off the ground. Beekeepers may apply for Conservation Innovation Grants, the Value-Added Producer grant, the Farmers Market Promotion Program grant, the Specialty Crop Block grant, and the Sustainable Agriculture Research and Education Program. Additionally, they may seek funding from donations, through crowd-sourcing, or with crowd-funding loans from Kiva, microloans from the Small Business Administration and Certified Development Company, and the USDA's Farm Service Agency (Red-Laird, 2015).

New Jersey's Intersect Fund may be accessible to beekeepers who are starting a small bee business. Loans up to \$25,000 typically have below market interest rates. The fund provides additional resources such as business training and coaching for low-income, minority, and women-owned businesses (Intersect Fund). Other non-profits have found funding to support the mission of their beekeeping programs. Sweet Beginnings, a company started by Chicago's North Lawndale Employment Network, provides short-term job skills training to formerly incarcerated residents. They obtained funding through grants from JPMorgan Chase, Boeing, Ben and Jerry's, the MacArthur Foundation, and the Illinois Department of Corrections (Kiernan, 2007; Dalzell, 2016; Schwartz, 2015; Tolan, 2015).

Whether the goal is improving bee health, education, or job training, identifying the purpose and accessing the appropriate funding streams is key to supporting a beekeeping project at Elijah's Promise. This was a quick overview of the basic things Elijah's Promise should consider as they expand their beekeeping program. Next we discuss how they might use their hives to contribute to their community development objectives.

#### TABLE 1. BEEKEEPING FUNDING

Program		Applicants	Funding Amount	Deadline	Criteria
Conservation Innovation Grant http://www.nrcs.usda.gov/wps/portal/nr cs/main/national/programs/financial/cig/ #		NGOs, historically underserved producers	Total: \$20 million Cap: \$2 million	May 10, 2016	Address at least one natural resource concern on agricultural land
Value-Added Producer Grant http://www.grants.gov/web/grants/view- opportunity.html?oppId=282855		Farmers, agricultural producers	Total: \$44 million Cap: \$250,000	June 24, 2016	Helps agricultural producers with value- added products
Farmers Market Promotion Program https://www.ams.usda.gov/services/gra nts/fmp		CSAs, non- profits, producer networks	Total: \$13 million Cap: \$50,000 min, \$500,000 max	May 12, 2016	Promote access to local agricultural products
Specialty Crop Block Grant-NJ http://www.nj.gov/agriculture/pdf/specia ltycropblockgrants.pdf		Grower cooperatives, agricultural organizations	Total: \$66 million NJ: \$809,717, \$10,000 minimum, \$40,000 maximum	May 18, 2016	Support specialty crop growers through research to increase demand
Sustainable Agriculture Research and Education (SARE) Program http://www.nesare.or g/Grants/Get-a- Grant/Which-grant-is- right-for-me/For- agricultural-nonprofits	Research and Education grant	Agricultural non-profit	\$30,000-\$20,000	June 23, 2016	agricultural outreach or research
	Professional Development grant	Agricultural non-profit	\$30,000-\$150,000	June 30, 2016	agricultural outreach
	Partnership grants	Agricultural non-profit	Cap: \$15,000	October 6	agricultural outreach or research

#### Beekeeper

A beekeeper is an individual who practices beekeeping. Beekeepers may tend someone else's bees or their own. Most beekeepers are hobbyists. Beekeeping to generate income involves selling bee-related products including honey, wax, propolis, bees, and equipment, or providing services such as tending bees, pollination, and hive installation.<sup>4</sup> Members of the New Jersey Beekeepers Association can be added to a list for swarm capture alerts. Beekeepers may charge for beekeeping services, but capture cannot be relied on as a consistent source of income since swarming is rare and unpredictable. For swarm capture on public land, beekeepers are unlikely to be paid, though they could charge homeowners or

<sup>&</sup>lt;sup>4</sup> For a complete list and guide see Penn State Extension (http://extension.psu.edu/business/agalternatives/livestock/additional-livestock-options/beekeeping)

businesses for their services. Swarms are valuable, so most beekeepers are willing to capture them free of charge (Interview with Cynthia Werts). Renting hives to farmers to pollinate crops can also generate income. Some crops, like apples are dependent on insects for pollination since they cannot be pollinated by a non-biological factor, like wind. Some beekeepers move their hives throughout the blooming season to follow the pollination needs of different crops (Penn State Extension, 2012).<sup>5</sup>

Raising queens is no easy task and demands a skilled beekeeper. It is a difficult and time sensitive endeavor, requiring patience, attention, and good hive management. To sell queens, they must be mated and have eggs, meaning drones must be available to impregnate the queen at the right time. Since drones are only available in the warmer months, timing this process is tricky. There are only two people who sell queens in New Jersey (Interview with Cynthia Werts). Other beekeepers raise and sell bulk bees. However, most bees sold come from the south and the west since it is easier to raise bees in warmer climates (Sanford and Bonney, 2010). Building, selling, or installing hives can also generate income. Installing a hive entails setting up the physical hive and installing the colony in the hive. Some organizations like Best Bees in Boston perform routine checks on bees and honey extraction. Some clients that keep bees on their property hire beekeepers to do this.

Hive products such as honey, wax, propolis, and royal jelly can be sold for profit. It is difficult to give concrete numbers on how much product one hive will produce.<sup>6</sup> Most value-added products are food or cosmetic and beauty products. Value-added cosmetic and beauty products such as lotions, creams, scrubs, balms, soaps, and lip balms only use small amounts of hive products such as honey and wax. Honey is also used to create value-added food products such as a replacement for white or brown sugar, in alcoholic beverages like mead, honey beers and liquors, and in baked goods, spreads and jellies, and candies.<sup>7</sup>

## Beekeeping Community and Community Economic Development

#### **Community Building**

Apiculture can be a catalyst for community building. Like community gardens that create a shared space for individuals who otherwise might not interact, beekeeping can be a node for interaction among residents from different backgrounds, with local institutions and with businesses. Beekeepers can use rooftops and local businesses can host hives. These businesses can operate as a platform to spread the word about beekeeping and local honey.

<sup>&</sup>lt;sup>5</sup> For a more in-depth list of considerations with an example of a commercial pollination contract go to the Penn State Extension (http://extension.psu.edu/publications/uf012).

<sup>&</sup>lt;sup>6</sup> Appendix C lists New Jersey farms and product prices as a reference for regional retail prices.

<sup>&</sup>lt;sup>7</sup> For more information regarding value-added beekeeping products see the Food and Agriculture Organization of the United Nation's "Value-Added Products from Beekeeping"

<sup>(</sup>http://www.fao.org/docrep/w0076e/w0076e00.htm).

For example, the Seaport Hotel in Boston and the Waldorf Astoria in New York City keep hives on their roofs and use the honey in their cocktails and restaurants (Fox, 2013; O'Brien, 2015).

#### **East New York Farms!**

East New York Farms! was created to fulfill a want and need in East New York, Brooklyn, for safe green public spaces and access to fresh food. East New York Farms! is a community food security organization that has a farmers' market, community gardens, community supported agriculture (CSA), provides community education about food, and a Youth Internship program. They got their first hive in 2005 through a partnership with Just Food and Heifer International and now have three hives on their main site. Beekeeping has served as an add-on to the community gardens and education workshops by providing pollination to the gardens. It is promoted because the hives are good for gardens and farms. The hives provide a learning opportunity for those who visit the farms and the honey interests people. There has been some overlap with East New York Farms!'s Youth Internship Program. Older children occasionally help with the hives. Some like to help extract, bottle, and sell the honey at the farmers' market stand. They have found the hives are pretty well supported in the community and have noticed a lot of excitement around them. East New York Farms! does not plan on using the hives as a community economic development tool because of how difficult it is to support oneself on beekeeping alone in New York City; however, they do connect those who are interested in beekeeping to resources like grants and other beekeepers who can act as information sources (Interview with David Vigil).

#### Education

There are two general types of bee education: teaching people how to be beekeepers and teaching about the environmental importance of bees. The focus here is on the latter. Bee education, a component of every bee-focused organization researched for this report, is critical for a number of reasons. First, bees play an integral role in the food ecosystem. Second, bees are under constant threat from pests, diseases, pesticides, and habitat destruction. Third, there is a misconception about bees that they are dangerous creatures to be feared. Bee education takes on added importance in urban areas because of the common disconnect between city residents and nature. While education is important in all stages of life, it takes on added significance when it focuses on children. Bee education is not so much about beekeeping itself but about why bees are worth caring about and why beekeeping is a necessary component of their preservation. If Elijah's Promise chooses to create a social enterprise business based on bees, education should, at some point, play a role.

Education is a common theme across beekeeping organizations. Education informs people that bees are excellent pollinators; their presence greatly enhances the health and performance of flora. Without the pollination efforts of bees, many trees, plants, and flowers would struggle to survive. Education builds awareness of the deadly plight facing bees. Bees are dying at a troubling rate and the reduction in the bee population "is one of the single greatest threats to our natural environment today" (Best Bees Story). Perhaps most

importantly, education changes attitudes. Some people dislike bees because they fear being stung or having allergic reactions to stings; bees are sometimes considered a nuisance. Education plays a vital role in breaking down stereotypes, fear, and apathy. Urban residents may not realize that farms depend on the pollination efforts of bees to grow food or that flowers in the store are only possible because of bees and similar pollinators. Education transforms bees and pollination from something people fear and or do not know about to something they may care about. When children are exposed to something at an early age they are much more likely to take an interest in that topic later in life. The children who are made aware of bees are going to be tomorrow's beekeepers and bee educators. An added benefit is that when children develop positive views of bees, their parents are much more likely to follow suit.

#### The Bee Girl Organization

The Bee Girl Organization is a non-profit organization based in Ashland, Oregon, that focuses on bee education. Bee Girl's founder, Sarah Red-Laird, has been the director of the American Beekeeping Federation's Kids and Bees program since 2012. The mission of Kids and Bees is to educate children about the importance of bees and inspire them to participate in the preservation of bees. Kids and Bees events are held each year at the national conferences for the American Beekeeping Federation and the Foundation for the Preservation of the Honey Bee. Red-Laird has recently expanded the program to include the Eastern and Western Beekeeping Society conferences. Bee Girl also offers a traveling Kids and Bees program that allows Red-Laird to interact with students ranging from pre-kindergarten to 12th grade. Red-Laird provides an educational lesson on bees, an observation hive, and hands-on activities. The program can be tailored to groups as small as ten or as large as 50. Bee Girl will also conduct all-student school programs. Fees for the Kids and Bees program range from \$400 to \$1,000. Those fees cover Red-Laird's time before, during, and after an event, and materials and supplies. Kids and Bees is open source so educational organizations can develop their own programs based on the Kids and Bees model (Sarah Red-Laird; About the Bee Girl Organization). (See Appendix for more organizational examples)

#### San Francisco Bee-Cause

San Francisco Bee-Cause believes that a sustainable symbiotic relationship can exist between the people of San Francisco and honey bees, particularly through urban agriculture. Two of its main purposes are to contribute to the health and survivability of honey bees in San Francisco and to develop a productive system of urban agriculture. They have a bee farm and urban farm project which are used for educational purposes to demonstrate the importance of honey bees, biodiversity, and agriculture in the urban environment. They keep their hives stationary to prevent adding stress to the bees. They have an intensive two-year apprenticeship program to teach participants how to be beekeepers (San Francisco Bee-Cause).

#### Bee Education and Elijah's Promise

Bee education at Elijah's Promise will likely take on many forms over time. Informal education at Shiloh Community Garden already helps build awareness among gardeners and visitors. The current informal education structure can transition to a more formal structure and Elijah's Promise may reach community members, businesses, social organizations, prospective beekeepers, and children. Elijah's Promise might host groups at Shiloh. Participants see bees in their "natural" environment near a garden that benefits from their presence. This allows Elijah's Promise to make the connection between bees and the food system. Elijah's Promise can also provide education at off-site locations such as businesses and schools. They might bring an observation or traditional hive to the interested groups. Most bee organizations use observation hives that show participants the workings of a hive without the need for bee suits. Some use traditional hives and participants wear bee suits. This type of education builds familiarity and comfort with bees. Elijah's Promise could charge a small fee for groups and individuals who visit Shiloh Community Garden and could charge more when they visit businesses and schools. Each program could bring in hundreds of dollars in fees. This is not much but may offset the cost of the hives, though not staff time. Providing educational programs leads to intriguing offshoots. Businesses and organizations that host programs may decide to hire Elijah's Promise for consulting services as some companies host hives. Elijah's Promise can create an "adopt-a-hive" program in which local businesses or organizations make monthly donations in exchange for Elijah's Promise maintaining their hives on Elijah's Promise property. As Elijah's Promise builds its educational services, there may be a need to hire people to lead the workshops (See Long Term Vision for more detail).

There are costs and limitations to providing education programs. The start-up costs associated with operating a traveling program can run in the \$2,000 range (Sarah Red-Laird). Funding may need to be obtained if this initial outlay is too much for Elijah's Promise. An education program that only operates at Shiloh Community Garden should be manageable for one person. However, if the program expands, one person may find it is too much in addition to everyday duties. Thus, scaling up the education program may include enlisting paid instructors or volunteers.

Outside funding will make it easier for Elijah's Promise to provide educational services. Bee Girl receives funding from numerous local and national organizations. In addition to other beekeeping organizations, Bee Girl receives support from food businesses and organizations, ranging from wine to farmers' markets to a creamery (Funders and Friends). Due to Bee Girl's strong online presence, she has secured funding from larger corporations interested in her mission (Sarah Red-Laird). Foundations and other organizations also support bee-related education. The Bee Cause Project out of South Carolina offers an Observation Honeybee Hive Grant to non-profit schools and educational organizations valued at \$1,500 that, among other things, provides an observation hive and a curriculum guide (Grant Program). Planet Bee Foundation in San Francisco partnered with Whole Foods Market in 2015 to provide free educational workshops at 86 local schools and non-profit organizations (Apply for a Free-Bee).

Education should be an integral component of any bee-focused organization but how Elijah's Promise approaches this depends on their objectives. Education informs and builds awareness. Intentionally thinking about how education "stacks" within Elijah's Promise's other programs and objectives is important when considering the next steps on the education path.

### Community Economic Development

Community economic development can be one outcome of urban beekeeping. This expands traditional economic development practices to include social benefits through job training, employment, and business development. While bee-related projects can complement community development objectives, they are unlikely to produce substantial income unless beekeeping is linked to other programs or funding sources. Beekeeping has relatively low start-up costs of around \$400 per hive (Wenning, 2012). Some organizations stretch revenue by incorporating small amounts of honey and other bee products into products. Creating value-added products requires additional capital investment for packaging, branding labels, and equipment and access to markets.<sup>8</sup> Some organizations sell honey and products above market-rate to support their missions. Others train people to tend their own hives and grow their own bee-related businesses but this may provide limited income. Some organizations create job training programs, with public and private funding, around hives and hive product development.

- The Reinas de Miel program in Minneapolis empowers low-income women through community-building and entrepreneurship-focused beekeeping. The group formed through a partnership between Urban Ventures, a local nonprofit, and the University of Minnesota. Participants attend university beekeeping classes and experienced beekeepers mentor participants. The women are paid for their work while they build skills to make and market value-added honey products (Dupuy, 2015).
- Sweet Beginnings in Chicago provides job skills training to ex-offenders through education and mentorship around their apiary. A ninety-day program teaches soft skills and provides an employment history to help reintegrate participants (NLEN). Most trainees have found employment in manufacturing, hospitality, or distribution, though one graduate started Westside Bee Boyz, a beekeeping business with hive management services, product sales, and a CSA (Dalzell, 2016; Westside Bee Boyz).

<sup>&</sup>lt;sup>8</sup> Gooserock Farm in Montville, NJ, sells honey for \$9.00 per pound. Mission-driven organizations like Sweet Beginnings and the Chicago Honey Co-op sell honey for \$13.00 per 12 oz. and \$16 per pound.

#### Job Training and Business Development

Job training around beekeeping can take two paths: teach participants soft job skills that will make them more marketable in a broad range of fields and demonstrate that they are capable of holding a job, or train participants to start careers as beekeepers. Beekeeping is often a part-time job or a hobby since it is difficult to make a livable income at a small scale. There may be opportunities to sell honey and value-added products at a price point that does allow for a full-time operation; however, most of the positive impacts are likely to come from employment readiness.

Employers want to hire well-rounded and reliable employees. In addition to basic competencies like reading and writing, potential employees need to communicate effectively, problem solve, work in teams, and acclimate to work settings that require punctuality and professionalism (ERIC, 2000). Non-profits can teach these skills through beekeeping because beekeeping is taught through story, experiential learning, and mentorship, making it a more accessible entry-point. Through education and mentorship, trainees gain skills in beekeeping, while they hone their interpersonal and professional skills.

