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## The Black Bear Food Guild: Student-Run Community Supported Agriculture From Roots to Fruition

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THE BLACK BEAR FOOD GUILD:  
STUDENT-RUN COMMUNITY SUPPORTED AGRICULTURE FROM ROOTS TO  
FRUITION

by

Sara L. Lyons

A Thesis Submitted in Partial Fulfillment  
of the Requirements for a Degree with Honors  
(Sustainable Agriculture)

The Honors College

University of Maine

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### **Abstract:**

The University of Maine is a Land Grant Institution developed, among other reasons, to promote education in the agricultural sciences. Sustainable Agriculture emerged as a new discipline, reflecting the sentiment of the times. The concept of Community Supported Agriculture gained popularity in the United States in the late 1970s. In Maine, Community Supported Agriculture farms have increased steadily since their establishment in the United States. The University of Maine Black Bear Food Guild is an entirely student-run Community Supported Agriculture operation that provides several benefits to the university and the surrounding community. These benefits include: student learning, student work opportunities, supplemental field experience for physical science curricula, undergraduate and graduate research, faculty research, and community outreach and service. However, the Black Bear Food Guild needs financial support to expand the program and to ensure sustained success. The Black Bear Food Guild could be vastly improved by: raising awareness of the program within all Colleges at the University of Maine, the establishment of a more reliable volunteer base, and the introduction of a student manager position. Finally, financial assistance is necessary in order to ensure the Black Bear Food Guild's future success.

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## **Section 1. History**

The ethically responsible local food movement is vital to Maine's economy and to achieving healthier communities. Community Supported Agriculture (CSA) is an example of the passionate community interest and involvement in the local food movement. The University of Maine's Black Bear Food Guild (BBFG) is the only entirely student-run Community Supported Agriculture in the United States (Goldshein, 2016). The BBFG is a fundamental and essential asset to the University of Maine and Greater Orono Community for multifarious reasons. However, changes need to be made in order to ensure the program's sustainability and continued success into the future.

The University of Maine (UM) was founded as a Land-Grant Institution with agriculture as one of the main attributes of the college curriculum. The Hatch Act encouraged research in the agricultural sector by Land-Grant Institutions as a means to expand the practical application of the agricultural sciences. Interest in sustainable agriculture gained momentum and resulted in the eventual formation of the sustainable agriculture degree program. Passionate students fought for a program that provided a hands-on learning opportunity in sustainable agriculture. This led to the genesis of the BBFG—an entirely student-run Community Supported Agriculture (CSA) program. This trend was paralleled by the growing momentum of the local food movement in the United States and particularly, Maine. CSAs are an essential asset to ensuring cohesion between campus life, the local community, and the ecosystem as a whole.

When colleges and universities became established in the United States, the degree programs did not include the agricultural sciences. However, “by the middle of the 19th century, the general and scientific press were making widespread demands for more agricultural and tech-

nical education. Agricultural societies in many states also were insisting that colleges be available where students could study agriculture” (APLU, 2012). Interest in creating a degree program for the general public—those working within agricultural and technical careers—gained popularity. Vermont Representative Justin Smith Morrill recognized the importance of agriculture and technical studies in a university setting and thus proposed the first land-grant bill in Congress in 1857 (APLU, 2012). Finally, after making various amendments to the bill, the Morrill Act was passed and signed by President Lincoln on July 2, 1862 (APLU, 2012). This act was a representation of the passion of the general public in the United States to allow access to a degree program tailored toward agricultural and industrial workers. “The Morrill Act was intended to provide a broad segment of the population with a practical education that had direct relevance to their daily lives” (APLU, 2012). The University of Maine, originally established as the Maine College of Agriculture and the Mechanic Arts, is a Land-grant institution that was established in 1862 under the provisions of the Morrill Act (UMO, 2015). “A key component of the land-grant system is the agricultural experiment station program created by the Hatch Act of 1887” (APLU, 2012).

The Hatch Act was established to recognize the pivotal role of research as a basis for developing agriculture (APLU, 2012). The Hatch Act supported agriculture in multifarious ways. For example, this act was meant to ensure “efficient production, marketing, distribution, and utilization” of agricultural products and cited these products as being “essential to the health and welfare of our peoples” (APLU, 2012). Further, this act ensures the promotion of “a sound and prosperous agriculture and rural life as indispensable to the maintenance of maximum employment and national prosperity and security” (APLU, 2012). Additionally, this act proclaimed the importance of agriculture as being of equal importance to industry in order to maintain balance

between “agriculture and other segments of our economy” (APLU, 2012). Here it becomes clear that the Hatch Act was introduced to expand the development and support of agriculture as one of the foundations of society. The mission of agricultural experiment stations within Land-grant institutions, as proposed by this act, was to conduct “original and other researches, investigations, and experiments bearing directly on and contributing to the establishment and maintenance of a permanent and effective agricultural industry of the United States, including researches basic to the problems of agriculture in its broadest aspects, and such investigations as have for their purpose the development and improvement of the rural home and rural life and the maximum contribution by agriculture to the welfare of the consumer (APLU, 2012).

At the University of Maine, our experiment station surpasses these goals set forward by the Hatch Act. The Maine Agricultural and Forest Experiment Station is the College of Natural Sciences, Forestry, and Agriculture’s center for applied and basic research in agriculture and food sciences, forestry and wood products, fisheries and aquaculture, wildlife, outdoor recreation, and rural economic development (UMO MAFES, 2016). Recalling the language used in the Hatch Act, the experiment station’s programs “strive to enhance the profitability and sustainability of Maine’s natural resource-based industries, protect Maine’s environment, and improve the health of its citizens” (UMO MAFES, 2016). In order to accomplish these sustainability and health goals The Maine Agricultural and Forest Experiment Station has various research facilities. The primary offices and research areas are located in Orono. The additional research facilities include: Aroostook Farm in Presque Isle, Highmoor Farm in Monmouth, Blueberry Hill Farm in Jonesboro, J. F. Witter Teaching and Research Center in Old Town, the Lyle E. Littlefield Ornamentals Trial Garden and the Roger Clapp Greenhouses in Orono, and the Dwight B. Demeritt Forest in Old Town and Orono (UMO MAFES, 2016). Utilizing the off-campus facili-

ties is part of the research in the field. “The off-campus facilities of the Experiment Station provide an essential platform for applied field research that is integrated with research at campus laboratories” (UMO MAFES, 2016). The combination of in vitro and in vivo investigations and scientific study are a perfect complement to make the research accessible, practical, and relevant to real life applications. The scientists and research assistants “use cutting-edge tools to address new challenges for Maine’s natural resource-based industries and develop the new knowledge that fuels innovation” (UMO MAFES, 2016). Although natural resource conservation is an important focus, particularly in regard to our local economy and ecosystem health, the research stations are not limited to these research programs. “Other research programs strive to protect Maine’s environment, promote public health, and assist rural communities. Discoveries are translated into new production methods, new pest management and disease treatments, new value-added products, new programs to improve the nutrition of Maine citizens, and new information for community leaders” (UMO MAFES, 2016).

One research center that has made significant advances in accomplishing these aforementioned goals is the The J. F. Witter Teaching and Research Center, which includes two research farms near the UMaine campus. The Witter Farm is a center for livestock research and animal science teaching whereas Rogers Farm, part of the Witter Center, is a center for sustainable agriculture research (UMO MAFES, 2016). Sustainable use of natural resources, preservation of local ecosystems, and promoting health and wellness are especially apparent when applied to the Sustainable Agriculture degree program, agricultural research, and the University of Maine BBFG, located on Roger’s Farm.

The University of Maine began offering a B.S. degree in Sustainable Agriculture in 1988 (Liebman, 1997). A key feature of the curriculum is a set of core courses covering principles



and practices of sustainable agriculture; cropping systems; crop physiology and ecology; soil chemistry and plant nutrition; soil organic matter and fertility; weed ecology and management; insect pest ecology and management; sustainable development and public policy; environmental ethics; and directed field experience, among others (Liebman, 1997). As mentioned, “additional faculty research work with soils, crops, and pests and associated graduate training projects take place at the university’s Rogers Farm, near the Orono campus” (Liebman, 1997). Moreover, the Roger’s Farm is utilized for “a significant amount of public outreach and undergraduate training” (Liebman, 1997). Roger’s Farm is part of the experiment station and provides an opportunity to diverse groups and programs for research, outreach, and other education purposes. Roger’s Farm encompasses several acres of: experimental fields; fields used for the Maine Harvest For Hunger program established by Dr. John Jemison; a site for the Penobscot County Master Gardener certification and demonstration program, run by Cooperative Extension; a small heirloom variety apple orchard; numerous field days, run by extension and experiment station staff; and finally, just under three acres of land for the BBFG’s Maine Organic Farmer’s and Gardener’s Association certified organic diversified vegetable production.

The BBFG is located at 914 Bennoch Road in Old Town, ME. As mentioned, the BBFG site is part of the experiment station at the University of Maine. The genesis of the BBFG can be traced back to 1994. “The Food Guild is a community supported agricultural endeavor, initiated and developed by students in response to their desire for more hands on learning” (UPSE, 2016). The BBFG provides a unique opportunity for students, primarily those majoring in the physical sciences, to manage and operate their own CSA program.

Community interest is the foundation of a CSA. The BBFG offers the CSA program in order to increase the accessibility of fresh, seasonal produce to members of the local community

(UMCE, 2014). The BBFG was established to promote nutrition in the community and build connections within the local food system. WVII (Channel 7) spoke with John Jemison, a soil and water quality specialist with the University of Maine Cooperative Extension, and two members of the Black Bear Food Guild for a report about Maine's high commitment to local foods.

"Jemison said people want to know what's in their food and how it's grown, and he has seen a lot of that interest in Maine" (UMCE, 2014). The vivacious community interest in supporting local agriculture is palpable among shareholders. BBFG shareholders are University of Maine professors, Masters students, PhD students, undergraduate students, and members of the Orono, Old Town, and Bangor community. The mission of the BBFG is to increase accessibility to fresh, seasonal produce for all members of the community. The BBFG offers full, half and quarter shares of the crops produced. The quarter share was suggested as an option and was established in 2014 as a convenient share option for one person (UDMC, 2014). This change was made to increase undergraduate student interest and financial accessibility. In 1996, the "student-run community supported agricultural enterprise [...] provided 42 households with organically grown fruits, vegetables, and cut flowers, and 'sustainably grown' (minimal chemical) cereal products and beans" (Liebman, 1997). In 2015, the Black Bear Food Guild CSA provided fresh produce, herbs, and cut flowers to 80 half-share equivalents—or to about 120 community members. Half share equivalents are calculated by figuring the amount of full, half, and quarter shares and adding those shares together to see the amount of full shares this number equals then dividing that number by two. Last year, full shares sold for \$500 and were recommended for households of four people; half shares sold for \$325 and were recommended for households of two people; and quarter shares, ideal for one person, were sold for \$175 (UDMC, 2015).

