Farm Report 2010

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Managers

Dan Gladstone, Ag Science ‘11- I became a volunteer at Dilmun when I was looking for a place to get my hands dirty on campus. The free vegetables were appealing as well. As I met friends through Dilmun, I wanted to get more involved, so I applied & joined the Steering Committee and eventually applied to be the farm manager for this summer. I still feel like a beginner when it comes to growing vegetables, but the summer was an extremely rewarding learning experience for me.

Ryan Devlin, Ag Science ‘13- Visiting a few work parties in the fall of 2009, I was enticed by the sense of community formed around the idea of sustainable agriculture at Dilmun. My interest in farming started with The Food Project, a non-profit I worked on back in the Boston area. With Dilmun I saw an opportunity to let this interest grow. My experience has definitely been one defined by learning through both success and mistakes on the farm. I value my time at Dilmun because in its essence it is just about being closer to the land.

Adam Baratz, Natural Resources, ‘11- I was born and raised in Israel. I am currently a senior studying Natural Resources and Development Sociology at Cornell. This summer I went back to Israel to help a neighborhood establish a community garden. After I returned to Cornell, I joined Dilmun Hill as a manager in the fall. I first found Dilmun halfway through my freshman year. The atmosphere in the farm was different from anywhere else on campus. At Dilmun, students connect with food, people, and the earth. The farm has served as a wonderful community. It has also served as a fantastic medium for experiential learning.

Becky Hume, International Ag & Rural Development ‘11 Hello! My name Becky Hume, I am a senior studying International Agriculture and Rural Development. This was actually my second year of involvement as a Market Garden manager at Dilmun Hill. Despite this, my second season was just as full of personal growth, beautiful moments of community, and of course bountiful vegetables! My time at Dilmun Hill has in many ways helped to cultivate in me a passion for sustainable agriculture and community building. I will continue to pursue these passions when I graduate and hope one day to own a farm of my own.
Volunteers and Work Parties

Volunteers are the heart of all Dilmun operations. Behind the hundreds of plants and vegetables seeded, transplanted, weeded, harvested, washed, delivered, and sold during the growing season are the wonderful and committed volunteers of Dilmun Hill. While the majority of Dilmun’s volunteers are students at Cornell, the farm is open to everyone and over the course of the 2010 growing season we had volunteers and visitors in almost every age group from kindergarteners to seniors.

Dilmun’s greatest and most known tradition on campus is its weekly work parties. Work parties are time for volunteers to come out and work on the farm with others who are interested in sustainable agriculture. Lots of farm work, eating, laughing, and learning take place at these events and they truly define what Dilmun is all about. Many of the season’s greatest ideas were formed by volunteers on the farm during work parties. In the spring and summer, Dilmun hosts work parties once a week and an additional one is added in the fall. While the Market Garden managers facilitated many of the work parties during the season, we also heavily relied on long-time volunteers to lead activities and jobs on the farm. Volunteers also run the farm stands in the fall. This past season hundreds of hours were worked by volunteers on the farm and we are truly grateful for their help.
Manager Time Commitment and Responsibilities

Over the 2010 Dilmun season the Market Garden had a total of four managers. This was an unusual number of managers for this project. The manager team, originally planned to have a composition of two people in the spring, ballooned into four managers in the fall due to added extra commitments by the original management team. While the team of four managers allowed for an efficient and productive fall (due to a highly coordinated scheduling and delegation effort) this is not a financially feasible decision for Dilmun to make in future years. It is of upmost importance to the farm that managers can make Dilmun their priority and their dream throughout the season and particularly during the school year. Managers with time consuming commitments outside of Dilmun have also expressed the personal difficulties related to being overly involved during a growing season. We recommend that future management teams consider this carefully in preparation for the season.
Growing Spaces

The primary vegetable field is Tortilla Flats, around 17,500 ft$^2$ (map follows). It is divided into 9 strips to accommodate six categories of vegetables and three cover crops (see page 22 on crop rotation). An expansion was initiated by Steering Committee member Ben Nachman in the spring, when we had a very successful couple of work parties to erect raised beds and amend the rocky native soil with compost in the neglected area behind the barn. As Tortilla Flats filled up, we eyed the area behind the barn and eventually attacked a larger section, even firing up the old red rototiller to tame the wilds west of the barn, christening it the 'Pioneer Garden'. Melissa Madden and Leigh Kalbacker had previously sampled this area for heavy metal content and declared it clean, as can been seen in the 2009 and 2010 BMP reports. This addition gave us room for a relatively successful potato patch around the raised beds and a less successful area to plant some of the excessive winter squash transplants we had started. The primary constraint in this area is deer pressure as they are free to come and go as they please and are not shy about nosing past floating row cover to get to the goods. Growing anything deer can eat here will require a fence or some ingenuity next season, but heavy mulching added some organic matter and suppressed the weeds to a degree. With a little bit of TLC this area of the farm can become a nice addition to our growing space. In 2010 we also expanded into the vacant spaces in the fruit tree terraces on the slope, allowing us to grow an extra 30 tomato plants. We turned these areas by hand, heavily amended them by top dressing with compost, and turned the compost in with the rototiller after 1 week. We were surprised how well the tomatoes did.
The Greenhouse

