2014 DILMUN HILL FARM REPORT

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INTRODUCTION

2014 was a very successful year for Dilmun Hill. The farm engaged many students and community members in interactive, agricultural-education events. In addition, produce sales dramatically increased in comparison to previous seasons. New marketing and organizational initiatives have also begun, in the hopes of enhancing the educational experiences we provide, and further integrating Dilmun Hill into the greater Ithaca area.
MANAGER INTRODUCTIONS

Alena Hutchinson

Year: Class of 2016  
College: College of Agriculture and Life Sciences  
Major: Agricultural Sciences and Entomology

Dilmun Story: I had always been interested in becoming involved with Dilmun, and applied for the Garden Manager position on somewhat of a whim. I’m so happy that I did! The Dilmun community is full of great people, and the farm provides such a unique learning opportunity. I’m really looking forward to spending the summer outside at Dilmun!

About Alena: I grew up in Rochester, NY, and developed a passion for sustainable agriculture my senior year of high school. This threw off my college plans (and scared my parents), because I had already applied to engineering programs. I ended up choosing not to attend a four year school as a freshman, and spent the last year at a community college further exploring my interest in agriculture. I became involved with Grow Monroe, a program that promotes local agriculture in Monroe County, which really opened my eyes to the impact that farms can have on their community. I’m looking forward to coming up with new ways to integrate Dilmun in the Cornell community, and hopefully pass along my appreciation for local, fresh, sustainably grown food to others!

Nate August

Year: Class of 2015  
College: College of Agriculture and Life Sciences  
Major: Agriculture Science

About Nate: My interest in agriculture began when I started volunteering at my high school vegetable garden. We grew produce for the cafeteria, often working with elementary school kids to help them gain a better understanding of where their food comes from. From there, I became involved with The Good Food Collective, a multi-farm CSA, distributing local produce to customers throughout the Rochester area. Here at Cornell, I’ve spent time working for projects that aim to develop sustainable cropping systems. I also spent a summer working a small, diversified vegetable farm in Vienna, Maine. These experiences
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have developed my enthusiasm for agricultural education and exploring methods to improve sustainability in our food system.

FARM MAP
Volunteers observe flea beetle damage on Kale and discuss the importance of diligent scouting for effective management.

Volunteer Work Days

In part of our effort to promote Dilmun Hill’s image as a place of interactive agricultural learning, we have decided as an organization to move away from the previously used title of “work party”, towards a name such as “volunteer work day”. During volunteer work days, anyone interested is welcomed to the farm to participate in various tasks, such as bed preparation and transplanting, where they work side by side with farm managers. We make an effort for work days to have a highly communal environment, with lots of dialogue. Volunteers are encouraged to ask questions and share their ideas, with the goal of making the experience engaging throughout its entirety.

Overall, volunteer work days were very successful, bringing in hundreds of volunteers over the course of the season. However, one difficulty of these events was unpredictable volunteer attendance, which could range from zero to fifteen. Due to this variability, it is best to consistently plan work day tasks that can accommodate a large group.
Farm tours
Throughout the summer, there were many occasions when both individuals and small groups would stop by the farm unannounced. Some people came purely out of curiosity, but many of our drop-in visitors were previously involved with Dilmun Hill. All visitors were enthusiastic, and farm managers would always take the time to tour the farm with them, answering questions and listening to their Dilmun stories.

During the fall semester, we gave tours to many of the CALS classes, including the Sustainable Agriculture class. Students were very enthusiastic about the farm, and many would return to Dilmun Hill events throughout the season. Exposing new students to Dilmun Hill generates a fresh wave of excitement each year, and we are working to make the farm, and its social events, more conveniently accessible for students throughout the university.

Yoga by the Pumpkins
This fall, a student-led yoga class held in the pumpkin patch brought over forty participants, many of whom had never been to the farm before. Organizing more events such as this, that are unrelated to farming, but held at Dilmun Hill, is a great strategy to increase publicity in the future. These events attract people of broad interests to the farm, exposing many of them to agriculture for the first time, and often sparking a new interest. We found that the majority of people in the other colleges at Cornell are completely unaware that there is a student-run organic farm on campus, but are always very excited by the news upon finding out.

Reaching out to other student organizations, and encouraging them to hold events at the farm, is an idea that should be explored as a means of increasing farm foot traffic. Additionally, co-sponsored events between Dilmun Hill and other student groups with common interests is another avenue that could generate more engagement in environmental mindfulness within the Cornell community.
Canning workshop

A canning workshop held at the Prospect of Whitby Co-Op was by far our most successful outreach event. Students were very enthusiastic about learning the new skill, and the convenient location of the event was also a likely factor in the increased attendance. Like yoga, this event called to people from many different backgrounds. More events such as this should be planned for the future, as they are a great way to engage more people in Dilmun Hill, teach new skills, and prevent food waste. An event such as this is an example of a potential collaboration with other sustainability-focused clubs on campus.