Every year a new farm management team—usually two or three students—is selected by the Food Guild advisor to run the BBFG CSA. The advisor plays a critical role as the new student farmers usually have not had prior experience running their own CSA. The advisor acts as the facilitator by providing relevant information to students in weekly meetings before the season starts in order to prepare the new CSA farmers for their managerial roles. Thus, it is critical to maintain accurate, user-friendly records for the new farmers to reference throughout the duration of their BBFG Experience. The BBFG season starts in the late Fall for the student farmers. This is an important development time where the field layout is decided. The field layout includes: what crops will be grown in what fields, how much compost or soil amendments are needed, nitrogen fertilizer calculations, and amount of seed needed. Seeds and supplies (including the supplies for starting seeds) should be ordered in the winter, before January if possible. Seeds should be started as early as February in the Roger Clapp Greenhouse. This is to ensure a bountiful first pick-up for the BBFG Shareholders. Shareholders pick-up their produce once a week on either Tuesday or Thursday from 4:00-6:00 PM. This two-day opportunity is for the convenience of the shareholder. The BBFG pick-ups usually run from mid-June through mid-October (UDMC, 2015). The approximate three acres of land is divided into four fields with two small hoophouses. In order to maintain a sustainable agriculture program, two thirds of the acreage is devoted to vegetable production while one third is under cover crop. Utilizing crop rotations with cover crops has several benefits, one of the most important being the preservation of overall soil health. All of the planning and preparation to establish a working agroecosystem is to encourage a healthy crop. Crop health translates to health within our shareholder community; this is the essential cycle for a thriving CSA.

Community outreach can be thought of in terms of involvement and impact. The involvement of the community in the local food system then has a significant impact on the development and promotion of the local food system. In another way, when a local farm fosters a healthy relationship with the surrounding community—the community is brought together and impacted in a positive way as well. BBFG provides volunteering opportunities throughout the spring, summer, and fall. Moreover, BBFG shareholders are a diverse group, depicting BBFGs outreach in various sectors of the local community. As community is the foundation of a CSA, BBFG farmers are cognizant of our shareholders opinions and make their satisfaction our paramount goal. Finally, BBFG reaches farther corners of the Bangor-Orono community by donating excess produce to hungry community members at various food pantries. The BBFG CSA was established to promote a sustainable, organic agroecosystem while simultaneously serving healthy produce to a healthy community. Through BBFG's effect on the community, I believe we have been successful in our mission to leave a lasting, positive impact on our surrounding community.

There is always more work to do on any farm than the farmer and farm team are capable of accomplishing and therein lies the importance of volunteering. What is most beneficial about volunteering is that volunteers can learn what goes into growing food while having the opportunity to learn diverse aspects of their local environment. Community service opportunities are open to UMO students from all disciplines, local high school students, UMO faculty, and community members. Roger's Farm is responsible for the safety training of all volunteers to ensure their welfare.

Welfare and appreciation of community service volunteers and community members is necessary in fortifying a strong connection between BBFG and the surrounding community.

Shareholders are a facet of the community that is necessary for the livelihood and continuation of BBFG. Shareholders are students, professors, and residents of various professions in Orono, Veazie, Old Town, and Bangor. As important contributors to the farm, BBFG farmers respect shareholders and persistently seek to improve their connection. Shareholders appreciate our sincere service efforts and are sure to make their satisfaction clear. As can be seen by the survey results from the Improvements section, BBFG is a noteworthy contributor to the local food system and surrounding community.

Finally, last summer, in order to give back to the community, the BBFG farmers donated all left-over produce to various food pantries. In 2015, we donated fresh, organic produce to: Manna Ministries food pantry and soup kitchen, Bangor Area Homeless Shelter, Harvest for Hunger through Cooperative Extension, Hope House Health and Living Center, and the Ecumenical Food Cupboard. Although BBFG farmers strive to give nearly 100% of the harvest to CSA shareholders, many shareholders only took what they would use and this would leave a surplus of produce. This produce—which could not be stored for next pickup—could then be donated to various food pantries and homeless shelters to help prepare healthy meals for those who do not have food security. The bridge that the BBFG builds between the community and the campus is a special occurrence that deserves recognition and celebration.

A CSA can be considered as two simple connections between a community and a local farmer: “A community of people supports a farm, and the farm supports that community” (Smith-Heavenrich, 2009). Support is the cohesion in this symbiotic relationship. In the 1960’s in Japan is where the CSA concept was established (Smith-Heavenrich, 2009). This occurred, “When a group of women banded together to purchase fresh milk [...] The customer-satisfaction based system was called ‘teikei,’ a word that means ‘cooperation’ or ‘joint business’ (Smith-

Heavenrich, 2009). This new food distribution system involved coordinated cooperation and encouraged an ongoing dialogue, “Farmers and consumers had to talk with each other, had to figure out how to share the labor and capital to develop and support their new delivery system” (Smith-Heavenrich, 2009). The CSA system was established mainly due to the fact that members of the community saw the degradative impact the conventional food system had on the environment coupled with “concerns and lack of trust in food offered through the conventional food system” (Smith-Heavenrich, 2009).

These concerns were paralleled within the US. “In the United States the idea of community supported agriculture has been gaining momentum, growing from a handful of farms in the mid-80s to over 1500 farms in 2005” (Smith-Heavenrich, 2009). Although the CSAs may slightly differ in their specific structures, the concept of a community and local farmer symbiotic relationship remains the same. The setup in the US can be conceptualized thusly, “a community of individuals pledges support to a farmer by purchasing ‘shares’ of that year’s harvest. In return, customers receive a weekly shopping bag full of what is in season” (Smith-Heavenrich, 2009). This is a symbiotic relationship because both parties benefit immensely. For example, “Growers benefit because shares paid in advance of the growing season help cover seed and production costs. They also share the risk of a poor harvest due to weather or pest problems” (Smith-Heavenrich, 2009). Similarly, the shareholders receive freshly harvested produce, know the systems inputs including whether chemical were used, and know the system in which the produce was grown.

In Maine, there have been continued efforts to establish more CSAs. In 2006, MOFGA was awarded a Northeast Sustainable Agriculture Research and Education (SARE) grant for a project entitled: “Building Connections: Creating a Broader Public Base for CSAs” (Pillsbury,

2008). This research project had a tangible the goal: “at the end of the three-year project, an additional 20 Maine farms would begin offering CSA shares, and the overall number of shares offered to Maine families would increase by 1250” (Pillsbury, 2008). This project went above and beyond their goals, “the number of farms offering shares in Maine has grown from an estimated 60 in 2005 to 115 (and counting) as of July 2008” [...] The number of households participating in these CSA programs exceeds 4000, up from an estimated 2000 in 2005 (Pillsbury, 2008). Since 2006 and continuing into the future, “MOFGA has been working to increase the visibility and awareness of the CSA model, both to farmers and consumers, through regular events, articles and other outreach efforts” (Pillsbury, 2008). The paradigm shift that the local food movement initiated is encouraging whole communities to re-think the established industrial food and grocery supermarket model of the past; “Indeed, as more and more Maine families recognize the value of eating food produced close to home, as well as the value of supporting locally owned and operated farms and food businesses, the popularity of direct producer-to-consumer relationships is expected to grow” (Pillsbury, 2008).

Furthermore, the local food movement gained momentum in 2009, with the release of noted books on food including: “Bill McKibben’s *Deep Economy*, Michael Pollan’s *Omnivore’s Dilemma*, Barbara Kingsolver’s *Animal, Vegetable, Miracle*” (Henderson, 2009). In these books, joining a CSA is depicted as being “the ultimate in connecting with a local source of food” (Henderson, 2009). These highly acclaimed writers are helping to promote the local CSA movement. In the US, “The number of CSAs listed by Local Harvest ([www.localharvest.org](http://www.localharvest.org)) has risen from 1294 in mid-2007 to 2300 in December 2008” (Henderson, 2009). In terms of the current CSA trends in Maine, “Five percent of Maine farms participate in a community supported agriculture arrangement, placing us third nationally, and we have three counties in the top twenty

nationwide for the number of farms practicing a CSA arrangement” (Keough, 2014). Consequently, CSAs across the US, especially in Maine, are becoming more successful as their shareholder base continues to expand. “Families are eating out less and turning to local farms for the ingredients essential to their newly recognized recipes for survival and health” (Henderson, 2009).

As community members recognize the interconnectedness of the health of our soils, the health of our produce, and human health—local foods through CSAs are the clear solution to several obesity-linked health disorders rampant in the US such as hypertension, heart disease, and type II diabetes. Because of this growing interest in the local food movement, “We are experiencing what we could call a seller’s market. This is not the moment to be cautious. This is a strategic opening for us to think through and begin to realize our maximum program for the transformation that the CSA model offers” (Henderson, 2009). Farmers are encouraged to start CSA programs and become more involved in promoting health, nutrition, and ecological literacy within local communities. Indeed, “Recent research by the Rodale Institute demonstrates that our small farms can make big contributions to reducing global warming by sequestering carbon. [...] The path to follow, the report declares, is developing local, small-scale, sustainable food systems” (Henderson, 2009). Accordingly, local farmers should seize this impetus for supporting local food system and enlist conscientious citizens to work to make CSAs the environmentally friendly, organic and sustainable food systems that these community members imagine when they buy from a local farmer (Henderson, 2009). “Added together, we come out with local food systems that bring us the quality of life we all want for our families, friends and neighbors – a rich and biodiverse environment with food that is clean, organic and fair” (Henderson, 2009).



In Fall of 2011, Maine had more than 150 farms and 6,200 shares, through CSA programs (Omand, 2011). With the growth each year of customers committing to farmers and farmers giving their best harvest; the community is transforming relationships with food and farms (Omand, 2011).

Although use of CSA marketing is rising among Maine farms, many farmers utilize an approach that combines marketing methods. For example, “Tom Roberts of Snakeroot Farm in Pittsfield Maine, markets his produce and perennials three ways: from the farm, at five area farmers markets, and through Community Supported Agriculture partnerships (Mack, 2009). As mentioned, CSAs are so attractive to farmers due to the influx of funds when farm inputs need to be purchased and equally attractive to customers who pay once and benefit through the procurement of fresh, local produce throughout the duration of the growing season. “Maine farmers are finding CSAs to be a win-win situation: Early in the spring, consumers purchase shares in a farm’s harvest-to-be, providing much-needed cash when the farmer’s pocketbook is leanest. In exchange, consumers get fresh produce, meats, milk and many other products throughout the season” (Mack, 2009). Customers are supporting local farmers who would otherwise have to go to the bank for a loan in order to successfully start their production, late Winter and early Spring is the most difficult time for farmers. “This is the tightest time of the year for our cash flow [...] Instead of going to the bank for a loan to get us through until harvest, we go to our customers” (Mack, 2009). In this way, customers can feel positively about their impact on ensuring the continuation of farms in their communities. Judy Blaisdell is the agriculture promotion coordinator of the Maine Department of Agriculture, she feels CSAs are beneficial programs for various reasons: “they allow purchasers to become a part of the farm experience. Farmers can run their farms more efficiently and consumers can have a partnership with their local farm” (Mack,

2009). The many benefits of a CSA are explained by Polly Shyka of Village Farm in Freedom, Maine:

“Consumers who support local farms may be seeking flavor, freshness or higher nutritional content, but they can also tout thrift as well as social and environmental activism as justifications for their commitment,” she said. “Eating locally means eating seasonally, and for many members of CSAs it means tasting a real difference because produce is usually harvested within 24 hours of picking it up” (Mack, 2009)

There is an agreement among shareholders that local produce is healthier produce. A shareholder from Willow Pond Farm explains, “there is nothing better than fresh fruits and vegetables [...] Knowing where they come from, having a small part in helping them grow and then getting to eat them is delightful. Eating something that was just picked a few hours ago not only tastes so much better than store-bought food, it is so much better for you” (Dillingham, 2013). Jill Agnew is the owner of Willow Pond Farm in Sabattus, Maine. Agnew believes in the health of her local produce as well, “It is most rewarding — feeding local people with fresh, healthy food that not only tastes good, but is good for them [...] I now have shareholders that are the children of long-time shareholders. Many are like family (Dillingham, 2013). Agnew understand the importance of healthy eating and maintains a caring connection among her shareholders. Chelsea Wagner, a volunteer at Willow Pond Farm and a biology graduate from UMO explains why being part of a CSA is important, “I have a degree in biology and had an interest in agriculture, so this was an excellent way to get exposure in the field [...] I think this is something I want to pursue” (Dillingham, 2013). Wagner’s interest in CSAs was reflected throughout Maine, “with more than 180 CSAs in Maine, many run by young farmers, Wagner fits the profile of a new generation that is becoming more interested in growing and eating locally grown food” (Dillingham, 2013).