We started many of our plants in the Guterman greenhouse on Caldwell Drive. Dilmun uses the certified organic greenhouse in this range. A training with the grower of the organic greenhouse and the Organic Farm Coordinator is required before any student manager uses the facility. The Coordinator and greenhouse grower should always be contacted before you use the potting area or plan an activity with volunteers in the greenhouse. Janet Myrick is currently the grower, and she is happy to dig out potting soil from storage and is helpful with any problems. It is the MG managers’ responsibility to monitor seedlings for pests and consult with the grower and Coordinator if any show up. Cucurbits and Brassicas were especially pest prone: managers need to make sure these seedlings are not in the greenhouse any longer than they have to be. Organic cold frames are just outside of the greenhouse for use before transplanting. Greenhouse staff will water seedlings in the greenhouse and cold frames and apply organic pest management. In addition to the full season crop transplants, we also used the greenhouse to seed successions of beets, scallions, and greens like Arugula and Spinach. Managers should also use the cold frames at Guterman to harden off transplants (you must move the plants to the cold frames). It’s easy to forget about plants in the greenhouse as the season gets underway, make sure you check in at least every 2 weeks. There should be no need to have plants in the greenhouse beyond July.

Field Work

Tillage

This is an ever-evolving aspect of Dilmun Management. Communication between managers, the Organic Farm Coordinator, and Campus Area Farms staff is important to make sure everyone knows what’s going on when it’s time to tear up parts of the garden with heavy machines. Face-to-face communication with the Organic Farm Coordinator or other staff members who are doing the work is best. Staff aren't as familiar with our farm as we are, and we're not familiar with their equipment so it’s important that the managers or the Organic Coordinator are present during machine work to communicate closely with the operator about the specifics of the job. If you're unsure of what equipment will be needed, ask the Organic Farm Coordinator and explain to them what you want done. The Organic Farm coordinator is a superb liaison for on campus departments like Campus Area Farms. There is a plan to buy a rotary plow for the BCS so in the future we may not rely as heavily on Campus Area Farms for tillage, but they are still an excellent resource for machine-related work on the farm. However it is important to first relay all questions to the Organic Coordinator as they are our primary liaison.

Mowing

This year the farm attempted to save some money by not hiring CUAES to mow during the lower-traffic months after graduation and before school started. It was mostly a success from our point of view. The entire Dilmun manager team took weekly responsibility for maintaining mown pathways between the projects, leaving the rest in “meadow” management that proved excellent for pollinator species. In 2011, the Growing Mosaics Garden managers will be looking into writing a formal reduced mowing plan for Dilmun. Mowing the high weeds in the fruit tree rows and under the hardy kiwifruit with the small push mower maintains a clear line of sight from the barn to Tortilla Flats and the grass on the hillside didn't grow too high. It might be different in a wet year, but we spent less than 20 hrs/month mowing which seemed pretty good for the area of grass there is. Making sure a 10’ periphery of the garden was mowed close was found to be the best remedy for devastating predation by mammals in beets and probably other crops as well, and allowed the resident Red Tail Hawks to help us. String
trimming to keep the irrigation main visible is insurance to keep other equipment from cutting it. It's also important to delegate among managers the responsibility of keeping our deer fence absolutely clear from vegetation- all management teams are responsible for doing 10% of their weekly hours towards Dilmun upkeep, and this is part of that. It’s tempting to overlook the berry-bearing violations of this rule but in just two years they will be impossible to remove and the fence will deteriorate. You may need to mow tough cover crops like rye and sorghum sudangrass with the BCS, but after a few hours getting used to the scythe even they are manageable if you take your time and do sections in pieces. We were able to mow all three sections of cover crop (sorghum) twice with the scythe this year. The scythe is a great tool, and always creates interest, but is only for use by trained managers, never volunteers.

**Weeding**

Proper equipment and technique for weeding is largely a personal opinion. We found that weed pressure was usually reduced under row covers. Annual grasses are especially problematic, while most of our other weeds can be easily removed grasses like Foxtail and Witchgrass develop roots in a matter of days. To control burdock, we resorted to just cutting off new leaves as they appeared every few days until the root reserves were depleted rather than unearting the entire root (there were too many). Because Burdock is biennial, if you ensure they don't get a chance to bolt and produce seed in the second year they will die out slowly.