Lacto-fermented dilly beans and pickles created at one of the pickling workshops.
PRODUCTION

Expansion of growing area

The completion of the deer fence enclosing the entirety of the farm has doubled our effective growing space, allowing us to utilize the great, uncontaminated soil behind the barn. This summer, we restored previously existing raised beds in that area, and established six new beds along with clearing a small field. We hope more beds continue to be established in future seasons.

The space behind the barn is advantageous for annual crops because it is flat and more accessible than the Market Garden space on the hill. Placing crops that require a higher level of maintenance here will make management much easier for future years. It is important to note that adequate irrigation infrastructure will need to be developed to fully take advantage of the newly-enclosed space.

Uses for the contaminated portion of the farm continue to be explored, with the hope that ultimately this land will become as productive as the rest of the farm. We hope to establish more small fruit plantings on our contaminated soil. Berry crops are ideal for our contaminated land as they do not take up the lead-arsenate, and the perennial nature of the crops allows us to maintain constant ground cover, reducing the potential for exposure. Additionally, we planted a small field of sweet corn in Block 1, another contaminated area, aiming to test the safety of growing this crop on the soil.

New raised beds established within the newly established deer fence.
Dilmun used space in the Guterman greenhouse for propagating transplants. Guterman’s proximity to the farm makes it a convenient location, and the maintenance that the greenhouse provides is hugely helpful. McEnroe potting mix and plastic cell trays were used in transplant production. Starting crops in the greenhouse is crucial to a successful season extension. Taking care in planning the seeding dates is important for timely establishment and succession of crops. In particular, slow growing crops like those in the Amaryllidaceae family should be planted very early to ensure a good size at the time of transplanting.

Irrigation
Irrigation on the farm is applied primarily through drip or “trickle” irrigation lines. The thin, black plastic hoses have small slits every 6-12 inches allowing for a slow, consistent supply of water, with minimal evaporation. The entire market garden as well as some of the pioneer beds are set up with manifolds for easy attachment of drip lines.

Some of the newly-cultivated space behind the barn is supplied with water for drip irrigation through garden hose, however the garden hose is too small in diameter to supply the adequate pressure needed to run more lines. Extending our large, 3” diameter mainline that ends in the market garden, down to the pioneer beds, will be an important step in expanding production behind the barn.

Nutrient Management
Before transplanting, a 2-4 inch layer of compost was spread across the beds. To save time, a few of the only received compost around each transplant. This proved to be a poor strategy, reducing crop growth and minimizing the benefits to soil improvement. In future years it is suggested that when beds are composted, the material is spread across the entirety of the bed.

Fish emulsion and chicken manure, were our only other nutrient inputs during the season. These fertilizers were used mainly post-transplanting to improvement crop establishment and as-needed for heavy feeders like tomato. Fertilizing was a time consuming task. Developing a better application strategy, such as incorporation into the drip irrigation, could be very beneficial for increasing efficiency in the future.
CROPS IN REVIEW

*Brassicaceae*

Brassicas were some of the first crops established in the field. The cole crops proved to be reliable, and high yielding. Brussel Sprouts, broccoli and kale all sold well, however cabbage, arugula and hakurei turnips were not favored by customers. Increasing the availability of kale throughout the growing season and exploring higher value crops like baby kale or arugula mixes are good opportunities to explore for future years.

Flea beetles were well-managed by floating row cover in the spring, but became problematic when the floating row cover was removed to reduce heat stress in the plants as temperatures rose. The resulting holes in the kale kale leaves somewhat reduced the marketable yield of the crop. The yields of other cole crops like brussel sprouts and cabbage did not appear to be affected.

Slugs were also problematic for the cole crops, especially broccoli. Use of diatomaceous earth was somewhat effective in deterring the slugs, however they too reduced the marketable yield of most of our cole crops. The increased slug damage observed on cole crops compared to other crops around the farm, was largely attributed to poor drainage and the use of straw mulch on the beds. The straw mulch was thought to exacerbate the already-wet field conditions, creating an ideal slug habitat.
Later in the season, swede midge damage became increasingly apparent on the brassicaceae crops. Swede midge feeds on growing point of brassicaceae crops, creating abnormal vegetative growth, and often reducing yields. This was particularly problematic for our spring planting of kale, which suffered from odd growth habits and a reduction in the number of large, marketable leaves. Crop residue was removed from the fields to reduce overwintering populations.