When considering the trends of CSA growth within the US, Maine’s CSA growth becomes an anomaly. “The number of farms across the United States with CSA programs remained

essentially flat between 2007 and 2012, but in Maine it was a very different story. Here, that number increased more than 150 percent, from 159 to 406, according to U.S. Department of Agriculture census data released last month” (Koeing, 2014). Furthermore, in the US in 2014, the number of CSAs increased less than 1 percent (Koeing, 2014). Interestingly, “New England as a whole saw its CSA numbers increase by more than 110 percent” (Koeing, 2014). Additionally, according the the United States Department of Agriculture 2012 Agriculture Census, “In 2000, there were about 7,000 farmers in Maine and farm acres in production were declining [...] In 2012, the survey counted 8,176 farms and 1.45 million acres of land in farms. Ten years prior, it counted 1.36 million acres of land in farms” (Curtis, 2014). Agricultural experts feel this increase in CSA development in Maine is due to “an overall increase in the availability of and demand for local food” (Koeing, 2014). As can be clearly seen, the local food movement in Maine is a fervent force.

## **Section 2: Significance**

The Black Bear Food Guild is an essential asset to the University of Maine. Within a college environment, sustainable agriculture programs and CSAs help to increase awareness of the importance of supporting local food systems and promoting sustainability within our local environment. The BBFG is a fundamental resource to the Land Grant Institution and the Maine Agricultural and Forest Experiment Station by providing sites for research in agriculture. Furthermore, extensive research has been conducted at the BBFG with potential for research projects every season by professors and graduate students. Additionally, as the University of Maine strives to become more environmentally friendly, the BBFG provides an opportunity for the uni-

versity to achieve Sustainability Tracking, Assessment & Rating System™ (STARS) status and to increase the overall sustainability status of the college. Finally, student education and opportunities for growth are greatly enhanced by having the BBFG as a learning resource. Taken together, it becomes apparent that the BBFG is indispensable to the university as a whole.

The BBFG has significance to the University of Maine for myriad reasons. Firstly, the BBFG is part of the experiment station, an important aspect of the Land-grant Institution infrastructure. “A key component of the land-grant system is the agricultural experiment station program created by the Hatch Act of 1887. The Hatch Act authorized direct payment of federal grant funds to each state to establish an agricultural experiment station in connection with the land-grant institution there” (APLU, 2012). The Hatch Act of 1887 was established to promote student and professor research. As of 2016, the University of Maine is one of the top 100 research institutions in the nation (UMO, 2016). Roger’s Farm and the BBFG site provide ample opportunities for agricultural research relevant to the Maine agroecosystem, which helps Maine farmers improve their production and help make it sustainable for future generations.

Moreover, the UMO Cooperative Extension has used this site for various research applications. For over 100 years, Cooperative Extension has “been putting university research to work in homes, businesses, farms, and communities—in every corner of Maine. Our educational efforts focus on the Maine Food System, Positive Youth Development, and Community and Economic Development” (UMO EX, 2016). The Cooperative Extension System is part of a nationwide program established by the land-grant universities in the US. The Cooperative Extension conducts experiments in the field—utilizing Roger’s Farm and BBFG land, gathers the data, and distributes the information to the public. Thus, the entire state of Maine—particularly the local

community—can benefit from this synergistic relation between the experimental stations and UMO Cooperative Extension.

One major focus of the Cooperative Extension is the Maine Food System. In order to support the local food movement and food-based economy, Cooperative Extension distributes information that “covers every aspect of the Maine Food System, where policy, research, production, processing, commerce, nutrition, and food security and safety are integral and interrelated” (UMO EX, 2016). Of particular interest is the agricultural research conducted and then utilized by the extension office. “University of Maine Cooperative Extension provides practical, how-to solutions based on university research” (UMO EX, 2016). This information is readily accessible and can be obtained via various means including, attendance at workshops, using extension publications published online, reading information in the newspaper, or hearing relevant research on the radio (UMO EX, 2016). The Roger’s Farm and the BBFG experimental sites are particularly useful as classes, demonstration sites, and whole plots can be utilized for various research and learning opportunities for community members and farmers interested in Maine agriculture. The extension focuses on farm management and recognizes the inherent complexities resented in running a farm. Cooperative Extension “agriculture experts help keep Maine farms financially, environmentally, and socially sustainable by developing: new crops, forage crop management strategies, pasture and grazing systems, soil health practices, irrigation and crop storage technologies, integrated pest management training, nutrient and waste management solutions, value-added products, and precision agriculture” (UMO EX, 2016). However, the Cooperative Extension offers research in other relevant areas including a focus on food and its relationship to health. Shareholders at the BBFG as well as other community members benefit from having access to the Cooperative Extension programs Food and Health information. The Food and Health pro-

gram includes: “Eat Well Nutrition Education Program, Food Preservation, Food Safety, Maine FoodCorps, Maine Garden to Lunchroom, Maine Harvest for Hunger, Maine Hunger Dialogue, Nutrition, and Resources for Small Food Businesses in Maine” (UMO EX, 2016). Thus, a symbiotic relationship is born between community members within the BBFG community and Cooperative Extension. In fact, last year there was a Master’s Gardeners Field Day where canning, food safety, and food preservation were important topics and shareholders appreciated having access to this information for storing their surplus of produce.

This past summer, on July 16th, 2016, the UMaine Sustainable Agriculture Field Day and Twilight Meeting “Sustainable Agriculture Research at Rogers Farm” took place. During this event community members learned about various research projects surrounding sustainable agriculture. As mentioned, Roger’s Farm is the sustainable agriculture research facility of the College of Natural Sciences, Forestry, and Agriculture. “As a mixed-usage research site, crops grown on the farm include silage corn, sweet corn, potatoes, dried beans, small grains and mixed vegetables” (UMO RF, 2016). Using a diverse array of crops aids in allowing for various types of research to be conducted within a similar agroecosystem. Indeed, “the farm, purchased in 1947, is used for a wide range of sustainable agriculture research, UMaine Extension and teaching projects year-round” (UMO RF, 2016).

Roger’s Farm is used by various students, faculty, community researchers, and Cooperative Extension specialists as their primary agricultural experiment station. Many of the projects presented were from research conducted at Roger’s Farm. Topics discussed included: “improving cultivation efficacy, customizing small grain varieties for your farm, producing and certifying small grain seed, managing weeds with soil solarization organic weed management strategies for onions, no-till corn, nitrogen management for winter grains, field pea varieties and interseed-

ing with oats, and malt barley varieties for new craft brewing markets” (UMO AG, 2016). Ellen Mallory, a sustainable agriculture extension specialist and associate professor in Plant, Soils, and Environmental Science, “has led a large research and outreach program focused on grains for local food, beverage and feed markets” (UMO RF, 2016). This research was conducted at the Roger’s Farm on the experimental fields. “Her current projects include evaluation of barley varieties for craft brewing markets and Danish wheat and rye varieties for bread flour, optimizing nitrogen management for fall-planted grains and forage or feed production with field peas” (UMO RF, 2016). This research is important for Maine farmers as it provides information for growing a viable grain cash crop with the added benefit of a soil-building crop rotation compatible with Maine’s climate. Additionally, research on potatoes was conducted on Roger’s Farm. John Jemison, UMaine Extension specialist, “recently completed a multiyear project evaluating double crop forage systems and winter canola. Jemison’s project is in collaboration with Greg Porter, professor of agronomy and director of UMaine’s potato breeding program, to provide a central Maine location for evaluating potato varieties” (UMO RF, 2016). Potatoes are of huge economic importance in Maine’s agricultural sector, thus conducting research on potatoes within a sustainable crop rotation system will help support the local growers while maintaining healthy soils.

The BBFG site and farmers were involved in research related to weed management. The research conducted by Sonja Birthisel, UMaine Graduate Student; Bryan Brown, UMaine Graduate Student; and Dr. Eric Gallandt, UMaine Professor of Weed Ecology was facilitated by BBFG. At Roger’s Farm Eric Gallandt leads several research projects mainly focusing on “dynamics and management of annual weeds in organic farming systems” (UMO RF, 2016).

Maine farmers are constantly seeking information about efficient weed management practices, as weeding takes valuable time and results in economic losses. “In a new series of field experiments, motivated by questions from Maine farmers, Gallandt and Ph.D. student Sonja Birthisel are studying soil solarization as a weed management practice” (UMO RF, 2016). Solarization is a weed management strategy that uses clear plastic to harness solar energy to heat soil and thus sterilize the weed seed bank and kill plant pests/pathogens. This is a popular strategy in arid climates because ambient temperatures combined the solar intensity are often able to reach temperatures that kill crop pests (UMO RF, 2016). “In temperate environments such as Maine, soil solarization is not widely used, but early results indicate it can dramatically reduce weed pressure, creating a ‘stale seedbed’ that is relatively free of weeds before seeding vegetable crops. Birthisel and Gallandt were surprised by the early field results” (UMO RF, 2016). The experiments were conducted on experimental plots at Roger’s Farm including BBFG agricultural production fields. Solarization may be an important weed management strategy—even in Maine, “after retrieving temperature data loggers from the soil, they found soil temperatures at a 4-inch depth were as high as 115 F, conditions lethal to many weed seeds” (UMO RF, 2016). The BBFG farmers felt that this experiment would be preferred by farmers as it is inexpensive to employ and is an efficient way to ensure a stale seed bed without having to till the soil and disrupt soil structure.

The other research that involved BBFG farmers was the organic weed management experiment for onion crops. Ph.D. student, Bryan Brown conducted a “project aimed at quantifying multiple dimensions of the performance of four common and fundamentally different weed management strategies to help growers choose a strategy that best fits their production goals” (UMO RF, 2016). In exchange for labor hours on the research plots, Brown gave his organic onions to



the guild. The different types of weed management employed by Maine farmers could include, “intensive, repeated cultivation during the ‘critical weed-free period’ of the crop; comprehensive seed-focused management with a goal of zero seed rain; weed prevention through plastic mulch; or weed prevention through organic mulch”, according to the researchers (UMO RF, 2016). The researchers looked at both “short- and long-term effects, [...] at how each system affects soil quality, [and at] the weed seedbank and profitability over time” (UMO RF, 2016). It has been concluded that the “longer-term zero seed rain and mulch-based strategies were also the most profitable” (UMO RF, 2016). This research is helpful to Maine farmers because it takes into account what is most economically feasible based on the type production system on the farm. This personalized approach is easier for various farmers to benefit from economically. “The researchers seek to understand factors that motivate farmers to adopt these contrasting weed management strategies and to help growers determine the optimum weed control strategy based on resources and management goals” (UMO RF, 2016). BBFG farmers were able to participate in this study through our weeding in the zero seed rain bed. Although the work was tedious, it was worth the effort. As organic growers, the BBFG can benefit from this study and apply it to their weed management plan for the following season.