Job training through an apiculture initiative can also prepare participants to keep bees. This job training approach might include an entrepreneurial and business development training module which would cover things like creating a business plan. Elijah's Promise could partner with the Intersect Fund, Middlesex County College, or NJAES to support bee-related business development. Aside from honey and value-added product sales, trainees could learn how to build hives for sale. The training could also complement Promise Culinary School's culinary program and could be turned into a separate training module in the future9

#### Sweet Beginnings

Sweet Beginnings, LLC, was created in 2004 to reach recently released prisoners living in Chicago's North Lawndale community. This organization was formed by the North Lawndale Employment Network (NLEN) which serves residents in the community who are under or unemployed through initiatives to further economic vitality and improve quality of life. NLEN aims to address the economic, social, and environmental challenges through a triple-bottom line approach to community development. Of the 36,074 residents in North Lawndale, 44% have a criminal record, making outreach to this segment of the population critical. The recently incarcerated face barriers to employment and high rates of recidivism without intervention. By addressing social and economic challenges through the production of a successful product, Sweet Beginnings works to achieve its triple bottom line mission. Participants form good work habits, build their employment history, and the social enterprise generates jobs and helps to revitalize the community (NLEN).

<sup>&</sup>lt;sup>9</sup> See the section on Farm to Table below for an expanded discussion of this idea.

Sweet Beginnings largely serves as a stepping stone to employability, only training participants for short-term employment with the organization. One student, Thad Smith, went on to co-found an independent beekeeping operation, Westside Bee Boyz, after completing the Sweet Beginnings training program (Hope). The group operates fifty hives in Chicago's southwestern suburbs and manages more in the city and on downtown rooftops. In addition, they provide consulting services, beekeeping management, bees, equipment, and raw honey for sale at farmers' markets. In the works is a locally crafted beverage that incorporates their raw urban honey. The West Side Boyz also run a CSA where customers can pay \$100 for ten pounds of honey annually (Westside Bee Boyz).

#### **Revenue Generation**

There are several ways a community food organization can sell bee products. Honey requires little additional processing or equipment and is the easiest option in the first few years of honey production. Organizations can later include value-added products which stretches hive yield and maximizes profits. Organizations can sell direct and at farmers' markets, CSAs, co-ops, and through fundraising efforts. Elijah's Promise has existing ties with the New Brunswick Community Farmers Market and could add honey to their current bread sales. They might also partner with a CSA to provide honey as a CSA item or as an addition. One of the farms incubating at Duke Farms sells honey from other producers. Finally, Elijah's Promise could operate a honey CSA (Chicago Honey Co-op).

A cooperative model (co-op) could also provide a medium for distribution and sales. The cooperative model is based on communal ownership and participation, which lends itself to equity, democracy, and personal responsibility to facilitate economic and social goals (Chicago Honey Co-op). Elijah's Promise and community members with hives may join together to share knowledge, enjoy community, produce income, and further the mission of Elijah's Promise. A portion of the honey yielded could be held back for each hive owner with the remainder donated or sold. Alternately, Elijah's Promise could purchase honey from apiarists, which they would process, package, and sell. This strategy provides apiarists a guaranteed buyer and allows Elijah's Promise to use its brand and connections to sell the honey and products. While product quality may be one attraction, community support may be even more important in making sales. Elijah's Promise's Chef's Night would provide a space to showcase their honey. Chefs from the Promise Culinary School could incorporate the products into their recipes for attendees to sample. Jarred honey could also be sold as a fundraiser at above market value prices. Attendees believe in supporting the mission of Elijah's Promise and may be inclined to pay more than usual for a product as a way of donating to the organization.

A year-round revenue generation model may also be possible. For example, small quantities of jarred honey could be sold at OQ Coffee in Highland Park, or honey could be sold for use in food made at the Harvest Cafe on Rutgers' Cook campus. These businesses and their customers value quality local ingredients and may be willing to pay more for these specialty mission-associated products. If Elijah's Promise were to sell 6-ounce jars of honey for \$10 each at OQ Coffee, this would generate about \$720 annually based on an average hive yield of 27 pounds in New Jersey. Though this revenue stream is unlikely to sustain the operation, the extra money could help Elijah's Promise support the beekeeping program.

#### Chicago Honey Co-op

The Chicago Honey Co-op began simply, with just three beekeepers coming together to create a business that would support itself, produce delicious honey, and perform job training. As part of the co-op's mission, job training programs employ two beekeepers full-time, with ten unpaid beekeeping trainees. These employees, co-op members, and trainees, care for the hives, extract and prepare honey and value-added products, and sell them at market (Melathopoulos). The Chicago Honey Co-op runs a CSA that provides an opportunity for more community members to support the organization (Chicago Honey Co-op CSA). With revenue generated from these businesses, the Chicago Honey Co-op is able to fund its job training program.

## The Vision for Beekeeping at Elijah's Promise

Elijah's Promise envisions using beekeeping to provide education, community building, job skills training, entrepreneurship opportunities, and income generation. Further, Elijah's Promise hopes that beekeeping can provide a source of revenue that it can reinvest into its operations. What follows is a blueprint for how Elijah's Promise can accomplish these goals. However, unless Elijah's Promise gets funding from another source, such as for job training or business development, it's unlikely that the income from bee-related efforts alone will be substantial. This vision is divided into three phases: short, medium, and long-term. Each category proposes tactics Elijah's Promise can employ to meet its goals in the respective time frame. The short-term goals are achievable now or in the near future. The medium-term goals will require additional funding and work and may be implemented years down the road. Finally, the long-term goals are only possible if Elijah's Promise significantly increases its scale of beekeeping operations. Elijah's Promise may never choose to pursue these goals or, conversely, may determine a few years from now that they are the logical next step. The vision that follows is just one blueprint that is meant to serve as a general guide. Elijah's Promise can use these ideas as inspiration for its own plan.

#### Short-Term

Short-term, Elijah's Promise can build on its existing bee-related efforts. Elijah's Promise's beekeeping involvement could draw attention to the organization's efforts, generate modest revenue, build community, and incorporate bee-related education within the Promise Culinary job training program that would set the stage for future community economic development endeavors.

#### Public Education and Community Building

Building programming around the hive in Shiloh Community Garden allows Elijah's Promise to meet their objectives of expanding urban agriculture, food production, education, environmental sustainability, and community building. Having a hive in the garden contributes to the production capabilities of the garden. In partnership with the Community Garden Coalition, it creates opportunities to educate Shiloh gardeners and other community gardeners about bees and their role in the food system, and to engage gardeners in hive management. Elijah's Promise can be at the forefront of changing people's perceptions of bees. The experiences people have working with the Shiloh hive may even inspire them to get more involved in beekeeping, perhaps by taking a course and trying it for themselves. Elijah's Promise could also consider formalizing its bee education program. They could charge a small fee to small groups that visit Shiloh to get a first-hand look at, and to learn about, bees.

#### **Culinary Education**

Promise Culinary School and Promise Catering can incorporate the hives and honey into their educational programs and meals. Promise Culinary can use the hives as an outdoor classroom to teach culinary students about bees' role in the food system and how bees produce honey. Back in the indoor classroom, culinary students can learn more about honey and effective ways to cook with it. <sup>10</sup> Promise Catering can include honey in their food products.

#### Selling Honey

The Shiloh Community Garden hive and Elijah's Promise may yield 27 pounds of honey this year. Elijah's Promise plans to package and distribute it to the gardeners who assist with the hive and to sell the remaining honey. Next year Elijah's Promise will have a second honey-producing hive which will mean a larger harvest. Selling honey made at its Shiloh Community Garden hives will give Elijah's Promise an additional source of revenue. Starting with small honey jars might pique interest and demand. Instead of selling its honey at or slightly above market value, Elijah's Promise could sell it at a premium for fundraising at events like Chef's Night, through partner organizations, or at the New Brunswick Community Farmers Market where they currently sell baked products. Gooserock Farms in Montville, NJ, sells 2-ounce honey bears for \$3.00. Since Elijah's Promise provides services for people experiencing food insecurity, people may pay more to support Elijah's Promise.

#### Medium-Term

In the medium-term, Elijah's Promise could engage community members in a beekeeping job training and entrepreneurship program that trains residents to tend their own hives. Elijah's Promise could model its program on Reinas de Miel, which employs and trains

<sup>&</sup>lt;sup>10</sup> The incorporation of apiculture into the Farm to Table program is discussed later.

local low-income women and encourages entrepreneurship with funding obtained through a University of Minnesota grant. If Elijah's Promise opts for this approach, they could develop a year long paid training program that builds on existing community resources.

To provide beekeeping education and mentoring, Elijah's Promise could partner with Rutgers and the Raritan Valley Beekeepers Association. Rutgers' Cooperative Extension teaches public introductory and advanced beekeeping classes. With an active network of staff and volunteers who are excited about training and supporting apiculture, this is a natural connection. The university has supplies, knowledge, and could help apply for funding to launch a two-year part-time apprenticeship program. In the first year, participants could attend beekeeping classes at Rutgers and monthly meetings at the Raritan Valley Beekeepers Association, and they would work alongside a mentor at the training hives.

It is unlikely that participants would have their own hives, so Elijah's Promise would need to provide hives. There may be opportunities for Elijah's Promise to partner with other New Brunswick community gardens, nearby farms, and Rutgers to site educational hives. Beekeeping at this scale could provide a small second-income. With funding, Elijah's Promise could provide education, supplies, and a year of training and support. Such a program could involve two hours of weekly training, education, and mentorship from April to September and one hour per week from October to March (Taylor, Robles, and Mittleman). In the second year and beyond, beekeepers could be paid to tend hives Elijah's Promise owns or maintains and to harvest and sell honey at local farmers' markets. During this phase, participants could also be connected to Rutgers University or Middlesex County College to access business and entrepreneurship classes to expand their skill set into branding and selling honey, hive, and value-added products. Funding may be accessed by applying for grants, by accessing the Intersect Fund, or through partnerships with corporations (Taylor, Robles, and Mittleman).

This phase of the plan requires connecting resources, engaging the community, and providing beekeeping and business education and training, ongoing support and a second source of income to community participants.

#### Long-Term

#### Bee Entrepreneurship

One long-term strategy is to create an expanded bee-focused entrepreneurship training program. An entrepreneurship program will provide participants with skills and knowledge to generate income for themselves and Elijah's Promise. In preparation for starting an entrepreneurship program, Elijah's Promise should build a network of individuals and organizations that will help the program be successful. Partnerships with funding sources are needed to get off the ground and grow to self-sufficiency. Small-business development agencies could provide guidance. Elijah's Promise needs to determine the structure of the program. This is not simply a "learn to beekeep" course. Instead, it will be a multi-faceted program that teaches bee health and environmental issues, beekeeping, honey and value-

added product production, and business and entrepreneurship skills. It is bee-focused community economic development.

#### Education

To be successful in any life pursuit, having in-depth knowledge on a topic is imperative. Beekeeping is no different. For participants of the entrepreneurship program to earn income from beekeeping, they must have a strong foundation of knowledge. Instruction on beekeeping is imperative and is the cornerstone of the curriculum. Learning about beekeeping goes beyond the basics of a hive. Participants must know every detail about caring for a hive so their likelihood of earning income is maximized. Every bee-related organization and business makes health and environmental issues important aspects of their missions. A person devoted to bees and beekeeping must take these issues seriously because they have a large impact on a beekeeper's ability to make money from beekeeping. The legal information provided in the appendix should be taught to participants because they may someday engage in business practices that are regulated by New Jersey laws or codes. A way for Elijah's Promise to assist participants is to teach them how to make their own beekeeping equipment. Having this skill will empower them to save money as they expand their beekeeping operations and to potentially earn money from selling hives.

Because making money is the objective, learning how to produce honey and valueadded products are valuable skills that will separate businesspeople from hobbyists. Efficiently harvesting and extracting honey, and other hive products, will be at the center of a successful beekeeping operation. While honey can be an income-producer, greater profit often results from honey-based value-added products. Elijah's Promise will provide participants a valuable service if they are taught which products can be made from a hive's yield and how to make, package, and sell those products. Participants may know a great deal about beekeeping and how to make products but if they do not have business acumen they will find making money is challenging. Participants could learn about product packaging, marketing, sales, and business planning.

As this program will likely be dissimilar to any other program in existence, Elijah's Promise will have to draw on several sources for inspiration. Looking to organizations that fight for bee preservation will offer curriculum ideas on bee health and environmental issues. Beekeeping courses offered at the local beekeeping associations and at Rutgers are convenient sources of information for the beekeeping curriculum and natural partners. Traditional beekeeping courses, books, and websites can serve as guides for the curriculum on honey and value-added product production. For the business and entrepreneurship component, Elijah's Promise should look to Rutgers, Middlesex County College, and the Intersect Fund as partners.

#### Program Structure

A program must be structured to maximize the likelihood of success. The program must give participants the confidence that they can move forward after the program knowing they

have what it takes to be entrepreneurs. Determining the duration of the program is critical. Most beekeeping courses range from a couple hours to a few sessions. A much more rigorous, long-term course will be necessary to meet the ambitious goal of the proposed program. At the very least, this program will require multiple sessions for each component of the curriculum. Beekeeping alone will require several sessions. It is not unreasonable to expect having a session once a week for 10-12 weeks. An extended apprenticeship program is also imperative to this educational concept. Urban Bee Co. in Seattle, WA offers an intensive, year-long apprenticeship to four participants (Apprenticeships). A caveat is that the Urban Bee apprenticeship is just for beekeeping. It does not include the economic development and job training aspects. While many aspects of that apprenticeship may not be applicable to Elijah's Promise, the existence of a one-year program provides a sense of how much there is to learn.

An apprenticeship aspect to the program considerably lengthens the duration. With just courses, the program could be done in 10-12 weeks. With an apprenticeship, Elijah's Promise will be looking at a program that could be six, nine, or 12 months long. A program of this duration would allow for significant educational and hands-on experiences. Further, it makes the many aspects of beekeeping less daunting and demoralizing in those first months or year. It offers participants the proverbial shoulder on which to lean. As such a program gets longer, the commitment required of Elijah's Promise increases. The organization must determine if it has the capacity to conduct such a long program. Not including an apprenticeship aspect is a possibility but there is concern that just having classes will not properly prepare the participants to make money from beekeeping.

If Elijah's Promise chooses to conduct an apprenticeship program, the amount of contact with the participants takes on increased importance. Elijah's Promise will not likely be able to, nor need to, meet with the participants every week once the sessions end. Once or twice a month would be a reasonable number of interactions. Elijah's Promise would also need to decide how much contact to have with the participants between sessions. It is advised that an instructor be available by telephone or e-mail to provide moral support and guidance.

#### Post-Program

A challenging aspect of this program is what to do when the program ends. Whether the program is six, nine, or 12 months, it is essential that the participants are in a position to succeed moving forward. The biggest obstacle is making it possible for the graduates to have access to beekeeping equipment and ongoing beekeeping and business mentoring. Ideally, they will have learned how to make much of their own equipment. Elijah's Promise could consider gifting or loaning bees and any remaining equipment so they can continue tending a hive. Participants may not have the space for a hive. Ideally, Elijah's Promise or one of its community partners will allow graduates to house their hives at one of the organizations' locations. The American Honeybee Protection Agency in Austin, TX, provides a model of how an organization can get creative with the addition of hives in its community. That organization has a hive at three schools in Austin, ten hives on the rooftop of a hotel in San Antonio, hives at a golf course outside Austin, and has plans for 100 hives at a 400-acre Boy Scouts camp (Our Work). In the New Brunswick area there are many golf courses and numerous hotels that could be sites for hives. Local farms are also potential sites.

Ideally, graduates will have hives that produce honey and may have pollen, propolis, beeswax, and royal jelly. The graduates will then be ready to sell their products. There are a couple of ways to do that. First, they can strike out on their own by selling the products produced from their hive. This is when the training on business and packaging will come in handy. A second option is to have the graduates sell their products to Elijah's Promise. Elijah's Promise will then be in charge of packaging the products and selling them. Elijah's Promise would sell the products at a mark-up at farmers' markets, through a honey CSA, or through a honey co-op. This could be a win-win as the graduates are guaranteed sales and Elijah's Promise is able to make money as well. An alternative income stream is for graduates to work in a bee-industry company. This may not be a likely outcome but, after an extensive beekeeping program, graduates would at least be competitive candidates based on education and experience. There are numerous bee-related companies in New Jersey and the region.