**Cucurbitaceae**

Cucurbits were similarly reliable, high yielding, and popular crops, but primarily during the summer months. Crops in this family that were grown at Dilmun include: cucumbers, summer squash, winter squash, pie pumpkins and jack-o-lantern pumpkins. Squash was a much more popular seller than cucumbers. Next year, it would be advised to plant fewer cucumber vines, as we consistently had large surpluses that went to waste, even after several pickling sessions.

The first planting of cucurbits faced considerable pest pressure from squash bugs and cucumber beetles. These pests were managed with floating row cover and by hand, manually squashing the bugs each morning while the bugs still move slowly. We made sure to immediately cover subsequent plantings directly after transplanting. This greatly reduced insect damage. Ultimately, damage from downy mildew put an early end to many of our summer squash and winter squash plants. As such, we were able to harvest very few winter squash. A great disappointment due to the high demand our customers expressed for the crop. The downy mildew damage is attributed to several factors; the persistently wet weather during the early growth of the crop.

**Solanaceae**

The small field of potato that was cultivated was incredibly successful and generated several engaging volunteer workday tasks. The crop stored well, and was a very popular seller. However, given the relatively low price received for potatoes, it may make sense to prioritize higher value crops in the future.

A large tomato crop was planted after Manndible Café expressed interest in purchasing much of harvest. Unfortunately, the field tomatoes were largely unsuccessful, due to a wet season and intense disease pressure. Exacerbating the damage was the fact that the tomatoes were trellised late in the season, and the plants could not be properly lifted off of the ground. Tomatoes grown in the hoop house, however, were very successful.

Tomatoes, particularly the smaller varieties, were very popular sellers at market and among co-ops. Other solanaceous crops such as eggplant and peppers were also popular sellers. For eggplant, it is recommended that early maturing Japanese varieties are used in the future. The Italian varieties did not have enough time to properly mature.
Amaranthaceae

Swiss chard was a reliable, high producer throughout the season. It experienced no pest pressure, and was incredibly low maintenance. Chard was one of our most high interest crops at markets, due to its beautiful coloration. Many Cornell students tried swiss chard this fall for the first time, thanks to Dilmun Hill. Beets were similarly popular.

Spinach was slightly less successful due to the high summer temperatures. A more careful timing and shaded location for the planting of this spinach to avoid bolting would likely yield a successful and popular harvest.

Alliums (Amaryllidaceae)

Alliums produced very well, and also had no significant pest pressure. A wide variety of alliums were planted, but the more traditional, large onions were the most popular sellers by far, and also stored very well. It is recommended that a large crop of these traditional onions be planted for next season, and a much smaller amount of novelty varieties.

Fabaceae

The bean crop this summer was incredibly high yielding, and a very popular seller. Pest and weed pressure were very low. One early planting in the low side of F1 was lost to poor drainage.

Cover crops

A mix of annual ryegrass and field pea was sown in approximately one-third of the bed space this season. Rye was chosen in the hopes that it would effectively smother weeds due to its thick growth habit, and field pea will fix nitrogen, improving soil health for the next season. These cover crops established themselves quickly, and were a great teaching point during farm tours.
MARKETING AND SALES

During the 2014 season, Dilmun Hill sold more produce to the Cornell community than past years, with much of the increase in success attributed to the new farm share program and customer E-list, “HillHarvests”.

Farm Stand

The farmstand could be found every Thursday on the Cornell Ag Quad. Students would bring up produce from the farm to market to passers-by and weekly customers alike. Especially during the summer months, faculty and staff were our primary patrons. Items that sold particularly well, were things that were easily consumable as is. Particularly, blueberries and cherry tomatoes often would sell out.
Sales to Cooperative Living Centers (Co-ops.)
Expanding wholesale business with Co-ops is an effort to better engage customers who are closer to Dilmun in the community and distribute a larger volume of product. Many of our volunteers live in coops. Creating a simple system of wholesaling to them only seemed natural. This program saw some success, with 1-2 coops. In particular placing orders each week during the growing season.

One of the most important factors of wholesale marketing has proven to be convenience. Continuing to work towards making interactions with co-ops as convenient for their food stewards as possible will help increase the success of this program. We hope to create an online order placing interface, and keep communication between ourselves and the food stewards as open as possible, so that we can best understand their needs, and work towards meeting them. Weekly produce deliveries were something that they responded very positively towards.