Although research is an important aspect of the experimental station, sustainability is another topic of interest within the local community and at UMO. This year, UMO is working toward attaining the Sustainability Tracking, Assessment & Rating System, or STARS, status established by the Association for the Advancement of Sustainability in Higher Education (AASHE). AASHE established the STARS system due to the recent growing interest that communities and institutions have shown toward sustainability in higher education institutions. “Recently, higher education institutions have also recognized the important role they can play in

moving all of us to a more sustainable future, one that will provide prosperity today while ensuring that future generations have resources to meet their needs” (AASHE, 2016). The STARS system is a “comprehensive tool [...] Constructed over several years and with the help of many students, staff, faculty, and administrators drawn from a wide range of institutions, [...] [that] enables colleges and universities to gauge their progress toward sustainability” (AASHE, 2016). STARS is a voluntary program that helps campuses recognize where they are and how they can improve their specific level of sustainability.

It is difficult to assess sustainability without having a firm understanding of what sustainability means to the organization that developed the STARS system. According to AASHE, “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. [...] The interconnectedness and interdependence of the social, environmental, and economic components of sustainability are included” (AASHE, 2016). The STARS system awards points for four facets of higher education: academics, engagement, operations, and planning/administration (AASHE, 2016). Points are allotted within these institutional sectors according to a panel of STARS Steering Committee members and AASHE staff (AASHE, 2016). The following considerations are used in their decision making: “To what extent does achievement of the credit: ensure that people (students, employees and/or local community members) acquire the knowledge, skills, and dispositions to meet sustainability challenges; [...] contribute to positive environmental, economic and social impacts; [...] contribute to human and ecological health and mitigate negative environmental impacts? (AASHE, 2016). In particular, BBFG satisfies the sustainability requirements within the realms of engagement via student life and operations via sustainable dining.

Credits for campus and community engagement are given to recognize institutions that “have co-curricular programs and initiatives that contribute to students learning about sustainability outside of the formal classroom. These programs and initiatives engage students by integrating sustainability into their lives, experiential learning experiences, and campus culture” (AASHE, 2016). To achieve this the institution must have “co-curricular sustainability programs and initiatives” (AASHE, 2016). The criteria to achieve the corresponding STARS points fall into three categories: (1) Active student groups focused on sustainability; (2) Gardens, farms, community supported agriculture (CSA) [...] where students are able to gain experience in organic agriculture and sustainable food systems; (3) Student-run enterprises that include sustainability as part of their mission statements or stated purposes (AASHE, 2016). According to the STARS criteria, BBFG is a program that satisfies every aspect. BBFG provides an opportunity for a group of students (and various student groups through volunteering opportunities) to gain field experience working with organic, sustainable agriculture that cannot be obtained in a traditional classroom setting; BBFG is a CSA program; and finally, BBFG is an entirely student-run program that specifically focuses on best management practices to ensure a sustainable farming system is maintained.

Similarly, BBFG helps UMO achieve STARS status through the sustainable dining aspect of campus operations. Sustainable dining is described as “supporting sustainable food systems and minimizing the impacts of their dining service operations” (AASHE, 2016). Furthermore, dining services can be operated sustainably through their “procurement policies and decisions, by preventing food waste and diverting food materials from the waste stream, by making low impact dining options available, and by educating its customers about more sustainable options and practices” (AASHE, 2016). This year, BBFG sold and donated produce including on-

ions, acorn squash, and delicata squash to UMO dining services, and in return the dining facilities featured a Maine Harvest Week where they displayed a picture of Mariah Fujimagari and me (two of the three BBFG farmers) with our harvest baskets teeming with fresh produce on the dining menus distributed throughout dining locations. The criteria for sustainability in dining operations consists of two major points, “The institution or its primary dining services contractor sources food from a campus garden or farm; [or] hosts sustainability-themed meals (e.g. local harvest dinners)” (AASHE, 2016). Therefore, the BBFG helps the dining operations meet the criteria set forth by AASHE.

The Office of Sustainability at UMO is constantly looking for opportunities to lessen the institution’s environmental impact and promote ecological literacy. Daniel Dixon, a Research Assistant Professor at the Climate Change Institute and the University Sustainability Coordinator at UMO provided a personal statement regarding the BBFG and sustainability. As sustainability director, Dixon “provides strategic direction and leadership to promote a culture of sustainability [...] He works closely with all levels of University leadership to advance the University of Maine’s ongoing commitment to sustainability and engages campus leaders to foster sustainability broadly across the institution” (UMO D, 2016). Thus, Dixon is an important resource when gauging the sustainability achieved through the existence of BBFG. According to Dixon, “I would say that the BBFG increases UMaine's sustainability breadth by its very existence. [...] I frequently mention the BBFG when self-reporting UMaine's sustainability efforts” (Dixon, 2016). In sum, the BBFG contributes positively to the social awareness of sustainable practices within both UMO and the surrounding community while simultaneously promoting and ensuring environmentalism and sustainability efforts.

The past president of Unity College, Mitchell Thomashow, was a crusader for the sustainable and local food movement. According to Thomashow, “for a cold place with a relatively short growing season, northern New England has a surprisingly robust network of local agriculture and organic farms” (Thomashow, 2014). The local food movement in Maine is noticeably gaining, particularly in rural Maine, “and its relative availability is a great asset for the college and the community” (Thomashow, 2014). An important question for an institution seeking higher levels of sustainability to address is, “How could we make community food production and education a key feature of our sustainability efforts? How could we minimize our reliance on industrial farming? How could we build a deeper awareness of food into all aspects of campus life?” (Thomashow, 2014). These questions can be addressed by fostering a community that wholeheartedly supports sustainable agriculture. “This could support interesting transformations in campus infrastructure (landscape design), curriculum (a new major in sustainable agriculture), and community partnerships (working with local growers and regional food banks), as well as college philanthropy (many interested regional donors)”. Supporting sustainable agriculture has various benefits to a college and surrounding community. Further sustainable agriculture could become the inspiration for sustainability initiatives (Thomashow, 2014).

Indeed, “campuses throughout North America are taking the concept of sustainable food seriously. Hundreds of institutions are growing more food on campus, working with their food services to ensure the provision of healthier and more local food, and emphasizing the curricular possibilities of integrating sustainability initiatives with an understanding of food systems” (Thomashow, 2014). Supporting a sustainable and local food system would increase the sustainability with a college system because food would travel less, the concept of health of the environment would gain recognition—as it determines the health of our food, and would foster a

deep understanding of the ecological systems and our place within them. As Thomashow mentions, “We can enhance our appreciation of food by observing its significance in just about every ecological relationship” (Thomashow, 2014). Maintaining a higher level of ecological literacy influences students and community members to note how their choices and approaches toward food can either be sustainable or not. “How we eat tells us a great deal about humans and the ecosystem, both personally and collectively, and some of our best lessons in sustainability, ecology, and human health are derived from understanding the natural history of foods” (Thomashow, 2014). The natural history of foods within a local food system involves an interconnected and interdependent web of ecological relationships within the ecosphere. This complicated web of interactions is a natural system in harmony able to continually recycle and be renewed—a sustainable system. This can be better understood by its contrast with the history of food within an industrial food system. Industrial agriculture cannot be renewed and is not a balanced natural system. “The energy budget of industrial agriculture is ultimately determined by oil. By understanding this, you grasp how there is a correlation between food awareness, energy systems, and climate action planning” (Thomashow, 2014). Our approach to food ultimately determines how we will have an impact on our planet. Education is necessary to gain a better understanding of these aforementioned connections. “From an educational perspective, food awareness is where human health most directly encounters the ecosystem, and it is an accessible way to link natural history to human flourishing” (Thomashow, 2014). Education should be about building meaningful connections that are applicable to everyday life. As everybody eats, so everybody can contemplate their actions and understand the ramifications. “When a college grows more food on campus, engages the community in the growing, serves local food in its cafeterias, provides comprehensive nutritional information, and connects all those initiatives to energy use, natural

history, and human health, it can dramatically improve the quality of life for the entire campus community” (Thomashow, 2014). College CSAs are sustainable food systems and have the potential for service learning projects throughout the duration of the school year. The campus community and surrounding community have the opportunity to come together to learn about food sustainability and celebrate health. The benefits can be enormous: “There is no more important life skill for students than to understand how to eat well. Such awareness may improve student and employee health and performance, and may contribute to reducing the costs of health care and improving morale. Healthy eating may improve a variety of academic measures” (Thomashow, 2014). In sum, establishing a campus and community sustainable food system and expanding the program to include educational efforts is a significant asset to any college environment. “What matters most is that these approaches provide an ecologically oriented and sustainable approach to nutrition and health. They can easily be incorporated into both campus food systems and sustainability curriculum. Eating well should be a priority for all food sustainability initiatives” (Thomashow, 2014).

Implementing sustainable food programs into the framework of a university involves the cooperation of students, employees, faculty members, and board members (Thomashow, 2014). A preliminary step is to support efforts to obtain local foods—particularly coming from a campus farm program. As stated by Thomashow, “the cafeteria should serve a higher percentage of local and organic foods, to work with community farmers, and to grow more food on campus” (Thomashow, 2014). Further, financial support may be obtained to facilitate this process. Upon adopting a sustainable food program, Unity College “received several grants to support food-growing initiatives on the campus. We coordinated these efforts with local growers and with the regional food bank” (Thomashow, 2014).

However, these changes cannot successfully occur without sincere student engagement and interest. “Growing more food on campus, supporting sustainable agriculture, changing food habits and behaviors, and building nutritional awareness into the fabric of student life and into the curriculum are significant change processes [...] [that] can transform the health, vitality, landscape, and visual appeal of a campus. [...] this process is generated in partnership with the student body. (Thomashow, 2014). Student interest in supporting the local food movement can be seen with programs like “Real Food Challenge,” a voluntary program where dining facilities pledge to serve 20% local, fair, and sustainably sourced food by 2020. Sustainable Agriculture students, Ruby DayBranch, Ashley Anderson, and I helped establish Real Food Challenge at UMO a few years ago. Today, the dining hall features local foods and is working toward the 20% “real” food goal. BBFG could be an important resource for local food within UMO dining facilities in the near future. “When campuses prominently grow food, [...] they are making an ecological statement about integrating humans with the ecosystem. [...] campus food growing makes a public statement about the meaning and purpose of education. [...] The campus becomes a center for the practice of regional sustainable agriculture and a public demonstration for sustainability actions and practices” (Thomashow, 2014). BBFG can provide opportunities for students and community members to physically connect with the land and develop a deep-rooted understanding of the importance of sustainable agriculture systems. “The campus food landscape can become a prototype for multiple approaches to ecological experimentation [...] It is incumbent on sustainability advocates [...] to explain why they are important, and how the cumulative effect of so many of these projects nationwide can have a profound influence on how people perceive their place in the biosphere” (Thomashow, 2014). The potential for expanding a campus’



ecological and environmental educational horizons is vast and a benefit that could be utilized to a far greater extent.