#### Concerns

Beekeeping is difficult work and most frequently done as a hobby. Making money from beekeeping, while not impossible, is no guarantee. Elijah's Promise must be aware of this before it pursues an entrepreneurship program. Even assuming the graduates will have access to a hive and equipment, there is no guarantee they will have bountiful returns. They would be engaging in beekeeping to make extra money but the money they make may be limited compared to the amount of work involved. It is unlikely this strategy will provide graduates much more than a little extra spending money unless the graduates become extremely invested and scale up their operations. For Elijah's Promise, there is no guarantee of a financial benefit. Graduates may decide they do not want to pursue beekeeping further. Or, the graduates may have limited success as beekeepers and not produce much honey to sell to Elijah's Promise.

#### Elijah's Promise as a Beekeeping Organization

The more aggressive option is for Elijah's Promise to have a division that has beekeeping as its primary focus. As in the entrepreneurship model, Elijah's Promise would conduct an intensive beekeeping program. The difference would come at the end of the program. Elijah's Promise would hire one or more of their trainees to work for Elijah's Promise's beekeeping division. The new employees would serve two important roles: educators and beekeepers. One vision is for the participants to go through the lengthy program and then spend another year or more as employees. As the operations build up, some of them could stay on long-term while others would move on to other opportunities, allowing new graduates to take their places.

#### Education

As educators, beekeeping employees would perform three main functions: corporate outreach, school outreach, and community outreach. While each type of outreach would have its specific purpose, the overarching goal of outreach would be to educate about bees, their importance in the environment, and the perils bees face. Corporate outreach would entail meeting with work groups to introduce them to the art of beekeeping and maintaining hives for businesses. Both of these approaches would generate revenue for Elijah's Promise. Additionally, it would build positive relations. These businesses could become donors, provide sponsorships, and could agree to site hives on their rooftops for Elijah's Promise.

School outreach would involve the employees bringing observation hives to schools as a way to educate students about bees and their importance to the ecosystem. Alternatively, students could take field trips to Elijah's Promise bee yards. The employees would be the face of Elijah's Promise and its beekeeping division to hundreds of children. This outreach could also generate revenue for Elijah's Promise if it charges the school PTAs. Visiting affluent schools could subsidize visits to lower-income schools. Regardless of the income level of the school, this would be a valuable service because it would change the stigma about bees, make young people aware of important environmental issues, and promote the work of Elijah's Promise.

Community outreach would entail employees going to community gardens, making presentations to community groups, and teaching beekeeping courses to the public. This is yet another potential source of revenue, especially the beekeeping courses. The perks of community outreach are numerous. The employees would make connections with members of the local community gardens and community groups. These connections could turn into more lucrative relationships that could benefit the beekeeping operations as Elijah's Promise.

One intriguing offshoot of community outreach is private consulting. Sarah Red-Laird of Bee Girl has found success doing work as a private consultant. Best Bees has made an entire business out of bee consulting. There are likely people in every community who are interested in beekeeping or at least the products that result from beekeeping. Many of them do not have the time to engage in beekeeping. Or, perhaps, they have the interest in getting honey but not the desire to tend to a hive. Employees of Elijah's Promise's beekeeping division could fill this market by handling all beekeeping duties for their clients, including harvesting and packaging the products. The clients would pay an hourly fee and, in return, receive products that come straight from their hives. This could become a lucrative component of Elijah's Promise's beekeeping operations.

#### Beekeeping

The program graduates who become employees of Elijah's Promise will also serve as the organization's beekeepers. First, the employees will tend to the Elijah's Promise hives. This model will require numerous hives, so having multiple people who are able to look after the hives will be beneficial. The employees will be responsible for harvesting the honey and, potentially, the propolis, pollen, and royal jelly. The next task for the employees would be for them to package the honey and create value-added products. While honey can provide a revenue, value-added products have the potential to bring in much more money. Sweet Beginnings does well because it uses a small amount of honey in its cosmetic products, markets them as honey-based, and charges a premium.

Once Elijah's Promise has the honey and value-added products ready to sell it will need to determine the method by which the products are sold. The easiest method is to sell at farmers' markets in the region. The beekeeping employees would represent Elijah's Promise at the markets. This would provide them with sales experience. During late spring, summer, and early fall, there are hundreds of farmers' markets at which Elijah's Promise could sell its products. A second method is for Elijah's Promise to operate its own CSA and/or honey co-op. Produce CSAs and the Chicago Honey Co-op provide examples of how this would work. Choosing this method of selling would internalize operations and would lead to stronger profit margins because Elijah's Promise would not need to pay fees as it would to farmers' markets. Employees would gain valuable experience in office management. Running a CSA or co-op will, undoubtedly, require significant effort. Thus, this method may be a later addition once the beekeeping operation is flourishing. Finally, Elijah's Promise may be interested in selling to grocery stores. This can be a game-changer but it also will require considerable work to make it a success. Once again, this is a very long-term goal that becomes realistic once the rest of the beekeeping operations are well-established.

There are benefits and drawbacks to this model. It has the potential to be much more lucrative for the participants and Elijah's Promise. Instead of selling a handful of jars of honey, participants will have actual, meaningful employment with Elijah's Promise. They will receive wages and be required to develop their office, customer service, and problem-solving skills. For those participants who have not had steady employment it would be excellent exposure to the responsibilities that come with having a job. Being employed by Elijah's Promise for a year or so would make the employees very marketable to bee-industry companies and to employers in any other field. Elijah's Promise's operations would be significantly larger in this model so the opportunity for much higher revenue is good. The revenue could lend support to its other operations. The main drawback of this model is the scale of operations it would require. Elijah's Promise would need to be able to handle the hiring of numerous people. It would need the internal structure to coordinate outreach and consulting. Creating a CSA or honey co-op, or selling to grocery stores, would require additional resources and logistics. This model would require Elijah's Promise to go all-in on beekeeping. The organization would have to be willing to become known as a beekeeping organization as much as it is known for its other services. This is not the type of project an organization takes on half-heartedly.

#### Concluding Thoughts About Bees and Community Development

Beekeeping provides many opportunities for community economic development, community building and education, job training and business development, employment creation, and revenue generation. It also presents its share of challenges and obstacles. With Shiloh Community Garden, urban apiculture provides an opportunity for Elijah's Promise to engage the community with potential opportunities for economic development. If Elijah's Promise obtains start-up funding, a model similar to Reinas de Miel may be emulated. This could facilitate partnerships between community members, the university, beekeeping associations, and Elijah's Promise. The result may be a program that trains new beekeepers, or that teaches job skills, while generating revenue for beekeepers or Elijah's Promise. Though job creation centered on beekeeping can be challenging, partnerships can make it possible. Start-up funding may be sourced through grants, donations, or fundraising. Training and mentorship are vital during the first year. A longer term plan expands this training to include business development.

This report provides Elijah's Promise with a thorough overview of how the organization can use beekeeping as a tool to meet its mission of using food to change lives. It provides background information that every organization interested in beekeeping should know. The third section of the report on apiculture draws on the first two sections to create a vision for how beekeeping operations at Elijah's Promise may evolve. These opportunities for job skills training and business development tie into Elijah's Promise's mission and existing infrastructure. Beekeeping enhances its mission as a food-focused non-profit, improving the guality and guantity of locally-grown food through pollination. Apiculture provides opportunities for job-skills training and business development. Elijah's Promise already works with many community and institutional partners who could further apiculture-related programs. Participants can be connected to the New Brunswick Farmers' Market for sales, nearby farmers for pollination services, businesses for hive maintenance, beekeeping associations and the Rutgers Agricultural Extension for continuing beekeeping education and mentorship, and the Rutgers University Business School, Middlesex County College, and the Intersect Fund for business and entrepreneurship education. Potential employment for job skill trainees may be found through Elijah's Promise's network of community supporters.

# Farm to Table



## What is Farm to Table?

The objective of Farm to Table is to remove steps from the time a crop is cultivated to the moment it reaches its consumer. It may be practiced on an individual level (growing crops in a garden and eating them) or on a larger scale (a restaurant with its own farm or that sources food from nearby farms). The following section describes Farm to Table as a community economic development strategy and lays out a three-phase plan to implement Farm to Table principles at Promise Culinary School.

## Farm to Table 101: A Community Development Program

Farm to Table practices hold community economic development potential if they expand access to jobs, foster a better understanding of the food system, increase job training and create new business opportunities. Elijah's Promise can harness this potential by incorporating Farm to Table into its Promise Culinary job training program in three ways.



- Cooking with garden and farm fresh food: Students will be introduced to fresh produce and seasonality (what to grow and when to grow it) and techniques to preserve fresh food through canning, freezing, and fermentation. Students will learn the basics of cooking with fresh produce, what to look for in the taste of farm fresh food, and how to integrate crops into recipes. Teaching students about value-added production and providing business support may be useful in helping students earn income.
- 2) Hands-on gardening: Students will learn basic soil science principles and gardening techniques. Through hands-on instruction in Promise Culinary School's garden, Shiloh Community Garden, and farm externships, students will taste freshly-grown produce, observe the environments in which it grows, and learn how to cook with it. This will enhance students' ability to grow and cook with food.
- 3) Food system education: Instruction in the garden and kitchen will incorporate principles of apiculture and composting to provide students with a greater understanding of every step involved in producing food, from pollination to composting. Chef Pearl Thompson, director of the Promise Culinary School, envisions a strong emphasis on the food system in Elijah's Promise's Farm to Table culinary program: "[It is] important that our students understand their piece in that puzzle."

Students will learn how to grow food, prepare and use it in recipes, and how to handle food waste for composting. This training will equip students with the knowledge to help increase food security in their communities: a first step to what Thompson calls a "food revolution." Elijah's Promise will serve two organizational goals by teaching culinary students these principles. First, it will prepare culinary students for a wider variety of jobs upon graduation (for example, jobs on farms and at Farm to Table restaurants). Second, it will promote increased food security in the surrounding community. Students will be more equipped to grow their own food and to teach others how to as well. Third, by working with other community partners including Rutgers University, the New Jersey Agricultural Experiment Station (NJAES), Middlesex County College, and the Intersect Fund, it could build business support networks to support entrepreneurial community residents. InterFaith Food Shuttle, an organization in Raleigh, NC, uses many of the principles outlined above to serve similar objectives.

## InterFaith Food Shuttle

InterFaith Food Shuttle uses a three-pronged mission to feed, teach, and grow. It does this by reducing food waste, encouraging backyard and community gardening, and growing

businesses through training programs. Interfaith also teaches families how to make healthier food choices on a limited budget. Interfaith runs on the strength of 6,534 volunteers and core staff members and donations (InterFaith Food Shuttle, 2015).

Several feeding programs provide fresh produce to community residents and develop relationships with farmers that allow them to glean food.

- Mobile Markets and Agency Distribution: They collect food donations from the North Carolina State Farmers Market and glean food from farms; within hours they deliver it to people.
- Cooking and Freezing: Through their commercial kitchen and culinary training program, they cook and freeze meals that they distribute to programs, agencies, soup kitchens, and shelters that feed the hungry.
- BackPack Buddies: Children who come from food-insecure households receive a backpack containing six balanced meals and two healthy snacks at the end of every week. Civic groups, local corporations, and volunteers make the program possible.
- Grocery Bags for Seniors: Volunteers supplement the incomes of older residents with door-to-door distribution of fresh produce and groceries (InterFaith Food Shuttle, 2016).

InterFaith Food Shuttle teaches skills for self-sufficient and healthy lifestyles. Their educational programs ensure that participants generate enough income to access fresh, healthy food and to feed themselves and their families. Their culinary job training program caters to unemployed and underemployed adults and prepares them for a career in commercial kitchens. Program graduates complete paid internships where they are given skills to advance their careers in the food industry. The nutrition education programs teach families how to prepare healthy meals on limited budgets. At Tryon Farm, people learn about sustainable agriculture; an incubator farm program mentors young farmers; people learn to grow and market food; and adult novice gardeners learn how to grow their own food to supplement limited budgets in a six-week seed to supper urban gardening program (InterFaith Food Shuttle, 2016).

The incubator farming program is a free three-year course. In exchange for plots, compost, seeds, and equipment, farmers volunteer three hours a week on the teaching farms or at farm stands where the produce is sold. The program gives farmers a comprehensive knowledge of how to grow food to sustain themselves and the community. Farmers learn how to add value to their produce and about hydroponics, horticulture, and beekeeping.

## Farm to Table Job Opportunities

#### Farm to Table Restaurants

Agricola Eatery in Princeton opened in 2013 and the restaurant's owner also owns Great Road Farm, four miles from downtown Princeton where they grow the food for the restaurant. This partnership allows Agricola to serve local and seasonal food. Agricola's owner attended an eight-month culinary program to deepen his understanding of the restaurant business (Politanto, 2013). As of April 2016, Agricola has several openings for Prep and Line Cook positions. The Prep team deals with handling ingredients and following food safety rules as well as basic cooking. The Line Cook position is responsible for assisting the chef, working under strict time limits, and following recipes. Recommended skills for this position include: strong communication, organization, and planning. The applications are available in English and Spanish (Agricola Community Eatery Jobs). Restaurants in New Brunswick that align with Farm to Table principles include Stage Left and Frog and the Peach.

### Food Distribution

Zone 7 is a farm fresh food distributor that distributes fresh food from over 120 farms in New Jersey and Pennsylvania to restaurants, grocery stores, schools, and more. They stress the importance of healthy relationships between farmers, customers, and chefs (Interview with Zone 7). Each month, Zone 7 founder Mikey Azzara creates a highlight video that describes which products are available and from which farm. Azzara shows extensive knowledge of products and how they could be useful to buyers depending on the season. Before he was a founder of Zone 7, Azzara developed his farming background working as outreach director at Northeast Organic Farming Association (NOFA-NJ) for 6 years.

To keep the business moving, Zone 7 has several staff positions, most of which require farming or cooking experience (Zone 7). Some of the positions that would fit the qualifications of someone who completed a culinary program with a Farm to Table emphasis: Restaurant Sales, Farm to Retail/School Sales, Farm to Restaurant/School Sales, Warehouse and Driver. Those responsible for hiring at Zone 7 say: "Generally we look for people who are passionate and energetic about local farm fresh produce and bringing it to local restaurants, schools, grocers, and more. For specific positions, we look for a similar background: food sales, restaurant chef, farming, Farm to Table related position, etc." (Interview with Zone 7). When asked specifically how Farm to Table training is beneficial to the team, they responded, "Since that's a majority of our customer base, having the culinary knowledge and Farm to Table passion is extremely beneficial in educating our customers on our products. Our primary restaurant salesperson has an extensive background as a chef, and it brings a fantastic dynamic to our team." Finally, technical skills they look for in all positions include Excel, Microsoft Word, and Victual Net (food software system for managing freight costs) plus knowledge for crop planning and reporting (Interview with Zone 7).

Aside from working in restaurants and food distribution, students who complete a Farm to Table culinary module can enter jobs that involve growing food.

## **Growing Food**

By learning the basics of how to grow food, students will be able to teach others



community gardening techniques. This may happen via Elijah's Promise demonstrations at Shiloh Community Garden or at New Brunswick Community Garden Coalition events. This has the potential to create a multiplier effect as one demonstration can help multiple people in the surrounding community increase their food security.

#### Hattie's Gardens

Hattie's Gardens started in 2011 in Akron, OH, as a sustainable garden and a work training program for individuals with and without developmental disabilities. The organization is planning to expand into a food hub. The food hub will include a retail market where farmers and food producers sell their food, a commercial kitchen to produce value-added products, and an education center for cooking and nutrition classes for consumers and residents. The training will include chopping and canning pasta sauces, jellies, salsa, and more. Students will be prepared to do "co-packing" and processing for grocery stores and other companies (Hattie Larlham a) to produce grown at the gardens is used in Hattie's Cafes and Gifts. Hattie's Garden and Food Hub are part of a larger non-profit social enterprise organization, Hattie Larlham. The organization also offers community-based composting and provides medical, housing, and recreational assistance to children and adults with developmental disabilities (Larlham b).

## Small Business Development

Elijah's Promise is well-suited to provide food-related entrepreneurship training and development through its commercial kitchen and relationships with Corazón Kitchen, Middlesex County College, and NJAES. In addition to being attractive candidates for employment at Farm to Table restaurants, students will learn skills to work on or with farms and to grow their own businesses. The programs could help students earn a living while increasing community food security. The San Francisco-based food incubator La Cocina, detailed below, may serve as a model for how to implement business development. In the near term, students may grow their own crops and sell them at local farmers' markets (depending on local regulations), and learn how to safely and legally preserve and sell what they do not immediately use. Elijah's Promise can partner with other New Brunswick organizations to train, certify, and support business growth. We turn now to describe their potential partners.