HillHarvests
HillHarvests is a Cornell-hosted email list newly created in 2014 to better engage customers interested in purchasing Dilmun produce. Originally a list intended exclusively for bulk order customers like cooperative living centers, however, HillHarvests has evolved into an email service available to anyone interested in learning about what we have available weekly. Weekly emails were sent out to the customers listing our availability and price, along with a picture and short snippet of farm news. Customers are able to order directly via email, for pickup at a scheduled time. This service was invaluable for getting better exposure to our produce, which has historically had low visibility across the campus as a whole. Individuals interested in joining HillHarvests are encouraged to email dilmunmanagers@gmail.com and request to be added.
Farm-share program

The farm share program was an effort to try out a community supported agriculture (CSA)-type model for our customers. Each week, Dilmun Hill offered a “share” of what the farm had to offer in the form of a box of delicious seasonal produce. Our farm share took a low-commitment approach, allowing customers order shares (or half-shares) on a week-to-week basis based on their need. Half shares, available for $15.00 were far more successful than the full share option ($25.00). This is thought to be due to the size of the share more so than price. Many customers reported having trouble using the entirety of the full share each week. Share sales peaked at around 10 share/week in the early fall, after considerable marketing efforts throughout the university.

Example of a Dilmun Hill Farm-share

Future possibilities
We see the Cornell community as a market that is largely untapped. This is a fantastic and challenging opportunity for us. As we continue becoming a more productive, higher yielding farm, Dilmun also needs to continue progressing our sales and marketing strategies to create more convenient ways to get our produce to faculty, students and staff. Expanding HillHarvests and the farm-share program, continuing to build strong relationships with co-ops and other smaller institutions, and creating value added items are just some of the many ideas that could help us reach this goal. With the formation of our new steering structure, we are confident that
we will continue to improve the business management aspect of Dilmun Hill, and provide students with a realistic experience of running a small farm business.

**MISCELLANEOUS FARM MANAGEMENT**

*Irrigation leaks*

It has come to our attention this season that there are considerable leaks in our irrigation system, resulting in wasted water and excessively muddy conditions on some of our pathways. Repairing the irrigation is a project we hope to tackle during the 2015 season, with the help of CUAES staff.

*Relationship with the orchards*

Dilmun Hill and The Cornell Orchards decided to continue their relationship this year, with Dilmun marketing various orchard products at our farm stand. The fruit and cider sold was very popular, attracting many customers to the stand.

*Freshly harvested blueberries from the Cornell Orchards ready to be brought to the weekly farm stand.*
Student research

This summer, we had one student researcher at the farm, working on the contaminated portion of the land. Unfortunately, we had very little interaction with her. In the future, a larger effort should be made to develop a relationship with student researchers, to engage both the farm managers with the student’s work, and the student with the overall progress of the farm. In addition, student researchers should be expected to share their project at the end of season wrap up event.

We hope that Dilmun will continue to be a site for student research, and continue to become a more popular one. Student research has the potential to become a much more foundational part of Dilmun Hill, and is yet another venue to pursue in the effort of increasing our presence within the student body.

Cornell Flotilla

Graduate student Peter DelNero approached Dilmun Hill at the beginning of the season with the idea of growing giant pumpkins to be used for a regatta, Cornell Flotilla, in the fall. He was granted use of the BMP beds at the back of the farm, on part of the contaminated land, and established a pumpkin patch. The farm managers helped with some of the initial patch establishment, as it required the use of the BCS, and in exchange, Peter spent an equal amount of hours volunteering at Work Days.
ACKNOWLEDGEMENTS

The success of the 2014 season could not have been achieved without the fantastic help from the following Cornell faculty, staff, and students, and generous support from outside organizations:

- Johnny’s Selected Seed Charitable Giving Program, through which we obtained a substantial seed donation, putting our season off to a great start.
- Myra Manning, a Dilmun Hill alumni now working at Johnny’s Selected Seed, who notified us about the Johnny’s Charitable Giving Program.
- Janet Myrick, Guterman Greenhouse manager, who took wonderful care of our seedlings.
- Cornell University Agricultural Experiment Stations and their staff, including Tim Dodge, who facilitated equipment training and maintenance throughout the season.
- Cornell Farm Services, including Bill Huizinga, who provided us resources and support throughout the summer.
- Glenn Evans, who lead the construction of our water tower and deer fence.
- Michael Mazourek and Jason Grauer, who partnered with Dilmun Hill to sell produce from Mellow Yellow Greenhouse, and educate students about greenhouse vegetable production.
- Cornell Orchards, including Farm Manager Eric Shatt, who provide water for Dilmun Hill, and allow us to harvest and sell fruit crops at the Ag Quad farm stand.
- Craig Cramer, CALS Extension Communications Associate, for helping us publicizes all of our education and outreach events.
- FSSAB, for their consistent guidance and support throughout the season.
- Betsy Leonard, Organic Farm Coordinator, for all of her time, effort, and guidance over the year.
- Triphammer and Prospect of Whitby Cooperative Living Houses, our first wholesale customers, who enthusiastically bought our produce throughout the season.
- Volunteers, without whom we could not have accomplished nearly as much as we did!