Mary Wiedenhoeft was the co-coordinator with Matt Liebman of the Sustainable Agriculture program in 1997 and saw the BBFG as a sustainable food system program that is immensely successful for the very same reasons. When asked about BBFG Wiedenhoeft explained, that “it was student driven. Additionally, there was room at Rogers Farm for some plot area that the students could use. In the first few years, the students were ‘purists’, no tractors, only human labor. [...] Because of their success, the Guild continued to expand, making human-only labor impossible” (Wiedenhoeft, 2016). Thus, the students were given more land and the tools to efficiently and effectively establish a sustainable cropping system. When asked about the significance of BBFG to UMO, Wiedenhoeft listed several reasons. The key components she appreciated about BBFG were that it was a student run operation that was initiated by students and was student led (Wiedenhoeft, 2016). She appreciated the learning opportunities that went along with “hands-on farming, leadership, book keeping, and marketing experiences” (Wiedenhoeft, 2016). As a shareholder, she was proud of the beautiful food and relished the “positive outcome from the University that I could show my friends and they could taste” (Wiedenhoeft, 2016). Wiedenhoeft explained the lasting impact that BBFG had on some of the students, as they went on to be CSA farmers including Mark Guzzi, Mike Gold, and Allison Putnam (Wiedenhoeft, 2016). She noted that BBFG attracts students to UMO and inspires other campuses. The BBFG “attracted students like Mark to our program [...] [and] When I came to Iowa State, they had just started a student garden after visiting us in Maine (Wiedenhoeft, 2016). She concluded with, “I love watching students get good hands-on experience, watching the students grow as they grow the veggies” (Wiedenhoeft, 2016). The learning opportunity for students translates into a unique op-

portunity for growth and development as a beneficial contributor to the health of the environment and surrounding community.

To gain a better understanding of the community impact of other campus CSAs in Maine, I interviewed Anna Davis, a farmer for the Beech Hill Farm CSA, which is part of the College of the Atlantic. Davis explained the farm layout: “Beech Hill Farm is farming on six acres with five unheated greenhouses and a small, heated propagation house. Our crew is made up of two full-time managers, four summer crew members and approximately fifteen work-study students in both the spring and the fall” (Davis, 2016). Beech Hill Farm is double the size of the BBFG yet has 21 laborers as compared to BBFG’s 2-3 student farmers. “The farm is owned by the college and we are college employees, however are expected to make the farms budget through our small (35 person) CSA, our farm-stand and wholesale sales” (Davis, 2016). The operation is not student run, as it has managers making the executive decisions on the farm. However, the other aspects of Beech Hill Farm are similar to BBFG. An exception to this is that Beech Hill Farm does not rely entirely on their CSA for their income. “We make over 75% of our sales through our farm-stand where we sell local meat, dairy and value added products in addition to our vegetables” (Davis, 2016). This is an important difference between Beech Hill Farm and the BBFG farm. If there is potential for notable increases in income and revenues via a farm stand, this option should to be considered further. The Beech Hill Farm stand “is open June-October five days a week and has become a central organic food hub on the island [Mount Desert Island]” (Davis, 2016). Another parallel between BBFG and Beech Hill Farm is the debilitating weed problem on the farm. “Weed management has also historically been hard for us. This year we are focusing on increased cover cropping, reducing variety and quantity of crops and looking into investing in new weed control equipment like better track rippers and 5 row basket weeders” (Davis, 2016).

What was not mentioned by Davis was the importance of community involvement and student service opportunities to Beech Hill Farm. For BBFG, these aspects are fundamental to achieving a successful program.

Service to the community is a mission of several student groups, clubs, and honors societies on campus and the BBFG provides a great opportunity for student service projects and volunteering. In 2015, three student organizations volunteered at the Black Bear Food Guild: the Green Team in partnership with the Green Campus Initiative, Sustainable Agriculture Enthusiasts, and the National Society of Collegiate Scholars Honors Society.

In July 2015, when the sweet corn from an experimental plot was available for harvest the Green Team and Green Campus Initiative sent twenty-five students to help with the harvest. The Green Team is the “only student organization with the direct objective of creating efficiency and sustainability on the campus and in the community” (UMO GT, 2016). They were able to accomplish their objective by volunteering at the BBFG local, student-run CSA farm. Our shareholders were ecstatic to have fresh sweet corn for several pickups in July. This was also a learning opportunity for the student club. The BBFG farmers taught them about BBFG and what can grow in Maine, what a typical day looks like for a farmer, how to harvest corn and proper storage techniques for various vegetables. When asked about their experience, several volunteers said that they had a great time and asked to return for a day of volunteering for the 2016 season. This experience helped the Green Campus Initiative achieve the objectives of their mission statement, “to develop a broad based, student-led effort toward environmental awareness and stewardship by promoting sustainable relationships between the ecological, economic and social systems on campus and in the local community” (UMO GT, 2016).

Various times throughout the duration of the growing season members of Sustainable Agriculture Enthusiasts (SAGe) club would volunteer their time to help the BBFG farmers with weeding, plant maintenance, and watering. SAGe is a student club for those interested in sustainable agriculture. The purpose of SAGe is to create an environment to help students gain hands-on experiences not available in a traditional classroom setting (UMO GT, 2016). According to the SAGe website, students in this club “They have a strong ethic to support and promote sustainable agriculture in the college community. They accomplish this by visiting farms, talking with farmers, attending conferences and workshops, and initiating agriculture-related projects in the UMaine community” (UMO GT, 2016). The BBFG provides an opportunity for students to get to know local farmers and practice farming themselves, which is unique to any classroom experience.

Another student organization that volunteered at BBFG in 2015 was the National Society of Collegiate Scholars Honor Society (NSCS). The three pillars of NSCS are scholarship, leadership, and service (NSCS, 2016). Thus, service in the community is a central aspect of NSCS activities. Members of NSCS volunteered their time in the field helping with weeding. Weeding is a serious ecological and economic issue for BBFG, therefore volunteers are greatly appreciated especially when assisting with weeding. More volunteers in the field means less time the guilders have to spend weeding and are able to focus on other maintenance and managerial farm operations.

Another potential student group that could become more involved with volunteering is the Horticulture Club. According to Dr. Stephanie Burnett, the advisor for the Horticulture Club, “BBFG might also consider connecting with the horticulture club or Pi Alpha Xi. Many members of both of those groups have expressed an interest in volunteerism. The horticulture club has

specifically mentioned that they are interested in getting more hands-on experience with vegetable farming” (Burnett, 2016). Therefore, the potential for student involvement with BBFG provides an opportunity for students of various interests to become more involved in their local food system. For student organizations, clubs, and honors societies on campus, the BBFG has an important place by providing opportunities for learning about sustainable food systems and community service.

However, the BBFG is not only an asset for student organizations. BBFG provides a site for various classes to participate in hands on learning. In the 2015-2016 school year, students from degree programs including Wildlife Ecology, Sustainable Agriculture, Biology, and even Journalism were able to gain experiences that would have otherwise not been available without the presence of the BBFG.

Plant Science is an introductory level classes offered in the Fall for First-Year Sustainable Agriculture students that uses the Roger’s Farm and BBFG as a field trip site to familiarize students with local flora. The professor, Dr. Lois Stack, was asked to explain how BBFG was a resource in Plant Science. She first established the particular sites of interest, “Each fall, I bring PSE100 (Plant Science) students to Rogers Farm, where they learn about vegetables, herbs, annual flowers, land grant universities, Cooperative Extension, the Maine Ag and Forestry Experiment Station, agronomic field research, Master Gardeners, and the Black Bear Food Guild” (Stack, 2016). Next, Dr. Stack discusses how the BBFG has an impact on her PSE100 students, “The Food Guild is very exciting to them, because it is managed by their peers, is a place where they can volunteer, and is part of Maine's network of CSAs. Every year, some students ask how they can become involved. The field trips provide the basis for discussions later in the semester as well” (Stack, 2016). Thus, the BBFG is a resource that can act as an important introduction

into local agricultural production systems of which the Sustainable Agriculture students can take part.

Additionally, when Dr. Jianjun Hao, professor of Plant Pathology at UMO, was asked how the BBFG impacted his class he responded by discussing that the Black Bear Food Guild is a good showcase for students who are majoring in agriculture and related areas. With the BBFG's diverse types of crops, "the program provides a perfect living library of plant diseases, which can be used for sample collection [and] disease evaluation without going far. I am teaching a course, Plant Pathology to undergraduate and graduate students every fall, and I have taken advantage of this site [and I] appreciate it very much" (Hao, 2016). Michaela Morris, a Wildlife Ecology undergraduate student in the Plant Pathology class felt that the Black Bear Food Guild was an asset to her overall class experience. When how in what way the BBFG impacted her learning Morris said, "the trip to Roger's Farm and the Black Bear Food Guild was a great opportunity to get hands on experience and to see different plant pathologies in person. It's not always easy to understand concepts without hands on experience and the field trip was a great supplement to our plant pathology curriculum" (Morris, 2016).

The BBFG is an opportune site for classes involving agricultural weeds, as they are a significant issue each year at the guild. Although having fields teeming with weeds is not usually seen as an advantage, it can be when considering the classes that benefit from studying the weeds. Indeed, two classes: Weed Biology and Identification and Weed Ecology and Management taught by Dr. Eric Gallandt, benefit from having BBFG as a resource. Bronte Sone is an undergraduate student majoring in Sustainable Agriculture. Bronte has taken four classes that were able to utilize BBFG for research and applying knowledge. When asked if she felt that the BBFG was a resource she said, "the Black Bear Food Guild has been a great resource that has

been used in multiple of my classes. The first time I travelled there was for a weed identification course I took with Dr. Eric Gallandt. We walked around the property identifying weeds we already knew and picking out ones that looked unfamiliar” (Sone, 2016). When asked about how BBFG impacted her classes this year she replied, “Last semester I went to the BBFG a few times for two different classes. The first was an entomology course with Dr. Phil Stack, and the second was a plant pathology course with Dr. Jianjun Hao” (Sone, 2016). She then elaborated on the impact for entomology, “in the entomology course, we observed different insects to see if they preferred a particular plant species. Additionally, we used the BBFG as an area to catch insects for the large insect collection we were required to have for the class” (Sone, 2016). Finally, she discusses plant pathology, “in plant pathology lab, we travelled to the BBFG to collect samples of plants that looked to be diseased and then used them in lab to try and isolate the pathogen. It was a really valuable resource to be able to see firsthand how diseases present themselves in the field” (Sone, 2016). Thus, students are able to access resources not available in a traditional classroom setting due to the presence of the BBFG.

Similarly, another student, who graduated with her BS in Sustainable Agriculture felt that BBFG was an extremely important asset to the University of Maine Sustainable Agriculture degree program. Margaret McCollough, a 2015 Graduate BS Sustainable Agriculture and MS Candidate in Weed Ecology and Management said, “The Black Bear Food Guild (BBFG) is serving University of Maine students by providing valuable hands on experiences aiding them in learning of the principals of weed biology, identification, and management. Conveniently located in close proximity to the UMaine campus, students attend field trips to the BBFG where they are able to have experiences collecting, identifying, and observing agricultural weed specimens” (McCollough, 2016). McCollough further explained how this was an asset to the agricultural

weeds classes, “being able to observe these strikingly competitive plant species in the agroecosystems they dominate, and are so highly adapted to, provides students with a unique experiential learning opportunity. This kind of on- farm experience equips students with an authentic understanding of weed management, skills in field identification of weed species, and patterns associated with weed and crop ecology” (McCollough, 2016). She then added, “Since the BBFG is managed organically, students also gain the experience of working together to hypothesize about sustainable weed management techniques that could be utilized at the guild” (McCollough, 2016). McCollough, next spoke of her personal experience and how she was impacted by BBFG, “As a student who graduated from the University of Maine sustainable agriculture program, who went on to manage my own organic farm enterprise for a couple of years, I would also like to add that the Black Bear Food Guild offers participants an incredibly unique and valuable experience to adopt all of the responsibilities associated with farm management” (McCollough, 2016). In conclusion McCollough said,

There is no other opportunity quite like participating in the BBFG that I have ever encountered, and the value of such an experience cannot be summed up briefly. If we would like to see sustainable agriculture grow as an industry in Maine, and as a philosophy of land management across the country, it is my belief that programs like the food guild are truly by far the best way to instill trust and confidence into the way in which we train the next generation of farmers (McCollough, 2016).