#### Culture and Business Opportunities

New Brunswick and New Jersey are rich in cultural diversity. Between 2010 and 2014 an estimated 38.6% of New Brunswick residents were foreign-born, and more than 50% of persons 5 years and older speak a language other than English at home. Elijah's Promise could incorporate cultural diversity within a Farm to Table entrepreneurship program to capture untapped markets and build community food security. NJAES is currently supporting farmers who are growing food to reach the NJ/NY/PA metropolitan immigrant markets and are natural partners (NJAES, Growing).
New Jersey's diverse makeup creates diversity in food demand as well. Currently this potentially lucrative market is not being fully explored by many farmers. Rutgers faculty and NJAES agents have conducted several research projects related to ethnic crops in Hispanic and Asian communities. New Jersey's climate allows farmers to grow and market many vegetable crops that are familiar to immigrants and to innovative chefs. This opens opportunities for farmers to explore growing different crops that can also contribute to increased food security and profits.

The New York Times published an article in 2015 about a Liberian farmer from West Africa who found success growing ethnic crops in New Jersey. Mr. Gbolo owns Morris Gbolo World Crops Farm; the farm is 13-acres and specializes in growing produce from his homeland to give other immigrants access to food that reminds them of home. Some of these crops that are considered native vegetables in Liberia include: kittley, bitter ball, Jamaican and habanero peppers, okra, and other summer greens. Another benefit of crop diversity is the endless recipes that can come from the vegetables. Immigrant groups prepare them differently and farm staff give new customers who may not be from West Africa inspiration about what to cook. Gbolo is unique in that people from the community are allowed to pick their own vegetables; other farms sell to wholesale or restaurants. Before Mr. Gbolo started his business in 2015 on a piece of land located at B&B Farms in Egg Harbor City, NJ. He started building his customer base while at B&B. Other farms in New Jersey that have specialty crops and "pickyour-own" models include De Wolf Farm in New Egypt and Specca Farms in Springfield Township (specializing in Indian, Italian, and Turkish cuisines) (La Gorce, 2015). Elijah's



Promise could build relationships with these farms around the state to form potential externship opportunities since these farms emphasize farm fresh food, culture, and community. They could work with NJAES to develop a pipeline for farmers, distributors, and food producers.

Like Mr. Gbolo, who started with a small piece of land, Promise Culinary students can grow their business ideas. If students experiment with growing and cooking different crops, with support, they may grow their own businesses. As mentioned earlier, NJAES has shown that diverse crops are viable in New Jersey's climate. Elijah's Promise could use the diverse vegetables students grow in tasting events to raise additional revenue to support Promise Culinary School. More people would be aware of different crops and students could develop a customer base to draw from if they start their own businesses.

#### New Jersey Agricultural Extension Station

Rutgers Cooperative Extension is a unit within the New Jersey Agricultural Experiment Station (NJAES). The goal of Cooperative Extension is to improve the quality of life for New Jersey residents by promoting healthy lifestyles, environmental stewardship, economic development, and food safety and sustainability. Two programs in the Cooperative Extension connect with Elijah's Promise's goals for a Farm to Table program: Food, Nutrition, and Health and Youth, Community, and Economic Development. The Food, Nutrition and Health unit addresses food and health in communities, especially within vulnerable populations through educational awareness on diet and exercise. Youth, Community and Economic Development houses the Rutgers Food Innovation Center that provides business and technical mentoring services and federal and state approved manufacturing facilities. For instance, the center can accommodate hot and dry processing plus cold processing and assembly (NJAES Food Innovation). This past year the Rutgers Food Innovation Center hosted a Food Entrepreneurship Seminar, entitled "Food Business Basics", in Central New Jersey. The seminar is one day and is for those thinking of starting a food business or for those who want to take their current business to the next level. A few topics covered at the workshop include: sales and marketing strategies, food law, food technology, and food safety. There is a \$149 registration fee that may be a hindrance to some Promise Culinary School students, but the information seems valuable enough to offer scholarships or partial coverage.

#### NOFA-NJ

NOFA-NJ is a non-profit started in 1985. "Our focus is to educate, develop and support the production, preparation and distribution of locally grown and sustainable foods in New Jersey" (NOFA-NJ). NOFA-NJ has several farmer trainer programs that could be linked to the Farm to Table program. The Intro to Farm Employment is for those interested in working on a farm and internship opportunities. The Beginner Farmer Program is for anyone who has had a farm or ranch fewer than ten years. Curriculum includes teaching those interested in starting a small farm enterprise how to create an action plan. The next course focuses on creating a business and marketing plan for a small farm business while the last course teaches students how to become a certified organic farmer. Other relevant courses include: Organic Gardening, Animal Husbandry, and Farm to Table workshops (NOFA-NJ).

# Farm to Table Curriculum Topics

Based on agriculture science syllabi and research from other Farm to Table programs, we offer a tentative Farm to Table curriculum for Elijah's Promise. An elective course would follow the culinary training for students who wish to work in this sector of the food industry.

#### Module 1: Plant and Soil Science

Students will visit Shiloh Community Garden and learn about the processes involved in the production of food. They will learn about soil chemistry and its importance to the success of certain crops. Students will be briefed on how soil can be made from composting kitchen waste materials and shown how the results of composting benefits garden crops. Students will learn about the importance of apiary activities in the process of food production and they will visit the hives and discuss pollination.

#### Module 2: Fundamentals of Agriculture and Crop Production



As students learn about the agricultural processes, they will be introduced to farming techniques and the appropriate methods for various crops. They will learn about the most sustainable and cost-effective methods for small-scale farmers. The use of composted soil will be demonstrated and discussed as cost-effective and environmentally conscious. Methods of Farming instruction could include hydroponics, rooftop farming, indoor and vertical farming, and organic farming.

#### Module 3: Processes of adding value

Students taking this course will learn the methods of adding value to fresh food ingredients. To address seasonality, methods of preserving food should be integrated into this module. The process of preserving may include canning, pickling, drying, and fermentation. For a well-rounded curriculum, apiary themes should be incorporated in demonstrations with bee products from the Shiloh Community Garden hives. The use of wax and other hive by-products, as well as honey, can be explored. The waste generated from this module will bring opportunity for a composting demonstration and visits to the composting site to observe the progress of any piles generated during the harvesting activities of the previous module.

#### Module 4: Recipe Development

At this stage, students would have had exposure to different types of fresh food from the gardens and would have tasted these new varieties. This Recipe Development model is meant to prepare the students to enter the job market and have a competitive edge in their understanding of food and ingredients. In this stage students will also learn the special preparation skills needed when dealing with farm fresh produce at Farm to Table restaurants. Using ingredients from the garden and honey products from hives at Shiloh Community Garden, students will undertake sessions of recipe development that will consider healthier options in making recipes, such as using honey rather than sugar and herbs rather than salt.

# The Vision for Farm to Table Culinary Training at Elijah's Promise

The vision for the Farm to Table program is to form an extension of the present culinary program to expand opportunities to specialize in food production using fresh ingredients. It will introduce new and healthy food options into the community and offer avenues of employment that present opportunities to change the financial status of participants. The objectives that this course will cover include: food security, job training and readiness, rehabilitation, community gardening, disposal, production, consumption, healthy food, and incubation. This will happen in several phases, which we separate into short, medium, and long-term plans. The short-term plan consists of changes we believe Elijah's Promise can implement immediately or almost immediately within their current culinary program. Medium-term plans are thought to be at least one to two years away from viability, while long-term plans will require at least three to five years before implementation.

#### Short-Term

In the short-term, Elijah's Promise could further incorporate Farm to Table principles into their existing programs by fully integrating Shiloh Community Garden via short intermittent trips. Shiloh is a short walk from the Culinary Training Program and encourages people to increase their food security and mobility by gardening. The growing season is from April to October and gardeners meet monthly for workshops and workdays. The garden contributes to community development, production, education, food security, and food and health. Following this, developing a curriculum for the Farm to Table program, the short-term goal will be to have students experience planting and tending to plants in the garden and participate in the harvesting of crops at the end of the season.

Culinary students could visit Shiloh during appropriate program modules (Friday on Week 7 of the daytime program, "Vegetarian and Whole Foods" on the Promise Culinary School's curriculum, for example). They would receive lectures on the food system that touch on plants, apiculture, and compost. This could include two hours of training in basic aspects of apiculture and composting. Demonstration can be done at the garden, which will show what the different types of soil look and feel like. Students can also be briefed on the best soil conditions for specific plant species.

Moreover, one of the missions of the curriculum is to introduce new types of food to people and to get them thinking about how it is grown. During the visit to Shiloh, students will be briefed on the growing process of plants and, where possible, they will be able to see



seasonal plants at different stages of the growth process (i.e., seeds in germination process, seedlings, mature plants). Students will also engage in tasting sessions to familiarize them with new flavors and the taste of garden fresh food.

Additionally, students can practice their skills by growing crops in community gardens, in window boxes, and possibly at the Franklin Food Bank. At the current scale of operation, the food scraps from the Promise Kitchen can be sorted and collected for composting, which can then be used at Shiloh if Elijah's Promise addresses the current regulatory barriers. By doing so, Elijah's Promise will accomplish its missions of entrepreneurial incubation, community gardening, disposal, and environmental concerns.

Short trips to Shiloh to learn about different gardening tools, and techniques will add to the basic instruction on gardening, including what beginners need to start (soil, water, fertilizer), a primer on the New Jersey growing season, and different gardening methods (raised bed vs. trellises). Culinary students may be able to lead some of this training, as Anthony Capece mentioned that a few culinary students keep gardens at Shiloh each year. Ideally, students could taste-test garden-fresh vegetables for a visceral demonstration of what fresh produce and herbs taste like.

Back in the kitchen, students could work with farm fresh and seasonal ingredients to learn about different cooking times, produce that can be served with minimal preparation, uses of herbs, and how to preserve fresh food through canning, freezing, and fermentation. Students would learn how different products grow, how to prepare them, and how they can use them in different recipes. Methods of adding value can also be demonstrated in the kitchen toward the end of the program.

#### Food and Health

The discussion about food and health can be expanded in the current curriculum. Instructors can discuss community health issues that are thought to be related to food. And instructors and students can consider possible solutions through food system/justice related initiatives. Students can work on recipes and healthy foods that address different dietary needs. Also, identifying possible partnerships with the Robert Wood Johnson Wellness Center.

#### Eastern Market

Detroit's Eastern Market uses a multi-pronged approach to food provision and education. They operate their own market and "pop-up mobile markets." Their economic development agenda stresses a "complete local food system," similar to Chef Pearl Thompson's vision for Elijah's Promise's role in New Brunswick. They provide demonstrations and nutrition classes, but not a full culinary training program (Eastern Market).

#### Cultural Awareness

Students can produce recipes from their own cultures and share how different cultures use produce and animals. The entire cohort can learn about the different ways to prepare the same food. To take this cultural education a step further, the recipes students contribute can be taught at the next Farm to Table series. Elijah's Promise hosted four evening culinary sessions with tastings using ingredients from New Jersey's summer harvest in 2015. Another Farm to Table event using Farm to Table techniques to create food that is enjoyed by ethnic groups in the community can be a starting point of shared understanding, community, and cultural awareness in the city. Since everyone eats food, sharing food between cultures generates a "we're not so different after all" mindset. Incorporating more Farm to Table



elements into Elijah's Promise's curriculum and getting students more practical experience at farms will expand students' exposure to sustainable agriculture.

Among Elijah's Promise's goals is to help marginalized community members in ways that go beyond emergency food assistance. This ethos is manifested in the organizational slogan, "Food Changes Lives." The short-term Farm to Table program can meet this ideal by leveraging relationships with area farms to provide interested students with practical farming experience, thereby improving their job prospects. One potential way to do this is through a community-supported agriculture program, such as the one run by Giamarese Farm in East Brunswick during the summer and fall months (Giamarese Farms). This practical experience will be in conjunction with enhanced Farm to Table-related instruction in Elijah's Promise's current culinary program.

#### Medium Term

As Elijah's Promise builds capacity, its Farm to Table training can be expanded into a separate module in the future. Students will learn about the process and best practices for growing food, value-added production, and then preparing the food for consumption, all within an environmentally conscious and sustainable framework. Additionally, students will actively participate in farming through externships prior to completing the program (Interview with Pearl Thompson; Anthony Capece).

#### Farm to Table Job Training

Elijah's Promise may phase in an additional Farm to Table module for students who have completed their culinary program. This module will include more rigorous Farm to Table job training, externships in the farming field, and more hands-on farming experience, with the goal of helping students earn a living to support themselves. Additionally, students may sell the crops they grow and use them to create recipes that go toward feeding members of the community. We expect this module to be approximately two months (6-8 weeks) long, and would be designed to place students in the workforce as quickly as possible while still teaching them new skills to make them attractive candidates for a wider variety of jobs.

The medium-term goal is to, as briefly as possible, prepare students to work on farms or in Farm to Table restaurants. One concrete way to do this will be to devote the final two weeks of the medium-term Farm to Table module to externships. For students interested in the Farm to Table extension module, this externship could replace the two weeks devoted to externships near the end of the current Promise curriculum.

The module may take a similar shape to the model employed by the International Culinary Center's (ICC) Farm to Table training program. While the ICC is a much larger organization than Elijah's Promise, certain elements of their program's structure may be instructive. For example, the majority of the ICC's program consists of standard culinary education, with approximately the last third of the program reserved for externships, on-farm experience, and field trips to area farms (ICC). We envision the medium-term setup at Elijah's

Promise as something similar: students complete basic culinary training, then receive a short, but intensive introduction to Farm to Table and sustainable agriculture techniques. Elements of the ICC's program such as on-farm experience and field trips to area farms may be replicable for Elijah's Promise as well, if on a smaller scale. Shiloh may be used for some student growing projects (depending on the time of year the course takes place), while day trips to New-Brunswick-area farms like Giamarese and the Rutgers Student Sustainable Farm will provide valuable knowledge of the day-to-day operations of farming.

In so doing, Promise Culinary will meet organizational objectives such as job readiness and skills development. Students will finish the module with more background knowledge of, and more hands-on experience with, farming and gardening than would be possible by simply integrating Farm to Table elements into the current culinary program. It will necessarily be less exhaustive than a full, 5-6 month Farm to Table culinary program; for example, even if the module touches on principles of soil science and the advantages and disadvantages of various methods of gardening and farming, breadth must be sacrificed for depth, or vice versa. Elijah's Promise can best meet its objectives for its students if these tradeoffs are made to maximize practical experience. Hands-on projects like growing crops at Shiloh or the Rutgers Student Sustainable Farm, making value-added products with excess produce, and making compost with scraps, should take precedence.

#### **Environmental Awareness**

In this medium-term module, environmental awareness can be expanded from two-hour sessions to one full day each for composting and apiculture. Composting education could include bi-weekly work days where students collect and process compost with the potential of earning professional certification. For bee training their short term goal would fit in here; students would get information about bees in urban settings, pests, equipment, harvesting, and health benefits for information and observational purposes. The hands-on bee education would be in the long-term phase of the Farm to Table curriculum. In addition to a more comprehensive compost and bee education to expand environmental awareness, teaching young children about the environment and composting is one way to create sustainable changes for the community and future generations.

#### Social Enterprise

In addition to further Farm to Table job and entrepreneurial training, students could grow their own crops, which may then be used in recipes for Elijah's Promise's catering business, giving students direct social enterprise experience. They may also receive training on using their crops to create value-added products, like First Field does with ketchup (First Field). A trip to First Field for either a half day or full day of instruction, perhaps followed by a student value-added product-making project back at Promise Culinary, may be possible with the longer time frame of the medium-term module. Increasingly farms are creating their own valueadded production systems. They need people who understand where the food comes from and how to transform it into value-added products. These people also need to have a basic understanding of what it takes to run a small business. Complementing the culinary education with small business training could help students in these new food businesses.

### Long-Term

#### Farm to Table Longer Program

Long-term, Elijah's Promise may offer classes and workshops to non-students on sustainable agriculture and urban gardening. This will allow community residents even outside the culinary school to learn techniques that can help them feed themselves. Culinary students will be involved in recipe development throughout the program. Hence, students will become culinary professionals with a knowledge of food and recipe making. Using their knowledge of the community garden spaces and the kitchen incubator, students can change their financial situation by creating food-related businesses that have a mission to provide nutritious meals to the community. Partnerships can be forged with organizations like Corazón Kitchen to create a delivery service akin to Blue Apron, which offers prepared meals for the week for families of two to four. By doing this, jobs are created, food security is elevated, lifestyles are rehabilitated, and financial statuses are transformed.

In the long run, the community garden spaces should be used to encourage community members to plant and tend to their own food stock as was done at the Urban Gardens at the InterFaith Food Shuttle. Demonstrating methods of preserving fruits and vegetables in off seasons will help to ensure that healthy food is consumed year round and the threat of hunger is reduced. By demonstrating these skills of food production and preservation, opportunities for jobs are presented in methods of pickling, canning and other preservation methods. Also, opportunities for working closely with co-ops and other community based supermarkets are made possible through the development of this curriculum.