As McCollough points out, growing interest in promoting environmental protection, sustainable food systems, and ecological literacy are unified under programs like the BBFG. Laura Goldshein reflects similar sentiments toward the BBFG. In an interview Goldshein discussed her experience as a BBFG farmer for two years, “Managing the Black Bear Food Guild had a significant impact on my experiences as a farmer and student at the University of Maine. Farming with the Food Guild greatly benefitted me as a student in the Sustainable Agriculture undergraduate program” (Goldshein, 2016). She further explained why being a farmer with BBFG was so sig-



nificant, particularly with reference to her degree program, “It provided me with an opportunity to apply concepts introduced in the classroom in a deeply interactive, hands-on setting. The experience that I gained in the field was invaluable, and deepened my understanding of the materials introduced in class” (Goldshein, 2016). Goldshein additionally explained how her skills increased as a student and a farmer, “My critical thinking skills were challenged with every issue encountered, and were ultimately strengthened as a result. My knowledge of organic farming was solidified with every field activity, from starting seeds in the Roger Clapp Greenhouse on campus to transplanting those same seedlings out in the field” (Goldshein, 2016). Goldshein concluded with, “I strongly believe that the Black Bear Food Guild is one of the most important and valuable aspects of the Sustainable Agriculture program” (Goldshein, 2016). As can be seen, being a farmer at BBFG has lasting impact on Sustainable Agriculture students by providing them with practical knowledge and the skill sets necessary to tackle farming as a career later in life.

Another student, outside of the Sustainable Agriculture degree program, felt passionately about the Food Guild enough to include it in his Honors thesis. Alan Bennett is a fourth-year Journalism major with a minor in Anthropology. He is also in the Honors College, an Honors 170 Course Facilitator, and Culture Editor of The Maine Campus. I first met Alan when he came to BBFG to take pictures and interview us about being student farmers. When asked to provide a statement about how the BBFG was a resource to him as a student, Bennett replied, “I’m an environmental and health communicator, and as such I have tried to focus my journalistic efforts on the fields of sustainability, ecology, nutrition, and community health. Profiling the BBFG gave me both a deeper insight into the kind of work involved on a small, diversified, organic farm, it gave me a new way of telling a story” (Bennett, 2016). Bennett was able to better understand the

work that goes in to running a farm from his peers. Bennett explained specifically how the BBFG aided him in his scholastic endeavors, “I think the BBFG is so unique in its approach. Its student-run and community-based, and its impact is seen throughout our local communities. I also profiled the BBFG at a time when I began my studies in food systems, and so looking into the deeper issues of food access and sustainability were instrumental in my grant research (Bennett, 2016). Bennett concluded with, “the BBFG also gave me a true appreciation for the organic lifestyle, and further served to motivate me in my Honors Thesis research on obesity and news framing” (Bennett, 2016). Bennett learned from the BBFG farming system through several perspectives and his story shows the breadth of impact that BBFG can have on a college community. The BBFG is not simply a field resource for students studying ecology and agricultural sciences; it is an example of common ground between the outside community and the university . Further, BBFG is a bridge between the physical sciences and social arts, an ecological and environmentally friendly area for student growth and development of community connections. By the end of the 2015 BBFG season, I knew this special, unique program would leave a lasting impression for the rest of my life.

Mark Guzzi graduated from the Sustainable Agriculture degree program at UMO in 1999. “Guzzi, along with a few other UM students, ‘sort of inherited’ the university’s Black Bear Food Guild, from which he sold produce at the Orono Farmers’ Market and through a university CSA market. This enabled Guzzi to manage an operation without having to invest his own capital (JE, 2006). Guzzi gained experience running his own farm without having to take any serious economic risks to determine if a career in agriculture was a good fit. Guzzi and two other UMO students worked at BBFG maintaining 2 acres of vegetables and 1 acre under cover crop. This was a similar set up to BBFG today, however there were some difference. For example, BBFG

sold at the Orono Farmers Market and maintained a CSA with a certain percentage of their harvest. This opportunity “allowed Guzzi to manage an operation without having to invest his own money. He said he was able to use the guild and his classes as ‘sounding boards’ for business and growing decisions. It was also a good way to stake out a spot at the Orono Farmers Market” (Ravana, 2007). Although, BBFG student farmers take advantage of the opportunity to apply their knowledge obtained in their classes to their agricultural management practices, student farmers today do not have the experience of selling at the Orono Farmers Market. Because Guzzi had the experience with both a CSA and selling at the farmers market, he was able to end his experience as a BBFG farmer with indispensable knowledge of being both a market farmer and a CSA farmer.

After his experience with BBFG and upon graduating from UMO, “Guzzi rented Peacemeal Farm, a developed farm and business in Dixmont, Maine, for three years with two other UM graduates” (JE, 2006). Guzzi eventually ended up purchasing the farm. His experience as a market farmer helped him develop a realistic farming business plan and prepare him for the challenges inherent in being a market farmer. In 2006, “he depends on bringing \$1400 home from each market” (JE, 2006). The economic climate at Peacemeal Farm changed in 2010, “Money was tight for the owners of Peacemeal Farm in Dixmont a few springs ago. Owners Mark Guzzi and Marcia Ferry were worried they couldn’t afford the supplies they needed for a successful growing season. So they turned to their longtime customers and offered them a deal — money for discounted vegetables” (Sarnacki, 2012). This program is a form of CSA because shareholders help support the farm at the time of the year when money is least available and in return gain access to the harvested produce. Peacemeal Farm “receives money early in the season along with

a committed customer, and the customer receives a steady flow of local food throughout the summer at a discounted price” (Sarnacki, 2012).

According to Guzzi, “In New England, for a young person to get into agriculture, one of the best things to go into is vegetable farming,” (Ravana, 2007) this is because in Maine vegetables are at a high value and in high demand. Moreover, “despite the lower population density [of Maine], there’s a very strong support among the people of central and midcoast for local farms,” (Ravana, 2007). Maine farmers can benefit substantially from the growing interest in supporting the local food movement. “CSA has become more and more popular [...] For people who are into local food and want to support local farms, the concept is a very attractive one.” (Sarnacki, 2012). As of 2012, there were over 160 CSA farms in Maine selling more than 6,500 shares to shareholders (Sarnacki, 2012).

As mentioned, the BBFG is a program that allows students within the College of Food and Agriculture to take on the role of a farmer. This program provides a job opportunity for students to have a hands-on learning experience, which goes above and beyond an apprenticeship or internship. Upon becoming a BBFG farmer, students simultaneously take on the role of a farm owner, farm manager, accountant, field worker, public relations professional and advertiser. A student in the College of the Natural Sciences Forestry and Agriculture is able to apply the information obtained through their degree program in the field to reinforce their knowledge. BBFG was a particularly helpful for my development as a student and as a farmer. Indeed, my BBFG farming experience: satisfied my Field Experience class, is the focal point of my Honors Thesis, and confirmed my commitment to being a sustainable farmer for the rest of my life. As a student majoring in Sustainable Agriculture, the knowledge I obtained through my job as a BBFG farmer was indispensable. For example, I was able to harness and utilize my knowledge regarding soil health, integrated pest management, agricultural best management practices, organic growing techniques, plant hardiness zones, among others, to make managerial decisions on how to bring a sustainable farm system to life.

Throughout the duration of the 2015 Black Bear Food Guild Season, I had several responsibilities. As I soon learned, the preliminary stages of being a farm manager do not involve

any work in the field; my job was to advertise, plan, and order supplies for the upcoming season. To advertise we made posters explaining what the Black Bear Food Guild is, how much a share costs and the corresponding amount of people that share will feed, and a picture of the 2015 season farmers and distributed them throughout the UMO campus and in businesses located in Orono, Old Town, Veazie, and Bangor. We also communicated via FirstClass emailing system and phone to contact veteran shareholders about returning to BBFG for the upcoming season. Beginning in January, weekly meetings regarding seed and supplies ordering and field layout took place. Once the seeds and supplies were ordered, we were responsible for starting the seeds in the Roger Clapp Greenhouse and watering them daily. We put our integrated pest management to work when we discovered an infestation of thrips by monitoring the pests with sticky paper and once the populations reached the economic threshold we used fly tape to catch the thrips.

Later in the greenhouse, we experienced a low germination rate for our sweet pepper seeds. We recorded this and immediately had to find other sources for our sweet peppers. Finally, in late May—once we were sure the plants would not suffer from frost damage—we were able to move our seedlings out of the greenhouse—taking several trips because BBFG does not have a trailer for moving seedlings and thus used our small cars. We moved the seedlings to Roger's Farm and covered them with remay to facilitate the hardening off process. Remail is a floating cloth cover for plants to help keep them moist and warm. We traveled to the farm daily, uncovered and watered our seedlings, and then returned at night to cover them again. We incorporated the proper nutrients into the soil and prepared the beds for planting and transplanting. We set up the irrigation system using drip tape irrigation and laid down infrared transmitting plastic to help with physical weed control. Finally, we direct seeded and transplanted our crops.

In order to reinforce weed control management, we applied 6+ inches of straw mulch to the fields—particularly the ones without plastic mulch.

Throughout the season, we finished setting up the infrastructure for our three fields and monitored our crops for pests and diseases. We routinely watered our crops and performed plant maintenance. In June, the pick-ups began and this added another level of complexity to our jobs. Every Tuesday and Thursday from 4PM-6PM we had to stop our farm hand work and take on our roles as business managers and customer service specialists. We would set up a market complete with displayed produce, information about each crop, the amount of produce per share, and bags and scale for weighing and transporting. On non-pick up days, we were able to assume our farm-hand positions once again and catch up on our weeding, plant maintenance, and harvesting. Meanwhile, it was our responsibility to: apply pesticides when all other measures were not successful at pest management, to balance our budget, to spray fish emulsion (an organic fertilizer) to our plants at regular, calculated intervals, to get our soil tested, to bring diseased plants to Cooperative Extension and the plant pathology lab for analysis, and maintain active communication with our shareholders.

Although the responsibility of a BBFG farmer is great, it is a special opportunity that pushes students past their comfort zone. It encourages the farmers to recognize that they are capable of accomplishing exceptional feats.

### **Section 3: Improvements**

In sum, BBFG is a program that is indispensable to UMO. However, there are ways in which BBFG could be improved. The main improvements could be accomplished by way of: raising awareness about BBFG and establishing a reliable volunteer base; encouraging increased

scholastic involvement; amending the advisor position and establishing a managerial position; maintaining a dialogue with shareholders and responding to their constructive feedback; most essential being financial assistance provided by UMO. These improvements are vital to ensuring the programs future success.

In order to get more students aware of and interested in BBFG, information about BBFG must be readily available and easily accessible. Indeed, in 2015, only two shareholders were undergraduate students; To put this into perspective: we ended the 2015 season with approximately 80 half-share equivalents. Even with the introduction of a lower price specifically established for college students, undergraduate student involvement in BBFG was extremely low. This could be an indication that not many students are aware of the program. For example, last season at the first pickup, one undergraduate shareholder explained that she would have been a shareholders throughout her time at UMO had she known that it existed. One method to increase student awareness would be to hold a farm reception in the fall. This reception could feature an informational tour of the farm and a meal that features the locally grown produce available at the farm. BBFG farmers end their season in mid-October and if the reception is held in September—when the harvest is still substantial—this would give ample time for student interest to flourish. Another process to increase student awareness of BBFG would be to distribute a job description along with a brief history of BBFG to UMO faculty involved in the School of Food and Agriculture. Finally, a reliable volunteer base is essential to continuation of BBFG. As mentioned previously, volunteers can come from a variety of sectors in the local community. In order to encourage student volunteers, teachers could incentivize students to volunteer and gain bonus points toward an assignment. Another method could be to make an announcement at the beginning of the school year about BBFG and letting students know that volunteers are greatly appreciated

and important contributors to the local food system. Using the volunteer database, BBFG farmers and the advisor could work together with Joseph Cannon to coordinate times to meet for the required safety training for volunteering at Roger's Farm.

Similarly, strengthening scholastic involvement at BBFG could be accomplished in through various avenues. Although many classes already incorporate visits to BBFG and Roger's Farm, there is potential for more classroom participation. This would be up to the discretion of the faculty of the School of Food and Agriculture. Last year, one BBFG farmer did not know about Roger's Farm until the start of her second semester of her junior year. As a Nutrition student and member of the School of Food and Agriculture, this is extremely unfortunate, yet could be easily remedied if diverse classes visited and incorporated lessons about BBFG in their classes.

Furthermore, student organizations are perpetually seeking new service opportunities and what better way to connect with the community than by helping support a program that supports a healthy environment and shareholder community. As I mentioned, three student organizations did volunteer at BBFG. However, with the exception of the one visit by the Green Team, overall student service was low. In fact, two NSCS members volunteered of the over 100 current members at UMO. Similarly, two SAgE members volunteered in 2015. Although SAgE is a smaller student organization, the BBFG fits well with their mission and more SAgE students should be involved with the program. Further, student organizations were unreliable in terms of consistency. For example, many times throughout the 2015 season when we spent over 12 hours at the farm and we needed extra help—the volunteers could not be reached. Although we were always grateful for any help, the BBFG farmers found that we needed a better system for organizing volunteers. To remedy this the advisor of the BBFG should contact the Bodwell center periodi-



cally throughout the duration of the Fall Semester in order to enlist volunteers to help with harvesting and field clean-up. Additionally, a volunteer contact database should be established for any students that are interested in volunteering throughout the summer season. As mentioned, the Sustainable Agriculture Enthusiasts club should also become more involved with BBFG. Student clubs that list sustainability in their mission statement should make it a priority to support the efforts of the BBFG.

Further, there's an opportunity for community members to become more involved with volunteering at BBFG. Dr. Stephanie Burnett, a professor in Plant, Soil, and Environmental Sciences, offered two potential avenues for increasing volunteering. Establishing a specific time one day a week where the field is open for volunteers would let the farmers know when to be expecting the volunteers. Another option proposed by Dr. Burnett, "Perhaps the BBFG could use social media to connect with volunteers and let them know what work they would be doing on any given week" (Burnett, 2016). In this way, volunteers would know ahead of time what they are most likely going to be helping with and will allow them to prepare accordingly. The BBFG site has ample space to grow enough crops to support well over 80 shareholders and have a surplus of produce. This, taken together with the combined fields under cover crop, means there's ample space for various experiments, demonstration sites, school sites, or community gardens. Sharing space with community members would allow for important connections to be maintained and potential for further learning, which should always be an aspiration for student cultivators of sustainability—i.e. farmers.

Although presence in the campus community is a major concern, of equal import is the betterment of the advisor roles/guidelines and establishment of a managerial position. Using the 2015 season as a reference, it is necessary that the advisor be present and easy to contact

throughout the duration of the season. Further, the advisor must be willing to assist students with maintaining an accurate and realistic budget. These were of foremost importance during the 2015 season and will significantly help future BBFG farmers experience a successful season. Last season, the BBFG farmers found it difficult to contact our advisor as the season progressed. Luckily, Goldshein had experience being a BBFG farmer from the previous 2014 season and provided guidance for managerial operations. Both Fujimagari and I looked to Goldshein as our stand-in advisor as we had never had experience running our own CSA operation. Thus, it was exceedingly helpful to have a student on the BBFG farm team that had been a BBFG farmer the previous year. This practiced farmer/manager position is a special resource to new student farmers. The manager is a student—a peer—amongst the other BBFG farmers and is there to provide added support. Speaking from personal experience, I have worked on an organic farm for 4 years prior to becoming a BBFG farmer. Running a farm is entirely different from being a farm-hand. I appreciated the practiced BBFG farmer's input and often looked to her for advice. I gained confidence in my ability to operate my own farming operation in the future and feel my experience was so positive, in part, due to the guidance of the veteran farmer. To be clear, I did not feel in any way that my experience was lessened by the presence of a practiced BBFG farmer. My experience was enhanced daily because I could learn from previous year's mistakes and achieve higher levels of success than if the experienced BBFG farmer had not been present.

As aforementioned, shareholders are the lifeblood of CSAs. As such, shareholders opinions should be considered carefully and answered in the following season. Therefore, I have conducted a shareholder survey to determine ways in which to improve their experience going forward.

Table 1. Full Share Survey. Shareholders were asked to rate their level of satisfaction on a scale of 1-5. One 1 least satisfied and 5 being most satisfied. Shareholders were encouraged to elaborate on their answers. Space was provided at the end of the survey to allow for any additional comments.

	1	2	3	4	5
<b>Were you satisfied with pick up times?</b>					xxxxx
<b>Were you satisfied with the quantity of produce received?</b>					xxxxx
<b>Were you satisfied with the quality of produce received?</b>					xxxxx
<b>Overall how would you rate your experience as a shareholder for the 2015 season?</b>				x	xxxx
<b>If you have been a shareholder for multiple years, please rate this years experience in regard to previous seasons</b>				xx	xx

Table 1. Overall, full share shareholders were satisfied with the 2015 season. x indicates a shareholder response.

Table 2. Half Share Survey. Shareholders were asked to rate their level of satisfaction on a scale of 1-5. One 1 least satisfied and 5 being most satisfied. Shareholders were encouraged to elaborate on their answers. Space was left at the end of the survey to allow for any additional comments.

	1	2	3	4	5
<b>Were you satisfied with pick up times?</b>				x	xxxxxxxxx
<b>Were you satisfied with the quantity of produce received?</b>				xx	xxxxxxxxx
<b>Were you satisfied with the quality of produce received?</b>				xxx	xxxxxxx
<b>Overall how would you rate your experience as a shareholder for the 2015 season?</b>				xxx	xxxxxxx
<b>If you have been a shareholder for multiple years, please rate this years experience in regard to previous seasons</b>				xx	x

Table 2. Overall, half share shareholders were satisfied with the 2015 season. x indicates a shareholder response.

Table 3. Quarter Share Survey. Shareholders were asked to rate their level of satisfaction on a scale of 1-5. One 1 least satisfied and 5 being most satisfied. Shareholders were encouraged to elaborate on their answers. Space was left at the end of the survey to allow for any additional comments.

	1	2	3	4	5
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	1	2	3	4	5
<b>Were you satisfied with pick up times?</b>				x	xxxx
<b>Were you satisfied with the quantity of produce received?</b>				xx	xxx
<b>Were you satisfied with the quality of produce received?</b>					xxxxx
<b>Overall how would you rate your experience as a shareholder for the 2015 season?</b>				x	xxx
<b>If you have been a shareholder for multiple years, please rate this years experience in regard to previous seasons</b>					x

Table 3. Overall, quarter share shareholders were satisfied with the 2015 season. x indicates a shareholder response.

In sum, the shareholders were pleased with the 2015 season. The comments can be taken into consideration this upcoming season. The frequent suggestions for improvements or comments from full shareholders included the following: “Late start to the season resulted in reduced product,” “more variety,” “better consistency of size of vegetables,” “suggested pick-up time change: 3:30 to 6:30PM instead of 4-6PM,” “appreciated having greens all season.” The BBFG

farmers should consider adjusting the planting dates in the spring to facilitate an earlier pick-up, with more overall crop variety for the 2016 season. Another consideration, as proposed by shareholders would be to consider lengthening pick up times—as many full share holders have families and correspondingly busy schedules. The common suggestions for improvements or comments from half shareholders included the following: “I wish there was more information about various vegetables” “harvest meal toward the end of the season,” “newsletter with vegetable information for upcoming pick-up and recipes,” “friendly staff,” “loved being able to glean the fields after the season was over,” “vegetable quantity was variable,” “there’s a connection, warmth, and community that surrounds the guild,” “more variety,” “a lot of some items and not as much of other items,” “so much more than the other farm shares we have participated in.”

Most half-shareholders requested recipes or suggestions on how to prepare the produce. One way that the 2016 BBFG farmers could accomplish this would be to write a newsletter for each pick-up with the produce available and various recipes. Shareholders could take the newsletter to their homes and would appreciate the gesture immensely. More variety was suggested again by half-shareholders and therefore should be considered when purchasing seeds for the 2016 season. Finally, the recurring suggestions for improvements or comments from quarter shareholders included the following: “Greater variety and longer season,” “Pickups on Friday and Saturday afternoons 2-5PM,” “more spring greens mix,” “loved ability to glean at the end of the season,” “guild member work days,” “potlucks,” “more winter squash,” “more quantity this year than in the past,” “allowing those with food allergies/intolerances to certain foods to choose an equal quantity of another food,” “I’ve never had the option of a quarter share and found it to be very generous — comparable to the half share I’ve had in the past,” “more recipes on social media from shareholders and farmers who have prepared the vegetables.” Quarter shareholders were

typically more interested in having farm gatherings where shareholders could bring food and volunteer. This would be a great opportunity to have extra help in the field. Organizing a farm gathering might be difficult for BBFG farmers, as the season is hectic as is, but the advisor could play an important role in helping to organize this event. Again, more variety was suggested by shareholders. As this has been brought up by every shareholder group, it should be of paramount importance when considering produce production for the upcoming 2016 BBFG season.

The following table includes the actual share values from 2015, which were calculated using the MOFGA Summer 2015 Price Reports. Shareholders, on average, obtained twice the amount of fresh produce than their share price covered for the 2015 season. This information was then used for creating a budget for the upcoming 2016 season.





The final improvement that is of utmost importance to the flourishing of BBFG is financial assistance. As mentioned in the earlier sections, many Maine farmers do not use solely CSA programs for their farm income. A similar university run farming program at Beech Hill Farm obtains the majority of their income from their farm-stand—as opposed to their CSA. An option for the BBFG would be to consider selling surplus produce at a farm-stand or to UMO Dining. Moreover, the significant weed infestation at the BBFG is a serious economic problem. Having worked at BBFG, I would estimate that about 50% of our labor hours were dedicated to weeding and we still did not successfully manage our agricultural weed problem. In fact, Dr. Eric Gallandt the professor of Weed Ecology and Management used the BBFG as an exceptional example of inadequate weed management last year in class and at an agricultural conference. Having a large amount of weeds results in farmers spending less time on plant maintenance, harvesting, or other farm operations and more time weeding. Additionally, weeds can promote spread of disease and pest outbreaks and can significantly lower overall crop yield. Taken together, this problem is economically significant and needs to be addressed. This problem could be remedied by reducing the contributions to the weed seedbank, planting into a stale seed bed, using cover crops to outcompete weeds, and through more time dedicated to weeding efforts. For the 2016 season, BBFG farmers have an opportunity to better manage their weed problem without losing a significant amount of income due to weed competition by applying for a Northeast Sustainable Agriculture Research and Education Grant. This grant is available to undergraduate students at a university or college for research. The research could be effective weed management strategies on a small organic farm.