#### **Cultural Awareness**

The long term goals for expanding cultural awareness relate to the entrepreneurial goals of the Farm to Table program. Students can learn about microenterprise programs to help them create their own food businesses if they choose that route. For instance, the New Jersey Women's Micro-Business Credit Program provides unemployed or underemployed women with no entrepreneurial experience training, mentoring, and loans up to \$5,000 to work toward self-sufficiency (NJ Women's Micro-Business Credit Program Report 2006-2013). The Intersect Fund is a community development financial institution and micro-lender for low-income, minority, and women owned businesses (The Intersect Fund).

#### Social Enterprise

A full Farm to Table training program may include an extensive entrepreneurial development module. Ideally, this will allow students to use commercial kitchen space at

Elijah's Promise and Unity Square. One organization to look to for guidance is San Francisco's La Cocina. La Cocina ("The Kitchen" in Spanish) provides entrepreneurial training for food businesses targeted to "women from communities of color and immigrant communities" (La Cocina a), which suggests they serve a similar population to Elijah's Promise. One difference is that La Cocina stresses business development rather than comprehensive culinary training. La Cocina provides online resources for food entrepreneurship, including tips on starting and developing a small business and information about industry suppliers. This information could be helpful for Elijah's Promise as a resource for culinary students interested in entrepreneurship and as a guide in developing the entrepreneurship side of their Farm to Table culinary program. Additionally, the Intersect Fund may be a valuable partner due to its entrepreneurship development infrastructure.

Hot Bread Kitchen, based in New York City, provides another example of job training, in their case focused on baking. They run workforce development and business incubation programs, and fund two-thirds of their operating budget through selling bread and renting out their kitchen space (Hot Bread Kitchen). Another New York-based organization, the forthcoming Brownsville Community Culinary Center Training Program in Brooklyn, also shares many goals with Elijah's Promise. The center is a product of the Melting Pot Foundation, which Danish food entrepreneur Claus Meyer founded in 2010 to, among other objectives, "drive social change and combat poverty through...food and hospitality" (Giving Back). The proliferation of organizations like these in the New York City area suggests the existence of a potential audience and partners.

East Baltimore is using neighborhood culture to foster food entrepreneurship and develop work-ready candidates. The Baltimore Food Hub will begin construction in Spring 2016 (Dash). The food hub is replacing blighted industrial buildings and will create food enterprises through workforce development and food entrepreneurs. Historic East Baltimore Community Action Coalition (HEBCAC) is in charge of the \$10 million development project while another nonprofit, Humanim, which focuses on workforce development, is responsible for the kitchen, training entrepreneurs (cooks and bakers) on how they can get their food into large institutions like colleges and hospitals, and restaurants. The project anticipates creating 200 culinary jobs in this low-income Baltimore neighborhood. American Communities Trust (ACT) chairman, Bill Struever, hopes the Farm to Table and sustainable agriculture movement will benefit Baltimore's economy as it has in other cities (Dash). In the long term, New Brunswick could benefit from a food hub like East Baltimore. New Brunswick has many potential partners that could make this venture possible, such as Rutgers University. The Baltimore Food Hub campus will include a food business incubator, office space, job training, urban farming, production kitchen, teaching garden, and farm stand/garden center (Cross Street Partners). Similar to Elijah's Promise, the food hub will have a commercial kitchen in its food incubator. The food hub will create "work-ready candidates" by offering food industry training. A Baltimore- based urban agriculture company, Big City Farms, is planning to build a highintensity urban farm on the site to provide greater access to fresh food and opportunities to learn where their food comes from (Cross Street Partners).

## Composting



Compost is both a material and an ecosystem. It comprises a combination of organic materials with different physical properties and chemical compositions to foster the growth of a population of beneficial microorganisms (while concurrently discouraging harmful ones). The act of composting can be described as people harnessing the power of decay. Everything that is now or ever was alive (organic) is subject to the natural process of decomposition. In nature there is no waste; everything organic is a food source for something else. The "something else" that drives decomposition in the compost pile will be artificially bolstered by populations of fungi, bacteria, and invertebrates - the soil food web, managed by people. For a food web, there are two primary food sources, which go by largely coterminous names: browns/carbon/dry materials, and greens/nitrogen/wet materials. Proper composting keeps these elements in balance, where "balance" is informed by the desired finished product, the timeline for operations, and the external conditions. As with any recipe, variation in recipe translates to variation in results. Because compost contains precisely those nutrients that the organic material added to it contained, the qualities and capabilities of a finished compost depends heavily on its "recipe." There are a number of calculators available to help develop compost recipes, the most popular of which is the Klickitat County Compost Calculator: www.klickitatcounty.org/solidwaste/fileshtml/organics/compostcalc.htm

Composting can happen in a "pile", enclosed bin, or even sealed vessel. By far the two most commonly used medium-to-large scale composting methods are covered windrows or in-vessel composting. The small scale is dominated by backyard composters, for whom the open pile or small bin work well to process garden and household waste. Best practices in composting at all scales derive from understanding the desirable organisms: their shared habitat, interrelated metabolisms, preferred temperature range, and oxygen demand. The reward for cultivating these organisms to process organic waste is finished compost, a soil amendment with myriad benefits.

Like farming, composting coaxes nature to produce an excess. Nature does not typically concentrate significant amounts of nutrients and potential energy, so composting means capitalizing on natural decomposition processes, by using knowledge of those processes to create ideal conditions for them. Again, like farming, harnessing the metabolisms and life cycles of organisms to consume waste and produce finished compost can be accomplished in almost innumerable scenarios. The composting method used is defined by limitations (site size, proximity to neighbors, timeline) and goals (waste prevention versus compost creation). There are many ways to classify composting methods, and we will start small.

#### Microscopic Organisms

Aerobic vs. anaerobic: The organisms that do the bulk of the work in decomposition are too small to see. Aerobic organisms thrive in oxygen-rich environments. Anaerobes, in contrast, can survive (and thrive) in oxygen-poor environments. At the scales relevant to Elijah's Promise, the only anaerobic process available is the bokashi method. Bokashi originated in Japan and relies on a mix of specifically bred "effective microorganisms" - a culture of anaerobic yeast and bacteria which essentially "pickle" the organic waste. This method is popular when space at the source of organic production is at a premium (such as small apartments), but it relies on specialized equipment: a sealed bucket, the microorganism mix, and a medium for the mix to grow on. Additionally, the end product of anaerobic decomposition is less "complete" - meaning it will eventually have to break down further in an aerobic environment. The major benefits of this method is the simplicity at the user end (add organics to bucket, minimal smell, organic waste quickly reduces in size in bucket) as well as simplified collection and processing (less weight/volume collected, less often; organics already broken down somewhat, leading to speedier decomposition).

#### Scales of Composting

There are roughly three scales of composting: the home scale, the community scale, and the municipal/industrial scale. All three use the same basic principles as they all rely on the same natural processes: creating a habitat for and feeding organisms that will decompose the organic matter into a stable, usable end product (compost). The most typical home scale composting methods are bokashi, red wiggler worms, and backyard piles. Bokashi and red wiggler worms rely specifically on highly productive organisms ("effective microbes" and e. Foetida, respectively). These can have applications at larger scales but require specialized containers and training/education, compared to more typical methods of composting, like the backyard bin. The backyard bin typically relies on the gradual addition of layers of organic materials (browns and greens) in proper proportions. Depending on site factors, this backyard pile may need to be enclosed to prevent pests, maintain correct moisture levels, optimal pile shape, and/or achieve an acceptable aesthetic.

#### **Composting Timeline**

The time from food scraps to finished compost varies because of quality and ratio of inputs, effectiveness of the compost system, outside temperature, moisture levels, and airflow. The most accurate, accessible way of tracking the progress of working compost is through its temperature. If a pile is built correctly and with a good recipe, it will heat up as the microorganisms populate and consume the organic material in it. Unlike other aspects of community greening like gardening, composting is year-round. As a rough estimate, Elijah's Promise could compare Shiloh to similar sites in the region which would put the time from food scrap to finished compost between three and six months.

## Why Community Composting?

#### Soil Improvement

Soil, broadly speaking, is a collection of solid particles of different sizes and composition, together with the air and water that surrounds and moves between them. These solid particles are both inorganic, coming from a non-living "parent material" (rock) and organic, a result of life processes. Compost's contribution to soil health includes the breakdown of the inorganic material into plant-available nutrients and a bolstering of the organic materials inherent benefits: water retention, soil darkening, habitat for soil biota and capacity and nutrient exchange.

Organic content of soils therefore serves well as a stand-in for soil health and fertility; generally speaking, the greater the amount of organic matter, the healthier and more productive the soil. The organic matter content of agricultural topsoil is usually between 1 and 6 percent, and even small increases can magnify yields appreciably. But why is organic matter so important? Because of its inherent properties, it improves soil physically, chemically, and biologically. Compost comprises living, recently decomposed, and long-decomposed (stable) organic material. Necessarily, this means that it contains those elements needed for life. These nutrients are released to plants only as the microorganisms in the compost digest this decomposing organic matter. The result is a soil-like material that is laden with the byproducts and end products of decomposition: a dark, slightly tacky, water-retaining soil amendment that increases aggregation (or "crumbliness") of soil. When incorporated into the garden, it provides plants better access to the necessities of life: food, water, and air. (Magdoff, Es, 2000: 3-13)

#### Economic Benefits to Growers

The value of compost to food growers was translated perhaps most clearly and thoroughly through the scientific lens of Dr. Elaine Ingham, soil microbiologist and founder of Soil Food Web Inc. (indeed, she coined the term "soil food web"). Her keynote at The Oxford Real Farming Conference, an international conference that brings "mud on the boots" farmers together with leading scientists was called "The Root of Your Profits." In this talk, Dr. Ingham describes how a healthy soil food web, fed by compost, contributes to the value of a food growing operation across five major areas. Compost-amended soil: can suppress disease through competition, inhibition, and consumption; can better retain nutrients through preventing runoff and leaching; can release plant-available nutrients at rates plants require (making for healthier, tastier produce); can decompose toxins; and can build soil structure (making it "crumblier"), allowing for reduced water use thanks to increased water holding capacity of the soil combined with newly possibly root depth. All of these contribute to the profitability and viability of a food growing operation. Dr. Ingham promises in one slide: "Within one growing season, you can get increased yields, decrease your costs and improve nutrition in the food you produce" ("The Root of Your Profits", Ingham).

In 2011, Dr. Ingham was named chief scientist at the Rodale Institute, a pioneer in organic growing since 1947 (they popularized the term in the US). The institute's purpose is to study, "the link between healthy soil, healthy food and healthy people." (Rodale Institute) Rodale has been an advocate of the value of composting since their founding, and "The Rodale Book of Composting" is an authoritative resource for gardeners interested in improving soil organically. They summarize the benefits of compost by emphasizing the linkages between soil health and human health, and concluding "Composting is the single most important task of the organic gardener or farmer because the health of the soil depends on the composting treatment it receives, and success in gardening and farming depends on the health of the soil." (Gershuny and Martin, 1992: 12) Similarly, they begin their chapter on compost and plant health with a single-sentence paragraph: "Plants grown in compost-rich soil will be healthier and more resistant to both insects and plant diseases." (Gershuny and Martin, 1992: 47) The gualities they ascribe to compost-amended soil are readily translated into tangible benefits for the community gardener, and echo the points Dr. Ingham makes: better moisture retention means less (and less frequent) watering, the retention and slow-release of plant available nutrients means a reduced (or eliminated) need for fertilizers, and improved soil texture and structure make for a supportive plant environment absent the stresses that create opportunities for pests and diseases.

For all these reasons, commercial organic gardener Jean-Martin Fortier gave compost primacy in his handbook for small-scale growers, "The Market Gardener." The book was written with for-profit enterprises in mind. As such, every action or resource is scrutinized according to its contribution to the financial bottom line. If it is too costly, it is advised against; if it is indispensable, its costs are justified by outlining benefits. It confirms that compost offers the best return on investment for food growing spaces. It advises those choosing a site to look to organic matter content in the soil as a primary indicator of value. Compost conditions soil to better retain and drain water, contains essential plant nutrients in a form easily taken up by them, and is host to beneficial microorganisms who constitute a support network for plants providing protection from disease and access to existing soil nutrients. The value of higher organic content in soils is realized for the gardener through the improved plant health and productivity these improvements induce. Compost is so logistically and thematically central to the vision of an organic, intensive garden that they advise the compost area be centrally located, so that it may act as a source and destination for the entire garden's material (Fortier, Fleming, Bilodeau, 2014: 53 - 77).

#### Economic Benefits to Governments

Any government tasked with environmental and upkeep or waste management should be aware of composting as a means of controlling costs. In fact, most governments do not consider waste management together with natural resource management. The elegant solution of decomposition, of waste feeding back into the earth, was split into two intractable problems: a dirty waste stream and loss of healthy soils. Restoring functionality at governmental levels will also restore some degree of ecological functionality, essentially tapping ecosystem services to offload the costs of processing organic waste.

The "waste stream" is the outgoing flow of material that leaves our inhabited spaces. People who produce waste, trucks that collect bins, and places where the contents are deposited are all part of the residential waste stream. Right now, organic material makes up a significant section of the American waste stream. And cities are looking to compost as a costeffective means for overcoming complex environmental challenges. In the October 2014 issue of BioCycle, the US's preeminent magazine focused on organic waste management, the compound benefits of compost use are invoked to explain why compost is such an attractive environmental practice. The article notes that in Seattle (and elsewhere), scientific trials have shown that disturbed soils amended with compost had better water infiltration and reduced stormwater runoff as well as better water retention. Applied over a watershed, using compost can save a municipality money on the diversion and processing of stormwater while also saving money on watering amended soils. BioCycle quoted David McDonald, a resource conservation planner at Seattle Public Utilities, as saying, "When you amend soil with compost, essentially instantly, you greatly increase its water-holding capacity, infiltration rate and ability to filter pollutants." Furthermore, "...just as important is that you're setting up an environment where plants can grow well long-term" (BioCycle, Ordinances to Amend Soils Boost Compost Demand).

#### **Community Benefits**

#### **Professional Certification**

According to N.J.A.C. 7:26A - 1.4(a) (14) (xiv), New Jersey requires operators of its permitted composting facilities to "attend a composting course.... approved by the Department." NJ Agricultural Extension Service (NJAES) Office of Continuing Professional Education with the NJ DEP provides instruction to improve facility operation. Right now, the above training is focused on large-scale processors, only three of which operate in Middlesex according to the NJDEP website. If community composting were to be recognized, similar style courses, covering the same topics but geared toward the small-to-medium scale would expand opportunity for job training in the county. Furthermore, Shiloh Garden could serve as a training site, in much the same way Rutgers does on the large scale.

#### Education and Training

Compost education courses are taught by Middlesex County to inform and empower residents to compost on their own. This approach results in composters being less able to reach the critical mass of organic matter needed for an effective compost pile. The NYC Compost Project hosts a train-the-trainer course called the Master Composter Course. This course fosters a network of educated volunteers and, as the Compost Project has expanded following new waste prevention initiatives, has also established a pool of candidates qualified to work in the field of community composting. By embracing a volunteer training program like

the Master Composter Certificate Course, community composters gain a level of professionalism and legitimacy that will help establish community composting operations as neighborhood improvements. Such volunteers will improve operations of the site and open it up as an educational resource for students and residents.

#### Earth Matter, Governors Island, NY

Earth Matter, a non-profit composting organization operating on Governors Island in NYC, offers an example of what is possible and is a resource for technical assistance for Elijah's Promise. They operate a compost learning center, training programs, and a community composting site. At the compost learning center, a number of compost options are exhibited ranging from the humble backyard bin to more advanced, larger-scale technologies some of which Earth Matter pioneered. This makes it an ideal location for the citywide training program: The Master Composter Certificate Course. The "MC" program, recruits and rewards dedicated volunteers so that the 140+ community compost sites around NYC are staffed with knowledgeable, dedicated volunteers who are able to lead volunteer work days, deliver composting workshops, or work independently to develop their composting operation.

#### Common Obstacles and Their Solutions

#### Regulations

Anyone hoping to compost or otherwise accept, haul, and process waste has to work within state regulations. The NJ Department of Environmental Protection is the primary enforcement arm of the government. For Elijah's Promise's purposes, there are three categories of organic waste processors: exempt, RD&D, and Class C Recycling Facilities. As of this writing, there are no officially permitted facilities for processing food waste in New Jersey (http://www.state.nj.us/dep/dshw/rrtp/classcfc.htm). The state law that governs NJ waste regulations is N.J.A.C 7:26A-1.1, and is enforced by the NJ Department of Environmental Protection. Any facility wishing to accept waste from "off-site" requires a permit. The permit process "varies based on size of facility, type of material composted, and composting process used." However, it is clearly scaled to large processors (the only limitation is 5,000 cubic yards of feedstocks, or roughly 1,750 tons per year which is far more than all of NYC's community compost sites, combined) (US Composting Council).