Additional supplementary aid could be provided by either UMO or an outside donor and is fundamental to the continuation of BBFG. The BBFG program provides myriad benefits, which are invaluable to UMO. Much like the CSA program results in a symbiotic relationship between community member and local farmer; a symbiotic relationship can blossom between BBFG and UMO. The following proposed budget references the most recent season to ensure accuracy coupled with the projected expenses (drawn from 2015 for reference and including some expenses from 2016). It is important to note that the \$1000 emergency funds are not included in the proposed budget and should be considered as a contingency expense. Some proposed forms of financial assistance include: a potential scholarship for BBFG farmers, scholarship/grant from a private donor to BBFG, Sustainable Agriculture Research and Education Grants—this could be accomplished through incorporating a weed management experiment into the 2016 BBFG season. The budget for the 2016 season includes new scales as last season both scales broke due to their age and overuse. It also includes the cost of a new tarp shelter as the current one is falling apart. As can be seen, shares alone will not be enough to financially support the BBFG—the budget is short over \$4,000. Last year, the season ended with \$1000 of labor hours not paid to BBFG farmers because our budget ran out. The current system is not economically sustainable and outside aid is necessary for the continuation of the program.

Table 5. 2015 Running Budget

<b>Operations Budget</b> <b>Black Bear Food Guild</b> <b>2015 vs. 2016 Budget</b>		
	<b>Actual 2015</b>	<b>Budget 2016</b>
<b>Share Funding</b>	<b>\$ 20,475</b>	<b>\$ 21,375</b>
<b>Expenses</b>		
Wages	21,736	21,736
Supplies	2,586	1,200
Seeds	1,095	1,100
Canopy	-	400
Scales (2)	-	350
<b>Total Expenses</b>	<b>25,417</b>	<b>24,786</b>
<b>Deficit</b>	<b>\$ (4,942)</b>	<b>\$ (3,411)</b>

  

<b>Share Subscriptions</b>	<b>Members</b>	<b>2016 Price</b>	<b>Amount</b>
Full	10	\$ 500	\$ 5,000
Half	35	\$ 325	\$ 11,375
Quarter	25	\$ 200	\$ 5,000
<b>Total 2016 Share Funding</b>	<b>70</b>		<b>\$ 21,375</b>

Table 5. The running budget of 2015, takes into account the expenses expected from a typical season of farming at BBFG. This budget does not include the additional \$1,000 that is expected as emergency funds or to carry over to the forthcoming BBFG season. Thus, the total necessary financial aid would amount to approximately **\$4,411**.

In conclusion, BBFG is a symbol of the commitment to sustainability and a beacon for the local food movement. BBFG has a tradition at the UMO for promoting research in agricul-

ture applicable to farms statewide. Students, faculty, and community members are able to unite through the BBFG common ground to achieve a better understanding of their place in the ecosystem and as environmentalists. The local community benefits from various programs at BBFG and learning is at the center of all farm efforts. However, more support is necessary if UMO wants to keep this valuable resource. Several aspects of the farm need attention: more students should be aware of BBFG; old equipment needs to be replaced for safety reasons; the dining facility should purchase more produce from BBFG to promote sustainability efforts; finally, BBFG farmers are college students and it is necessary for them to be paid for their labor. College student farmers are not commercial, experienced farmers and BBFG is an introductory program to increase student interest and experience in farming. I recognize that farming is difficult and sometimes commercial farmers do not make a significant profit. However, in order to help students learn about farming, a transitional period is extremely helpful. This learning period is a time where students can work and get paid for the time they put in. They can experience farming without the economic risks. The BBFG is a program established to encourage interest, not discourage students because they will not be compensated for their hard work. Having BBFG as a program harkens back to the very roots of UMO, founded to support agriculture and practical application of field research. Today, BBFG represents the growing interest in reducing our carbon footprint and our overall impact on climate change. The BBFG is a program that attracts students and inspires other institutions. The passion behind a sustainable food system is present and can either be nourished and perpetuated or malnourished and diminished. I encourage UMO to accept the responsibility of forming a symbiotic relationship with the farm that has contributed immensely to the campus and beyond throughout the duration of its existence.

### Works Cited

Association for the Advancement of Sustainability in Higher Education (AASHE). "Stars Technical Manual." Stars Technical Manual (2016): 1-311. Stars Technical Manual. Association for the Advancement of Sustainability in Higher Education, Jan. 2016. Web. Feb. 2016.

Association of Public and Land-grant Universities (APLU). "The Land-Grant Tradition." The Land-Grant Tradition. Association of Public and Land-grant Universities, Feb. 2012. Web. Apr. 2016.

Bennett, Alan. "Black Bear Food Guild Impact on Students." E-mail interview. Apr. 2016.

Burnett, Stephanie. "Black Bear Food Guild Thesis Defense." Personal interview. 9 May 2016.

Curtis, Abigail. "USDA Farming Census: Maine Has More Young Farmers, More Land in Farms." Bangor Daily News. N.p., 23 Feb. 2014. Web. 17 May 2016.

Davis, Anna. "CSA at College of the Atlantic" E-mail interview. Feb. 2016.

Dillingham, Russ. "CSAs Offer Fresh, Local Food for the Price of a Share." Bangor Daily News. Bangor Daily News, 17 Sept. 2013. Web. Mar. 2016.

Dixon, Daniel. "Black Bear Food Guild Impact on Sustainability." E-mail interview. Apr. 2016.

Goldshein, Laura. "Black Bear Food Guild Impact and Suggested Improvements." Personal interview. 6 May 2015.

Hao, Jianjun. "Plant Pathology." E-mail interview. Apr. 2016.

Henderson, Elizabeth. "Local, Organic and Fair: Setting a High Bar for Our CSAs." Maine Organic Farmers and Gardeners Association. Maine Organic Farmers and Gardeners Association, Summer 2009. Web. Feb. 2016.

JE. "Young Farmers, Creative Beginnings." Maine Organic Farmers and Gardeners Association. Maine Organic Farmers and Gardeners Association, Summer 2006. Web. Mar. 2016.

Keough, Gary. "USDA Blog » Maine Agriculture Is "Up" in More Ways than One." USDA Blog. United States Department of Agriculture, 10 July 2014. Web. 17 May 2016.

Koeing, Paul. "Boom Time for Shares in Maine Farms." The Portland Press Herald. The Portland Press Herald, 31 May 2014. Web. Jan. 2016.

Liebman, M. "The University of Maine Sustainable Agriculture Program-factors in success". Consortium News (Consortium for Sustainable Agriculture Research and Education) 14 June/July 1997: 5-6. Web. Apr. 2016.

Stack, Lois. "Black Bear Food Guild and UMaine Classes." E-mail interview. 16 May 2016.

Mack, Sharon Kiley. "Partnership between Farmers, Consumers Growing." Bangor Daily News. Bangor Daily News, 16 Mar. 2009. Web. Jan. 2016.

Maine Organic Farmers and Gardeners Association (MOFGA). "Summer 2015 Organic Price Report as of 7/16/15." MOFGA Price Reports (2015) Maine Organic Farmers and Gardeners Association. Maine Organic Farmers and Gardeners Association, 15 July 2015. Web. Apr. 2015.

McCollough, Margaret. "Black Bear Food Guild Impact on Students." E-mail interview. Feb. 2016.

Morris, Michaela. "Plant Pathology." Telephone interview. Mar. 2016.

National Society of Collegiate Scholars (NSCS). "About NSCS." The National Society of Collegiate Scholars. National Society of Collegiate Scholars, 2016. Web. Apr. 2016.

Omand, Heather. "Maine CSA Directory Available." Maine Organic Farmers and Gardeners Association. Maine Organic Farmers and Gardeners Association, Autumn 2011. Web. Apr. 2016.

Pillsbury, Melissa. "CSAs in Maine: 115 and Growing." Maine Organic Farmers and Gardeners Association. Maine Organic Farmers and Gardeners Association, Fall 2008. Web. Mar. 2016.

Ravana, Anne. "Producing Results; University of Maine Grad Plants Success at Dixmont's Peacemeal Farm." Bangor Daily News. Bangor Daily News, 13 Oct. 2007. Web. Jan. 2016.

Sarnacki, Aislinn. "Supporting Local Farms Starts in Early Spring." Bangor Daily News. Bangor Daily News, 28 Feb. 2012. Web. Feb. 2016.

Smith-Heavenrich, Sue. "Supporting Community Agriculture." Maine Organic Farmers and Gardeners Association. Maine Organic Farmers and Gardeners Association, Summer 2008. Web. Jan. 2016.

Sone, Bronte. "Black Bear Food Guild Impact on Students." Telephone interview. Feb. 2016.

Thomashow, Mitchell. "Food". The Nine Elements of a Sustainable Campus. MIT Press, 2014. 43-58. Web. Mar. 2016.

UMaine Division of Marketing and Communications (UDMC). "Black Bear Food Guild Offering CSA Shares." UMaine News. University of Maine, 15 Apr. 2014. Web. Jan. 2016.

UMaine Division of Marketing and Communications (UDMC). "2015 CSA Shares Available from Black Bear Food Guild." UMaine News. University of Maine, 01 Apr. 2015. Web. Jan. 2016.

UMO Cooperative Extension (UMCE). "Cooperative Extension: Agriculture." Cooperative Extension Agriculture. University of Maine, 23 Apr. 2014. Web. Feb. 2016.

University of Maine (UMO). "Recognition & Rankings." Maine Business School. University of Maine, 2016. Web. Apr. 2016.

University of Maine (UMO). "About Us - Quick Facts." University of Maine. University of Maine, Fall 2015. Web. Apr. 2016.

University of Maine (UMO AG). "Sustainable Agriculture - UMaine Sustainable Agriculture Field Day." Cooperative Extension: Agriculture. University of Maine, July 2015. Web. Apr. 2016.

University of Maine (UMO D). "Dr. Daniel Dixon - UMaine Mandela Washington Fellowship." UMaine Mandela Washington Fellowship. University of Maine, 2016. Web. Jan. 2016.  
University of Maine (UMO EX). "About Us - Cooperative Extension." Cooperative Extension. University of Maine, 2016. Web. Jan. 2016.

University of Maine (UMO GT). "The University of Maine - Green Team." Green Team. University of Maine, 2016. Web. Feb. 2016.

University of Maine (UMO MAFES). "Maine Agricultural and Forest Experiment Station." Maine Agricultural and Forest Experiment Station. University of Maine, 2016. Web. Apr. 2016.

University of Maine (UMO RF). "Exploring Rogers Farm." UMaine News. University of Maine, 31 July 2015. Web. Jan. 2016.

University of Maine (UMO SC). "Student Clubs and Organizations - College of Natural Sciences, Forestry, and Agriculture." College of Natural Sciences, Forestry, and Agriculture. University of Maine, 2016. Web. Feb. 2016.

UMaine Plant, Soil, and Environmental Sciences (UPSE). "Black Bear Food Guild." Plant Soil and Environmental Sciences. University of Maine, Fall 2012. Web. Mar. 2016.

Wiedenhoeft, Mary. "Black Bear Food Guild." E-mail interview. Feb. 2016.

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Upon graduation, Sara plans on working on a Maine Organic Farmers and Gardeners Association certified organic farm on Mount Desert Island before attending graduate school to become a Doctor of Naturopathic Medicine.