The regulations regarding management of solid waste can be antagonistic toward the goals and methods of community composting. While there is no restriction on the commercial collection and hauling of food waste, processing it anywhere in the state would entail costs in the tens of thousands of dollars in permitting and site engineering. The full process would take several months or more to complete. It is for these reasons that Wayne DeFeo, an independent consultant who teaches the NJ DEP-approved compost site operator training at Rutgers Office of Continuing Education, recommends planning out any new food waste management initiatives, such as community composting programs, at least a year in advance. Mr. DeFeo

further explained that the sort of community composting being done in New York City is not currently possible in New Brunswick, as there are no apparent exemptions that would allow many of their best practices. Unfortunately, the law does not distinguish between a small nonprofit moving a few containers of food scraps from commercial or institutional sources and a large hauler moving truckloads of food waste.

Mr. DeFeo advises that even small-scale practices commonly engaged in by community gardeners nationwide, such as collecting food scraps at home to be processed at the garden, are technically "processing off-site material" and are not allowed under the current law. Of course, bringing back what was generated in the garden and used at the members' homes might well be allowed. The laws were simply not designed with these sorts of operations in mind; the laws are designed around large-scale, traditional waste management (landfilling and recycling of metal, glass, plastic, and paper) and the exemptions are written in to protect large-scale agricultural practices (on-farm processing of manure, for example). There is no special consideration given to the nature of the organization (non-profit, charity), to the amount of organics collected from multiple sources, or for the purpose of the organics (to make soil to improve a garden, to provide science education outside of the classroom, etc.).

In NY, a hauling license is expensive and difficult to obtain, with solid waste management sites being easier to license and operate. This explains the business model of Community Composting, which collects in Newark, NJ and Jersey City, NJ and processes in New Paltz, NY. The business works because it collects from communities on the side of state line that has friendlier rules for food scrap collection and processes on the other side, which is friendlier to medium-scale composters. In NY, it is exceedingly difficult (time and money intensive - several months, tens of thousands of dollars) to get a license to haul waste. On the other hand, it is much easier to start and operate a facility in NY that processes waste. In NJ, it is the opposite - you can collect all the waste you want, no license necessary - but if you try to process it anywhere other than on the site it was generated, you are in violation of the law.

Duke Farms offers a possible path to exemption; they haul and process organic waste from off-site (albeit manure, yard, and leaf waste only). They also operate the largest allotmentbased community garden in the United States, and a "regional outreach training center" for Growing Power. This status makes Duke Farms the NJ location for the prized educational capacity of Growing Power, a food growing organization rooted in urban composting and considered a pioneer in urban agriculture in the US. The trainings offered there once a year could benefit Elijah's Promise staff or serve as an incentive for high-performing volunteers with the Elijah's Promise composting operation.

Elijah's Promise has a relationship with Rutgers, the state extension, that they might capitalize on in reaching out for New Brunswick's support for county approval of composting operations for Elijah's Promise (Wayne cited fines in the tens of thousands). Given their severity, understanding and abiding by regulations should be the #1 priority for Elijah's Promise before expanding any composting program.

#### Pest Management

Just like maintaining a properly functioning compost pile necessitates understanding the biological rhythms and organism needs/wants, rodents, insects and other unwanted organisms can be effectively excluded by better understanding them in order to deny habitat and sustenance for all but the beneficial organisms at work in the compost itself. Strategies vary according to the composting site and methodology. At the small and community scale, the best practices are to physically secure the compost pile or to manage the composting material to discourage pests.

Securing compost bins is a common strategy to keep out pests like rodents. To do so effectively requires a workable understanding of the threat. Rodents have strong jaws, an instinct to burrow, and are incredibly flexible. Additionally, they have an acute sense of smell and can survive on surprisingly small amounts of water and food. A rodent-secure compost bin needs to have no opening smaller than 0.25", and should be protected by metal. "Wood-and-wire" cubic yard-sized bins are common features in community gardens. Both hardware cloth and drywall lathe are used, but drywall lathe can be especially difficult to handle as it is quite sharp.

An additional concern when locating a space for composting is to ensure the perimeter of the workspace is readily walkable. It is common for both backyard and community gardeners alike to choose a site for compost that is unsuitable for anything else: out of the way, in the back, in the corner. This is precisely where rodents are driven by instinct: unwatched, cluttered places with very little foot traffic. To have a truly rodent-secure bin, it must be possible to walk around it, to clean around it, and to inspect for any incursions. Rodents have hairs on their faces that, when brushed, will cause the front legs to begin digging. This is instinctual. If a rodent's keen olfactory senses lead it to a compost bin, it is likely to try to get into the bin from below. This speaks to why the entirety of a compost bin needs to be armored with hardware cloth, but it also indicates a problem. Even if the rodent can never enter the bin, it will still receive shelter (and warmth, if the compost is active) and food (in the way of insects and invertebrates that might also be in the soil, attracted by the compost. Just as the bin needs to be located with some space around its perimeter, in order to be rodent-proof, a bin needs to be up off the ground. Concrete blocks serve this purpose nicely, as they are sturdy, can be used to level the bin, and can be cleaned around easily.

For many gardeners, rodent-free compost is worth the initial investment of time and energy; however, it has its limitations. Necessarily, the most that can be composted on site is what can be fit inside of the bin. Additional bins are needed to process more material, or have material at different stages of decomposition (to have a steady flow of compost). Sites that want to make large and/or varying amounts of compost opt instead to build windrows, which have different pest management techniques. Most of the negatives traditionally associated with compost (smell, mess) can be resolved through greater understanding of the general process and comparing common practices.

#### Aerobic Composting Overview

Aerobic composting relies on oxygen-loving micro- and macro-organisms to swiftly and fully digest organic material. The result is a nutrient-rich organic soil conditioner: compost. The byproducts include gases like carbon dioxide and a liquid solution of water and organic material called leachate.

#### Compost Tumbler

Tumblers are enclosed, elevated containers, typically metal or plastic drums, that have small holes for aeration and a hatch door for adding organics. They rely on aerobic decomposition and their primary advantages are enhanced rodent protection and faster initial decomposition. Much of the bulk of a material is water, and as this evaporates or collects at the bottom of the drum; it stops supporting the organic matter it came from, causing the material to decrease in weight and volume in a short amount of time. This can be accelerated by turning the material over, something that tumblers are designed to do guite easily. There are two practical limits for using tumblers to process organics. First, they have a limited capacity; tumblers can be filled and must be turned until the material is processed sufficiently before adding more material. This makes having more than one tumbler, especially for a community scale compost site, nearly a necessity. Second, their chief advantage (moving scraps readily and easily) is also a weakness as tumblers cannot be sized to take advantage of the higher temperatures used in other kinds of aerobic composting setups (imagine trying to turn a cubic vard of material - impractically heavy). Therefore, the decomposition will be less complete. In addition to practically requiring more than one tumbler, using tumblers in your garden also requires a bin for final decomposition or "curing" phase.

#### **Open-Air Bins**

Because aerobic decomposition relies on a balance of air and water made available to your blend of organics, open-air bins are a popular choice for small to medium scale composters. There are no rules governing materials or construction; the unifying characteristic is that the bins are enclosed to keep out pests and maintain site cleanliness while allowing airflow. Typical open-air bins include plastic garbage pails with small holes drilled into them (enough so that water can drain and moisture does not build up in the plastic) or, most commonly in community compost sites, wood-and-wire bins. The name suggests the common materials, which are easily acquired and can be adapted to each site. This is the bin that I suggest for a site the size Shiloh community garden and for the scope of work Elijah's Promise proposed (i.e. less than 1,000 lbs. of organic waste a week).

The most important part of this bin is the "wire": hardware cloth is maximally preferred. It is sold according to three measurements: the size of the gaps/squares in the cloth, the thickness of the wire, and roll width. This is the ideal material. It can be applied to compost bins so they can be completely enclosed (using a fastener called a "poultry staple". It is made of galvanized steel, so it will not rust and because it is woven or welded it will be very strong. It is also ideal because the wires are thick enough that rodents cannot gnaw through the wire and spaced such that rodents cannot squeeze through, while air, water, and beneficial organisms can pass through freely.

A cubic yard sized bin is the minimum recommended size for an active compost bin (according to PFRP) (Rodale bins are 4'x4'). It is possible (and common) to build such a bin at a low cost by using waste materials as much as possible. While the hardware cloth and chicken staples are best acquired new (because the rodent-proofing depends on their quality), the wooden frame can be made from other materials harvested from the waste stream. Old lumber, and in particular used wooden shipping pallets, are commonly employed to frame compost bins in small to medium-size compost operations. To use pallets in the garden safely, it is important to know how they were manufactured, and especially how they were treated against rot and pests. Because of past outbreaks of invasive virulent species, pallets shipped and used internationally must bear a stamp from the International Plant Protection Center (IPPC). The IPPC code must contain the abbreviation "HT," "KD," and/or "DB," and, importantly, not "MB." These indicate whether the material was heat treated, kiln dried, or debarked. MB stands for methyl bromide, an antifungal/pesticide agent which can leach into soil and when coming into contact with human skin, has been associated with deleterious health effects. Do not use pallets marked "MB."

#### Aerated Static Piles

Aerated piles can be exposed, containerized, or left under tarps (or technical fabrics, like Goretex). Their distinguishing feature is the network of pipes that run through the pile to enhance the convection effect. As this kind of composting relies on aerobic organisms, the greater volume of air moving through the pile helps to break material down faster and more completely than would be possible without the pipes. There are two ways to aerate a pile with pipes: passively or actively. Passively aerated piles are simply pipes without any additional energy inputs. Actively aerated piles can either blow or draw air through a pile. Of course this requires additional energy, but, as can be seen in Red Hook, NY, these blowers can be powered by solar panels, even on a relatively large scale. Piles managed in this way require less labor (as the material does not need to be turned over as much).

#### Compost Case Study Sites

#### Earth Matter, Governors Island, NY

Earth Matter is a non-profit based on Governors Island. Technically a part of Manhattan, the island is open seasonally to the public as a park and year-round to staff. They maintain a compost demonstration site with a multitude of bins demonstrating a variety of composting methods and technologies. By far the most attention and energy is directed toward the building of aerated static piles, or ASPs. At Earth Matter, this is accomplished with a mix of volunteer labor and limited mechanization (a bucket loader and a mixing machine called a Jay-Lor). The volunteer engagement is something Earth Matter does extremely well. Small elements make a difference at this site. Perhaps the most pertinent example is the handpainted signs that display unique names for each windrow, chosen the day they are built, by the crew that built them. Through these simple artworks, volunteers are given more permanent recognition than end-of-day thanks and some signs date back many years. Earth Matter's best practices also include a high degree of expertise. The founders, employees, volunteers, and students who come to learn at the site are engaged by educational signage throughout the site. Furthermore, the compost recipe and composting procedure are carefully tended for optimal composting.

#### Added-Value/Red Hook Community Farm, Brooklyn, NY

The two major takeaways from Added-Value/Red Hook Community Farm in Brooklyn are: prepare well and move efficiently. The site is outfitted with only those tools that have been found to hold up to heavy use. Beyond composting equipment, the site seeks to improve the volunteer experience by offering gloves, boots, shelter from elements, a port-o-potty, heat lamps for winter, etc. The second contribution is efficient movement. David Buckel, site manager, manages his volunteers down to individual actions, resulting in the most efficient, largest "people-powered" compost site in the country.

#### **Community Composting Vision**

#### Short Term Plan

#### Produce Enough Compost for the Garden

A highly functional compost site moves material through it at an appropriate pace, without attracting any nuisances, and engages the community throughout the process. To accept enough organic material to process into the amount of compost needed for garden operation, Elijah's Promise would need to increase the efficiency with which they currently compost organics. This would involve changing the physical organization of space and the timeline of work. Currently at the Shiloh Garden, piles of organic materials passively compost in place, without cover to prevent pest harborage/feeding. To compost more effectively, the layout and practices need to change.

Starting with the access point, and ending with a final place for curing composted material, a path for materials needs to be established. Given the number of worker hours available, scale of organic waste collection, and site conditions, enclosed bins may be the best option. There are many ways to construct a closed bin, but the most popular methods in community gardens are wood-and-wire bins. These types of bins can be constructed nearly for free if a waste product like used pallets are collected. Alternatively, high-end, attractive bins can be built out of long-lasting materials like clear cedar (a rot-resistant wood that has no knots or defects in the boards - hence "clear"). They can be free-standing units or attached (2-

bin, 3-bin, 4-bin, etc.). The purpose of multiple bins is to provide a pathway for movement of material. Organic matter should stay in a bin until it is ready to be turned.

A compost thermometer and a notebook are the most important tools in determining when a pile is ready to be turned. The temperature in a well-built compost pile should spike once in the initial 2 weeks, and begin to decline. It is at this point that compost is ready to turn. In order to best follow "PFRP" (or the process for further reducing pathogens), the temperature should reach 131°F for at least 3 days, 141°F for at least two, or 150°F for at least one full day in order to remove pathogens, weed seeds, and other undesirable organisms. Additionally, the recording of these metrics will be important for developing compost recipes and determining best practices.

#### The Garden as an Exhibit

Elijah's Promise should make Shiloh Garden an exemplar for composting at community gardens. Assuming regulations work out such that sufficient greens can be sourced, the site needs to be kept in pristine condition and attractive and accessible to all. The current compost piles should be containerized. Right now, organic material is assembled without a recipe, without sufficient mixing, and without protection from vectors (pests). This makes for incomplete decomposition (slow process, odors, pests), wasted effort, and a reduced amount of finished product. By building bins for containerized composting, Elijah's Promise will be able to make more compost to amend its soil, divert more waste from landfills, and engage/educate community in the process. A highly functional, attractive site opens more community development opportunities for Elijah's Promise as a destination for school trips or a location for professional and volunteer trainings.

#### Education

Middlesex County Division of Solid Waste Management offers classes in backyard and vermicomposting for residents at the Rutgers Cooperative Extension, and they sell residentialscale composting equipment. These classes and products are geared towards residents and offer an opportunity for collaboration and program enhancement. Additionally, a "Master Composter" program would equip Elijah's Promise with a trained volunteer force which could be tapped for employment should the program scale up.

#### Tracking Success

Use metrics proposed in Five Borough Farm, the advocacy and informational urban gardening resource developed by the Design Trust for Public Space (Cohen, Reynolds, Sanghvi, 2012: 96 - 107). The Design Trust developed the toolkit in collaboration with Farming Concrete to track output to showcase the benefits of community gardening, to improve and share garden practices, and to raise awareness of impact to funders and policymakers (https://farmingconcrete.org/toolkit/). In the follow up text, Five Borough Farm II, the authors outline the benefits of multiple scales existing concurrently (Altman et al: 42 - 55). Community based sites do not process sufficient waste to be a viable waste management practice alone.

To capture the value a compost site has for a community, they should be measured in other ways as well such as the number of classes taught and number of volunteers trained. If they wish to pursue community composting on a neighborhood scale in the near future, it is in Elijah's best interest to seek inclusion in their region's solid waste management plan. (Middlesex County has not been updated since 2012). Advocating with metrics will establish legitimacy; advocating with the metrics from the Five Borough Farm toolkit may lend the additional legitimacy of the Design Trust and Farming Concrete.

#### Medium Term Plan

#### Regulations

Because of the regulatory framework for solid waste management in New Jersey, it is necessary for "advocacy" to be the medium-term plan. There are methods to scale up community composting from a small number of cubic yards suitable to amend garden plots, but, even the most accepted community composting practices, like bringing food scraps from home to be processed at the garden, are technically illegal. There are avenues open to Elijah's Promise to help them process waste or make compost, but they are restricted. The first and best option is to qualify for any number of exemptions under the law. This may allow Elijah's Promise to process waste from their other operations (enabling another degree of "stacking"). It also allows them to process garden and vard waste, including essential community compost materials like wood chips, fall leaves, and grass clippings. This is the method that Duke Farms uses to process farm waste on its site. They operate under exemptions for wood waste from which they make mulch applied on their landscapes, for the receipt of leaves from local towns which they directly apply to their fields (and use in their compost operation), and for the receipt of livestock manure from local farms for use in their composting operation. Additionally, they have to report annually to the NJDEP the total volumes from each extension. Expanding the composting operation to accept food waste from other sources, or process any "significant" amount will require developing a strategy with regulatory agencies to earn a certificate of authority to operate a research, development, and demonstration (RD&D) project. Ag Choice, the only food waste processor in the region, operates as an RD&D project.

The NJ Department of Environmental Protection defines "significant," and they determine eligibility for exemption, permission for research development and demonstration (RD&D) projects, and "Class C" facilities (municipal scale waste management facilities). The other vital regulatory agencies are the New Jersey Public Works Department and the Middlesex County Division of Solid Waste Management which govern waste and its impact on neighborhoods. Perhaps the key to securing support at these governmental levels would be to build on Elijah's Promise's relationship with Rutgers. As the largest college in NJ and the NJ Cooperative Extension (which has supported composting efforts in the past), Rutgers could be a partner in composting education at Shiloh Garden. For example, the school of continuing education offers for-credit courses towards becoming a certified (municipal scale) compost site operator.

#### Long Term Plan

If Elijah's Promise can build an impeccable track record of small-scale operations and if they are able to leverage this track record to win the support of governing agencies, in the long term it's possible to aim for the best of what's been achieved in similar urban settings. Most, but not all community compost sites in our area operate on "improved" surfaces like asphalt or concrete. An improved surface allows for a suite of technologies and practices, pioneered in New York City, that have proven to be effective for community engagement, skills training and education, and (of course) compost creation. All three of the largest composters featured in 2014's NYC Community Composting report composted nearly the same way, BIG! Compost in Astoria, Queens processes nearly 500 tons of material a year, Earth Matter on Governors Island processes nearly 250 tons, and Red Hook Community Farm processes 150 tons annually. All of this is achieved through embracing large-scale technologies applied on small-to-medium scale: windrows, specialized covers, and engineered aeration systems. The next step up from bins is to process so much material, so quickly, that the bins would get in the way. This is best achieved on an improved surface like concrete or asphalt. Elijah's Promise and Shiloh garden will produce waste; it's up to them to decide if it is worthwhile to treat it as a resource for composting.

Though they differ in some important ways (Red Hook has a commitment to using only "people power", whereas BIG! has actively sought mechanization), each of these sites also provides the city with educational opportunities for all ages; volunteer, internship, and job training programs; and a powerful tool for community outreach and engagement. This is the long term vision for Elijah's Promise's community composting program: Slowly build a program which engages, educates, and trains people through community-based volunteerism. If New Jersey, Middlesex County, and New Brunswick support community composting, the Elijah's Promise-trained volunteer base would be well positioned for employment in that field. But even if there are no regulatory changes to support community-scale composting as a business, the other benefits remain. Much like the value of a community garden is not decided solely on "pounds of produce grown", the value of a community compost site comes also from community engagement, education, and volunteer training.

# Conclusion

Elijah's Promise is already engaged in apiculture, farm to table, and composting. The question is how it expands these and to what ends. What are the priorities? Job training? Job creation? Education? Small business development? Elijah's Promise could relatively easily take the first steps in expanding its efforts in relation to Shiloh Garden. The costs are minimal and it could gradually build education, job training, and small business development programs that extend benefits and resources across the organization. To expand any of these programs beyond that suggests a need to do these things exceptionally well and to partner with many of the high capacity organizations that it works with now to better identify potential opportunities for collaboration. Elijah's Promise works with Rutgers, Cooperative Extension, Middlesex County College, Middlesex County and New Brunswick City government and the Intersect Fund in a variety of ways. They could expand these efforts and talk through potential future efforts and how and where institutional objectives overlap. Expanding in any of these areas presents challenges, but they also may present opportunities to unleash the collective potential of cooperative activities.

# Appendix A: New Jersey Beekeeping Laws

## **Hives**

All hives in New Jersey must be contained in "modern, movable, frame hives which permit the thorough examination of every comb in order to detect the presence of bee diseases." N.J.S.A 4:6-10. Any beekeeper in possession of one or more bee colonies is required to, within 8 days of a written request from the State, furnish a statement of the number of colonies and their location. A beekeeper who fails to comply is subject to a \$200 fine. N.J.S.A. 4:6-16. Beekeepers who overwinter their bees must register each year with the New Jersey Department of Agriculture. At the beekeeper's request, the Department of Agriculture will issue documentation that the beekeeper is a legally registered beekeeper in New Jersey. N.J.A.C. 2:24-3.1(a), (d).

## Inspections and Infestations

The State of New Jersey "shall have free entry upon or into any apiaries or premises where bees are kept or hives or combs or other beekeeping equipment and appliances are stored." N.J.S.A. 4:6-18. When feasible, a beekeeper will be notified in advance of an upcoming inspection. N.J.A.C. 2:24-4.1(a). The number of hives inspected for American foulbrood varies based on the number of colonies in the apiary. A beekeeper with one to ten colonies will have each colony inspected. Fifty percent of the colonies will be inspected if there are between 11 and 20 colonies. If the beekeeper has between 21 and 50 colonies, 33% of the colonies will be inspected. N.J.A.C. 2:24-4.1(b)1. If American foulbrood is found in an apiary, each colony will be inspected. N.J.A.C. 2:24-4.1(b)2. The State Apiarist may conduct Varroa mite sampling. N.J.A.C. 2:24-4.1(b)3. A beekeeper must follow strict protocol if American foulbrood is detected. N.J.A.C. 2:24-4.1(d). A beekeeper who knowingly keeps a colony that is infected by a contagious or infectious disease is subject to a \$200 penalty. N.J.S.A. 4:6-12.

# **Selling Products**

Pursuant to Section 8:24-3.2 of the New Jersey Administrative Code, "[f]ood prepared in a private home shall not be used or offered for human consumption in a retail food establishment." However, honey is not explicitly mentioned in Title 8, Chapter 24 of the New Jersey Administrative Code. In fact, the New Jersey Department of Agriculture has published a document entitled "Minimum Food Safety Requirements for Product Sales Farm Markets and Community Farmers' Markets" that indicates a clear distinction between honey and other types of food intended for retail sales. Foods such as baked goods and jams are required to be produced in a licensed and inspected commercial kitchen. Honey, however, simply must be processed and stored in facilities that are kept in good sanitary condition. Product labels for honey, according to this publication, must include the name and address of the seller, the name of the product, an ingredient list, and the product's net weight (Farm Market Guidelines, 2007). It should be noted that if the honey is used in the production of another product, state law and code may require the use of a commercial kitchen.

There are separate requirements to sell products wholesale. Wholesale refers to the selling of a product to any entity other than the ultimate consumer. N.J.A.C. 8:21-9.1. This refers to establishments that sell either food or cosmetics. N.J.S.A. 24:15-1. A wholesale establishment is required to obtain a license and pay an annual fee. N.J.A.C. 8:21-9.5.

# Selling Queen Bees

An apiary must be inspected at least twice each summer if it sells queen bees; failure to comply will result in a \$200 penalty. N.J.S.A. 4:6-5. An apiary intended for the sale of queen bees that is free from disease will receive a certificate from the State. If disease is later found, the certificate will be revoked. N.J.S.A. 4:6-6. Any beekeeper who intends to ship queen bees intended for sale must attach a certificate that provides the date of the most recent inspection and indicates the apiary was free from disease. Failure to comply with this requirement will result in a \$200 penalty. N.J.S.A. 4:6-14. Breeders of queens and sellers of splits, nucs, or divides must also obtain a certificate from the State that discloses the number of Varroa mites found per sample taken from the hives, and must provide a copy of this certificate to each buyer. N.J.A.C. 2:24-4.2.

# Appendix B: Honey and Value-Added Product Sales

Pricing for Honey and Value-Added Products Sold in New Jersey			
Gooserock Farm (Montville, New Jersey	y)		
Honey	2 oz.	\$3.00	
	12 oz.	\$7.00	
	1 lb.	\$9.00	
	2 lb.	\$17.00	
Comb honey	12 oz.	\$12.00	
Black Locust or Bamboo honey	1 lb.	\$11.00	
Flavored honey spread	Unavailable	\$12.00	
Beeswax soap	1 bar	\$5.00	
Lip balm	0.17 oz.	\$3.50	
Hand cream	2 oz.	\$7.00	
Lotion bar	1.7 oz.	\$7.00	
Honey lotion	8 oz.	\$10.00	
Facial mousse	4 oz.	\$12.00	
Pillar candle	5"	\$17.00	
Tapered candle	10" (2)	\$9.50	
Propolis extract	1 oz.	\$15.00	
Raw beeswax	1 lb.	\$9.00	
Source: http://www.gooserockfarmstore.com/productslist.asp			
Pricing for Honey and Products Sold by Mission	n-Driven Organizations		
Sweet Beginnings			
Honey	12 oz.	\$13.00	
	6 oz.	\$8.00	
	3 oz.	Price upon request, special order only	

Lip balm	0.2 oz.	\$4.00
Shower gel	2 oz.	\$4.00
	9 oz.	\$15.00
Body cream	8 oz.	\$22.00
Body lotion	2 oz.	\$4.00
	9 oz.	\$17.00
Body balm	2 oz.	\$12.00
Bath scrub	8 oz.	\$19.00
Source: http://www.beelovebuzz.com/store/		
Chicago Honey Co-op		
Honey	1 lb.	\$16.00
	12 oz.	\$12.00
	6 oz.	\$7.00
	3 oz.	\$4.00
Honey mustard	4 oz.	\$6.00
Body Bar	2.25 oz.	\$12.00
Lip balm	Set of 4	\$13.00
Bath scrub	10 oz.	\$18.00
Tapered candles	10" (2)	\$13.00
Pillar candle	3"	\$24.00
Source: http://www.chicagohoneycoop.com/our-sho	pp/	

# Appendix C: Beekeeping Education

Rutgers Beekeeping Program					
Class	Location	Cost	Hours/ Duration	Topics	
Bee-ginner's Beekeeping, The Basics of Apiculture	Rutgers EcoComplex, 1200 Florence- Columbus Rd, Bordentown	\$215, \$195 for NJBA members	2 ½ days	Bee biology, hive management, purchasing queen bees, honey extraction, beekeeping in urban environments, disease and mite prevention, hands-on hive assembly	
Beyond the Basics: Practical Hive Management Tools for BeekeepersFloriculture Greenhouse, 64 Nichol Ave, New BrunswickFloriculture Greenhouse, 64 TBDSplits and nucs, queen rearing, feeding, moving bees, selling honey and wax, hive medicine					
Source: http://www.cpe.rutgers.edu/programs/beekeeping.html					

Other Beekeeping Education Programs				
Provider	Program	Cost	Duration	Topics
NYC Beekeeping Association Source: http://www.bees.nyc/ classes/	Urban Beekeeping 101	\$200	12 hours	Basic bee biology, construction of a bee hive, safe hive placement, general maintenance, dealing with neighbors and landlords, troubleshooting in the hive, processes and life cycle within the colony, diseases and treatments
NYC Beekeeping Association Source: http://www.bees.nyc/ apprenticeship/	Urban Beekeeping Apprenticeship	\$2,000	February to October; 250 hours of hands-on experience	Langstroth hive, about the honey bee, bee biology, as well as pests and disease awareness, how to manage honey bee colonies in an urban rooftop educational apiary; hands on training on hive building, hive and bee installations, hive Inspections and maintenance, swarm management and capture, disease prevention and treatment, splitting and combining hives, hive relocation, feral bee hive removal, honey harvesting, honey extracting

Urban Apiculture Institute, University of Wisconsin Extension Source: http://milwaukee.uwe x.edu/files/2015/04/U WEX-bee- registration-2015.pdf	Certified Beekeeping	\$115/ person or \$185/ couple	Sundays April- September 1:30-4:30 pm (Monthly)	Honeybee Biology/Ecology and Hive Components/Equipment, constructing an Apiary and How to Install a Package of Honey Bees, Hive Management Techniques & Pest Management, Installing a Package of Honey Bees; hands on experience on Management for Spring Honey Production, Swarm MaEscapes on & Honey -Off, Maximizing Fall Honey Production, Mid-September: Honey Extraction and Processing, Late September: Bottling Honey Class & Homemade Products of the Hive, October/November: Winterization
BeeHive Barn Source: http://www.beehiveb arn.com/shop/index.p hp?route=product/cat egory&path=61	Beekeeping Course	\$155	12 hours	Introduction- 'The Colony' Honey Bee- Life Cycle: Drones, Workers & Queen, Hive Parts: Hive Box Assembly and Tools. Parts and Uses in Hive Medications: Organic and Conventional- Pests- Mites, Diseases. When to treat or not to treat, Handling Bees: Spring/ Summer, Fall/ Winter. Installing Packages/ Nucs/ Swarms Starting a nuc, Making a split, Re-queening, Extracting Honey: How and when to Extract Honey, bottle, labeling and beeswax
	The colony/Honey Bee Biology	\$38	3 hours	Introduction: 'The Colony' Honey Bee- Life Cycle: Queen, Workers, Drones
	Medications and Hive Parts Terminology	\$38	3 hours	Hive Parts: Hive Box Assembly and Tools. Parts and Uses in Hive Medications: Organic and Conventional- Pests- Mites, Diseases. When to treat or not to treat.
	Beekeepers Calendar	\$38	3 hours	Beekeepers Calendar - Handling Bees: Spring/ Summer, Fall/ Winter. Installing Packages/ Nucs/ Swarms Starting a nuc, Making a split, Re-queening
	Extracting Honey and Bottling	\$38	3 hours	Extracting Honey: How and when to Extract Honey, bottle, labeling and beeswax extracting Honey and Bottling Honey- Weather, Honey Flow
Chicago Honey Co-op Source: http://www.chicagoh oneycoop.com/classe s/	Beginning Beekeeping	\$85	5 hours	Honeybee biology and life cycle, pests and diseases, foraging habits and beekeeping equipment and techniques
	Hands-On Beekeeping	\$85	5 hours	Practical experience with tools, lighting a smoker, hive inspection techniques and how to determine the health of a hive
	Candle Making with Beeswax	\$50	3 hours	Learn the ins and outs of making candles, how honeybees make wax, how beekeepers collect it and refine it, what equipment is used and how to properly heat wax and pour beeswax candles

Penn State Source: http://beekeeping101. psu.edu/	Beekeeping 101	\$189	Online	Teaches bee biology, bee behavior, hive management, swarming, equipment, bee products, and more
Ohio State Source: http://www.ohiostate beekeepers.org/beek eeping_class/	Beekeeping Training Program	Free	Online	Assembly, management, queens, bee packages, feeders, supers, winterizing the hive, transferring bees

# Appendix D: Local Beekeeping Network

Contact Information for New Jersey Beekeeping Associations					
Organization	Point of Contact	Information			
New Jersey Beekeepers Association	Janet Katz, President	president@njbeekeepers.org			
Raritan Valley Beekeepers Association	Cynthia Werts, President	cynthiawerts@aol.com			
Central Jersey Beekeeping Association	Gene Armstrong, President	atstreeman@optonline.net			
Source: The New Jersey Beekeepers Association					

Beekeeping Education at Beekeeping Associations in New Jersey					
Organization	Time	Location	Date	Торіс	
New Jersey8:30 amBeekeepers- 4:00Associationpm	8:30 am - 4:00	Varies	4/23/2016	Role of viruses in honey bee colony losses, successful swarm management	
		7/25-26/ 2016	Beginner and intermediate beekeeping, queen rearing, varroa sampling and control		
Raritan Valley 7-9 pm Beekeepers Association	Calvary Bible Church (lower	4/21/2016	Warre Hive		
		Readington Rd, Whitehouse Station	5/19/2016	Hiving new packages, keeping bees in all mediums, the Rose Hive, demo on controlling small hive beetles	
		6/16/2016	Mistakes in Beekeeping		
Central Jersey 6:30 pm Beekeeping Association	Monmouth Co. Agricultural Building, 4000 Kozloski Road, Freehold	5/15/2016	Drone Comb		
		6/5/2016	Swarm Prevention		
			7/17/2016	Honey Extraction	
			9/11/2016	Winter hive preparation	

			11/6/2016	Candle-making	
Source: http://www.njbeekeepers.org/Calendar.htm#Raritan					

# Appendix E: Economic Development and Education Examples

# Reinas de Miel

In Partnership with the University of Minnesota, Urban Ventures, a faith-based nonprofit in Minneapolis, began a beekeepers training program aimed at empowering low-income women in the community. The program, dubbed Reinas de Miel, Spanish for Honey Queens, consisted of five women and one female youth who met every Thursday with a Bee Squad beekeeper and mentor from the University of Minnesota. Urban Ventures hired the women part-time, paying them \$15 per hour to maintain its bees and learn the art of honey-making. An initial \$50,000 grant was provided by the U Bee Squad through the Healthy Food, Healthy Lives Institute at the University of Minnesota to get the program started (Interview with Heck). Urban Ventures has previously been involved in bees and beekeeping with their CityKid Food program, which began teaching youth about bees in 2013 with sponsorship from General Mills (Dupuy, 2015).

For these women, their work as the Reinas de Miel is a second or third income stream, and a source of hope for the future, giving participants the ability to save (Interview with Heck). The program started when the women attended an apiculture class through the University of Minnesota's Bee Squad and continued into the hands-on portion. Through the partnership with Urban Ventures, the women are paid as they continue their apiculture education. The program provides women with the tools and supplies needed to work the beekeeping operation. As of July 2015, Urban Ventures planned to expand the program to more women. Of the Reinas de Miel, only three are bilingual, necessitating translation of the instructor's directions for the other women. After the women work the hives, gather and process the honey, they then plan to then sell it at the Urban Ventures farmers market. They also plan to incorporate their yield into value-added products like salsa (Dupuy, 2015). As part of the program, the Reinas are working with the social enterprise director at Urban Ventures to formulate their plans for value-added sales (Interview with Heck).

## San Francisco Bee-Cause

San Francisco Bee-Cause is sponsored by the San Francisco Parks Alliance to use urban beekeeping to improve lives of both the human and bee population of San Francisco. Their purpose is to increase the health of urban agriculture in San Francisco by boosting the population of pollinators in the area and to provide transitional work for people with who have backgrounds that are obstacles to gaining employment as well as providing summer and after school jobs for youth (San Francisco Bee-Cause). They educate San Francisco's communities about the value of honey bees, how they interact with the urban landscape and contribute to urban agriculture in San Francisco, and how that can increase the health of the honey bee. They run a bee farm, 2-year beekeeping apprenticeship program, and work on the San Francisco Native Bee Database Project to consolidate information on San Francisco's bees into a single online location. The bee farm is an urban farm which was created to demonstrate the importance of pollinators and their role in the food system. The site contains eight apple trees, five plum trees, blueberry bushes, beans, and strawberries which provide food for the bees and people. The hives are managed by participants in the 2-year internship program. The bee farm also hosts monthly volunteer work parties for community members (San Francisco Bee-Cause).

San Francisco Bee-Cause has an intensive 2-year beekeeping apprenticeship program. The program is free, but the apprentices are responsible for purchasing their own protective clothing, hive tool, smoker, and the book Keeping Honey Bees by M. Sanford and R. Bonney. The estimated cost for these materials is approximately \$175 - \$250. Participants are expected to be able to completely commit to the program. Those who have jobs, volunteer, or have commitments which may conflict with the program are discouraged from applying. Apprentices are not allowed to keep their own bees while they are going through the two-year program. Once participants finish the program they are expected to be prepared to manage healthy bee colonies in an urban environment (San Francisco Bee-Cause).

# East New York Farms!

East New York Farms! is a community and food security project in the East New York neighborhood of Brooklyn, New York. Their programs include a farmers' market, urban agriculture, a youth internship program, community supported agriculture, and community education. Their urban agriculture program includes gardener assistance, the UCC Youth Farm, Hands and Heart Garden, and beekeeping (East New York Farms!).

They established their first hive in 2005 with the Just Food City Farms program and support from Heifer International and now have 3 hives. Their hives are an add on to the community gardens and education. The hives provide learning opportunities for people who visit farms and honey interests people. There is some overlap with the Youth Program. While the participants do not help with day to day hive operations, older participants like to help extract, bottle, and sell honey at the farm stand. In 2008 they started helping other gardeners
to set up their own hives and offered small grants. Some members have since become independent beekeepers and borrow East New York Farms!'s extractor (David Vigil).

East New York Farms! is primarily keeping their beekeeping operation to do honey. They offer some community hobbyist lip balm making and other workshops. East New York Farms! has yet to encounter any obstacles other than those that are associated with basic beekeeping. The hives have been pretty well supported by the community and those who visit the farm are excited about them and the honey has been in high demand (David Vigil).

### The Bee Girl Organization

Bee Girl is a non-profit organization founded by Sarah Red-Laird in 2011 based in Ashland, Oregon. Bee Girl's mission is to "inspire and empower communities to conserve bees and their habitat" (About the Bee Girl Organization). Red-Laird, who has been interested in bees since childhood, saw that interest really take off when she attended the University of Montana as an undergraduate. She chose to study bees and Colony Collapse Disorder for her thesis project. While serving as a research assistant after graduation, Red-Laird was allowed to pick out a hive for her personal use. The mentorship she received allowed her to flourish as a beekeeper. When she decided to strike out on her own, the University gave her two hives to get her started (Sarah Red-Laird).

Red-Laird drove her bees from Missoula, Montana, to Ashland, Oregon. Once in Ashland she soon crossed paths with people who were struggling with beekeeping and she found work as a consultant. Within a couple of months, she started teaching at the community center. In February 2011 she founded Bee Girl. Her early days involved mostly trial and error. Bee Girl was not self-sustaining to start; Red-Laird had two part-time jobs in addition to volunteering 20-80 hours per week as Bee Girl. She found being in a small town was difficult. Her fees were low but people would still scoff at them (Sarah Red-Laird). Everything changed in January 2012 when she attended the American Beekeeping Federation annual conference. She made connections and her prior work as a researcher opened many doors. Red-Laird found that having a connection to a university helps tremendously. These connections led to Red-Laird becoming the head of the national Kids and Bees program. By the end of Bee Girl's third year, the organization was self-sustaining (Sarah Red-Laird).

Bee Girl has evolved over the past five years. It started out by providing services more in line with what Best Bees Co. does, mainly consulting and personal beekeeping services. Now she turns away people looking for beekeeping services daily. She only provides beekeeping services to three affluent families; she takes care of their hives and charges \$75 per hour. Red-Laird is paid to tend the hives and process the honey. Her clients receive all of the honey their hives produce. Some beekeeping consultants perform these services for corporate customers but Red-Laird does not (Sarah Red-Laird).

After five years Red-Laird feels that she is directing Bee Girl where she wants it to go. She focuses more on community organizing and long-term bee conservation. She remains Bee Girl's only full-time employee but has usually had an unpaid college intern. Red-Laird attends numerous events each year, with most of them having an education component. She runs the Southern Oregon Beekeeping Academy each summer which is a five-week course that costs \$400. Red-Laird is also a driving force behind the Next Generation Beekeepers Initiative, a movement to get new and young beekeepers more connected to the beekeeping community (Sarah Red-Laird).

She is the director of the Kids and Bees program that provides bee education to school children across the country. The Kids and Bees program educated 3,538 students in 2015. Kids and Bees offers programs at schools and educational organizations to expose children to the art and science of beekeeping. A standard event includes a talk about bees, pollination, and the importance of bees. Red-Laird then engages in a dress-up game that highlights the various jobs in a hive. Next, students break up into smaller groups and move around four stations: honey and pollen tasting, bee finger-puppet making, observing bee hive and beekeeping equipment, and beeswax candle rolling. Bee Girl charges \$200 for one program with up to 40 students. An auditorium-based whole school program costs \$150. Groups of up to 40 students can partake in activity sessions after the whole-school program for \$50 per group. Fees increase depending on the size of the group, travel distance, and the number of days for the event. Generally, program fees range from \$400 to \$1,000. These fees cover staff time before, during, and after the event, and supplies. Parents or school staff members usually volunteer to assist the students at the activity stations. Bee Girl's start-up costs for the materials and supplies necessary to run the Kids and Bees program was approximately \$2,000 (Sarah Red-Laird). After five years, Red-Laird has yet to make a living wage as executive director of Bee Girl. She reports that most of the money Bee Girl receives comes from donations from companies that appreciate the work she is doing. Companies are impressed by her social media presence and the Bee Girl website. She thinks that her organization could reach new heights if she could hire someone to pursue grants (Sarah Red-Laird).

Red-Laird operates 20 hives for Bee Girl. She uses them mostly for educational purposes, virus research, and as a fundraising tool. She is clear that beekeeping is a lot of work and that honey does not provide a large revenue stream. An organization needs the right facilities and many willing volunteers. The high cost of equipment can be an obstacle. Two hives with equipment run between \$600 and \$800. An extractor and maintenance costs add to the total. An electric spinner is between \$600 and \$800. Finding a place for the equipment is another issue. Getting products to market is difficult; Red-Laird does not like to compete with local for-profit honey producers. A very strong team is needed to get honey marketed and into stores. As the low gross profit from sales in 2014 indicates, Bee Girl does not sell much honey despite operating 20 hives (Sarah Red-Laird). Red-Laird has friends in New York who charge \$175 per hour to tend hives for clients. According to Red-Laird, the average yearly yield on the East Coast is 44-48 pounds. This compares unfavorably to an ideal yield of 200 pounds per year. In Los Angeles hives can produce 200 pounds in winter. Red-Laird has found research that indicates 55% of revenues in New Jersey go back into operations and many repairs are needed every year because of climate change (Sarah Red-Laird).

Red-Laird has been told by experts at the University of Minnesota that it will not be economically feasible for Bee Girl to build up its operations. Anyone interested in making money from beekeeping has to be a beekeeper first and everything else second. Beekeeping is heartbreaking work so it needs to be a passion. Your heart has to be in it because if you are looking to make money from it you will be disappointed. Making money from beekeeping is not likely (Sarah Red-Laird). To have a chance at making a living from beekeeping one needs a minimum of 1,200 hives. Sweet Beginnings has found success because it focuses on selling high-end value-added products with a large markup; there is little honey in the products. Beekeeping is not the heart of the operations at Sweet Beginnings. Red-Laird does not recommend trying to make beekeeping work on a small-scale level - so many have failed trying this way. Beekeeping needs to be large-scale if it is going to be anything more than a hobby (Sarah Red-Laird).

Red-Laird has thoughts about Elijah's Promise's foray into beekeeping. She notes that if Elijah's Promise has a strong following it can be successful. Elijah's Promise will need to create a strong brand and find strong partners. She believes beekeeping would be a nice add-on program. She is concerned that Elijah's Promise will have a hard time getting people to the point where they can make a living from beekeeping. She is intrigued by the co-op idea. She floated the idea of providing micro loans but this could become a problem if the participants decide they do not like beekeeping. Red-Laird equated teaching beekeeping to teaching gardening. You do not teach people to be farmers, you teach them to be gardeners. Similarly, you teach people to be hobbyist beekeepers, not commercial beekeepers (Sarah Red-Laird).

## Best Bees Company

Best Bees Company is a beekeeping company based in Boston, MA. Best Bees delivers, installs, and manages beehives for companies and residences in select markets across the country. What began in 2010 as a company looking to raise funds for scientific research on bees has turned into a company that provides beekeeping services to hundreds of clients. Their primary goal is to increase the bee population and improve bee health (About).

Once hired to provide beekeeping services, Best Bees delivers the bees and all of the equipment to the client. Best Bees provides one bottom board, three 10-frame deep boxes, 30 frames, one inner cover, and one outer cover. It also provides weighted support for the top of the hive and blocks to raise the hive off the ground. Best Bees guarantees live, healthy bees. The queen will be replaced if she becomes sick or dies. This guarantee even covers death due to CCD and the many other pest and disease threats bees face (Residential Services). Best Bee's beekeepers visit their clients, on average, once a month, depending on the hive's condition and time of year. The beekeepers handle swarm prevention, disease management, feedings, and changes to equipment. Best Bees provides its clients with updates after each visit about the status of the hive and the colony's strength (Residential Services). Honey harvesting is flexible. If a client chooses to harvest their own frames, the beekeeper will remove

the frames from the hive and leave them for the client to harvest. Alternatively, Best Bees will harvest the honey for an additional bottling fee (Residential Services).

Best Bee's all-inclusive services start at \$995 per hive per calendar year for residential clients who live near Best Bee's operation sites. Commercial clients with high insurance requirements may pay as much as \$2,500 per hive per calendar year. A-la-cart services are offered, starting at \$150 per hour for special events, beekeeping mentoring, and package bees for pickup. Complete hive sets with bees costs \$450. The mentoring service provides clients with on-site one-on-one time with a beekeeper who answers questions and goes over the hive with the client (Residential Services).

## Chicago Honey Co-op

The Chicago Honey Co-op began simply, with three beekeepers coming together to create a business that would support itself, produce honey, and provide job training. Within a year, the co-op was turning a profit. The simplistic model they chose was vital to their early business success. Very quickly the business received a positive public response, with an influx of members; however, some of the members did not continue as active participants (Melathopoulos). The cooperative model is based on communal ownership and participation. Such a structure lends itself to equity, democracy, and personal responsibility to facilitate common economic and social goals within the North Lawndale community where the co-op was established. As part of the co-op's mission, job training programs employ two beekeepers full-time, paying \$10 per hour, with two additional beekeepers hired in summer months to meet increased demand. In addition to the employed beekeepers, the co-op trains an additional ten beekeepers annually.11 This was scaled back from the twenty trained in their first year, finding a smaller group more manageable. These employees, as well as co-op members and trainees, care for the hives, extract and prepare honey and value-added products, and sell them at market. Honey, honey mustard, pollen, bath and body products, and candles are sold at three farmers' markets in the City of Chicago and a nearby suburb throughout the summer (Melathopoulos).

In conjunction with the apiary, the Chicago Honey Co-op has community gardens and holds events to engage the community. They sighted their facilities to encourage openness and interaction with the neighborhood and the co-op's facilities provide community education through site tours (Melathopoulos). Formal beekeeping classes are also available for more serious hobbyists (see Appendix D). The Chicago Honey Co-op runs a CSA that provides an opportunity for more community members to support the organization. Members pay \$75 for a share at the beginning of the year and use the balance to make purchases from mid-July to December at the farmers' market. This system offers flexibility, allowing members to spend as little or as much as they want each week. Members have two market shopping options:

<sup>&</sup>lt;sup>11</sup> This pay rate is below the pay rate Elijah's Promise estimates is a living wage in Central New Jersey.

Saturday Green City Market or the Sunday Logan Square Market. Members also have access to products like mead that are not sold at the farmers' markets or in the Chicago Honey Co-op online store (Chicago Honey Co-op CSA).

#### Sweet Beginnings and Westside Bee Boyz

Sweet Beginnings, LLC was created in 2004 to reach recently released former prisoners living in Chicago's North Lawndale community. This organization was formed by the North Lawndale Employment Network (NLEN), which serves residents in the community who are underemployed or unemployed, with initiatives to further economic vitality and improve quality of life. NLEN addresses economic, social, and environmental challenges using a triple-bottom line approach to community economic development. Of the 36,074 residents in North Lawndale, 44% have a criminal record, making outreach to this group critical. People who have been recently incarcerated face barriers to employment and high rates of recidivism without intervention. By addressing social and economic challenges through the production of a successful product, Sweet Beginnings achieves its triple-bottom line mission. Participants form good work habits and build their employment history while the social enterprise generates jobs and helps to revitalize the community (NLEN).

Established in 1999, the NLEN began as an offshoot of the Steans Family Foundation. Sweet Beginnings, LLC started in 2004 to reach recently released former prisoners through a beekeeping initiative. To support this endeavor, Sweet Beginnings received funding from JPMorgan Chase's workforce initiative, Boeing, and Ben and Jerry's (Dalzell, 2016; Schwartz, 2015). The MacArthur Foundation provided a \$400,000 grant, and the Illinois Department gave \$114,000 toward the effort, along with a \$100,000 line of credit, and \$150,000 from the Kellogg Foundation (Kiernan, 2007; Tolan, 2015; Chicago Urban League). Combining these sources of support allowed Sweet Beginnings to start strong.

With four apiaries and more than 100 hives located throughout Chicago, Sweet Beginnings trains 40 ex-offenders every year in a ninety-day, 30-hour a week program, teaching beekeeping, management, and sales skills (Schuessler, 2015). Participants receive general job training, credit counseling, and other services to help them reintegrate (Tolan, 2015). After participants have completed the program, they may use the job skills they've learned in manufacturing, hospitality, distribution, or other fields. Those who complete the Sweet Beginnings program have a recidivism rate of six percent, far below the national average of fifty-two percent (Dalzell, 2016).

Sweet Beginnings has had success, selling their value-added products online and in Mariano's and Whole Foods. Their Beelove<sup>™</sup> product line includes honey-based lip balm, shower gel, lotion, and more. While honey can only be sold at a markup of about thirteen percent, these products can be sold at a margin of eighty to three-hundred percent (Tolan, 2015). As a result, Sweet Beginnings has been able to make \$300,000 per year from product sales. This has created more than 360 jobs for former inmates (Dotston, 2013). Despite this success, Sweet Beginnings just turned a profit in 2015 of \$9,000 (Gass, 2015).

Sweet Beginnings largely serves as a stepping stone to employability, only training participants for short-term employment with the organization; though one student, Thad Smith, went on to co-found an independent beekeeping operation, Westside Bee Boyz after completing the Sweet Beginnings training program (Hope, 2015). The group operates fifty hives in Chicago's southwestern suburbs and manages more in the city and on downtown rooftops. In addition, they provide consulting services, beekeeping management, bees, equipment, and raw honey for sale at farmers' market. In the works is a locally crafted beverage that incorporates their raw urban honey. The West Side Boyz also run a CSA where customers can pay \$100 for ten pounds of honey annually (Westside Bee Boyz).

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