**Irrigation**

The Irrigation system is piecemeal and requires constant supervision & maintenance. The main valve near Cornell Orchards must be turned off at the end of every day so that Orchards doesn't lose tens of thousands of gallons of water if a component fails at 9:00 PM. We made investments in some new equipment this year, and now all of the above-ground components are in tip-top shape. A new 1 1/2” header or submain runs south-north along the east edge of the garden and distributes water to the driptape that corresponded to rows running east-west in the garden. This spring we plan to buy a pressure reducer to protect the drip-tape from blowing out. If you cannot use the pressure reducer, it's important to keep open no less than 8-10 drip tapes at a time to prevent blowouts. When drip tape is stored it cannot be folded or otherwise bent into any angles or it will fail in the creases. We rolled it around some of the recycling cans and pails this fall and that seemed to be a good technique. Brainstorm for better ideas while you are weeding. There is a good chance Orchards will not be ready to turn on the water when you first start transplanting (they may have new projects or leaks of their own to fix), so it might be necessary to carry water from the old well behind the barn. When you use this well make sure you turn off the circuit breaker in the basement after you are done or the pump will run continuously. We are required to report all water withdrawals for this old well monthly, so keep track of your use and report it to the Organic Farm Coordinator.
This is the most fun, and best way to roll up the irrigation main!

**Compost, Foliar Feeds and other Amendments**

Heavy feeders such as cucumbers and Solanaceous crops were transplanted with a shovelful of compost mixed into the soil at the base of the plant. We never got our own delivery of compost, but rather stole it by the wheelbarrow-full from the mountainous stockpiles in the GMG and BMP projects. We used around 6 cubic yards in Tortilla Flats and 3 in the non-raised bed areas of the Pioneer Garden to mulch potatoes. The new raised beds contained a high proportion of compost, and should be replenished yearly with fresh compost.

We used some horse manure from the Equine Research Park on Bluegrass Lane this year. You will need to borrow a truck, and may have to load it by hand, but Steve or Larry may help with a front-end loader if they are not busy. They have great long piles of the stuff, it accumulates and starts to decompose during the winter months before they spread it or use it in the CU compost. It's slightly acidic and has a lot of woodchips and straw. We used it as mulch around the kiwifruit and fruit trees, as well as mulch over 3 rows of potatoes in the pioneer garden.

Straw Mulch was used on a lot of crops to suppress weeds & maintain soil moisture levels without having to irrigate as much. The previous managers warned us about slugs inhabiting the straw in wet years but it was not a problem for us. Tim Dodge at the Love Lab generally has a supplier for straw and it is much more enjoyable to apply mulch than to keep up with weeds in un-mulched areas.

We used fish emulsion to feed the eggplants, peppers, and tomatoes 3 times between the middle of June and July, and fed broccoli, cauliflower and kale 2-3 times throughout the summer. The fish emulsion is stored with the backpack sprayer in the organic greenhouse. Make sure you tell Janet Myrick a few days before you need to use it, and it must be cleaned and fresh water run through it before it is returned. It's against University policy for students to apply anything with an EPA label. Only fertilizers the Organic Farm Coordinator has reviewed can be applied (vermicompost teas etc).
Seeds

We ordered seeds from Johnny’s Selected Seed Company after having a special early-season work party/meeting with volunteers and the previous season’s managers to select varieties that we thought would appeal to customers and do well in our garden. Next year, we recommend estimating the amount of seed that will be needed for successions of crops like beets and scallions, because they are much more expensive to buy at the farm store downtown when they run out than in the mail-order catalogs.

We also have to thank the following for contributions to our genetic wealth at Dilmun:

Martha A Mutschler

Dr. Mutschler is a professor in the Plant Breeding and Genetics department at Cornell. She is a vegetable breeder who works on developing genetic control of specific traits in tomatoes and onions through the use of classical breeding techniques. Martha contacted Dilmun to offer us two varieties of plum processing tomatoes. These varieties were developed to have resistance & tolerance to late blight. Considering that late blight decimated Dilmun’s tomato crop in 2009 we were excited to see how the hybrids would fare. Martha also offered the hybrid seeds in hopes that as student farmers we could benefit from creating an experimental assessment system to evaluate the success of the hybrids.

While we quietly anticipated with fear the onset of late blight throughout the season, it luckily never occurred. However, this development made it difficult to evaluate the hybrid varieties’ resistance to late blight. The hybrids also became victim to the cool early fall weather due to a late planting. This resulted in only a few ripe tomatoes being produced before the plants succumbed to frost. However, we found this small sample size of tomatoes to be quite tasty, especially considering their designation as a processing variety.

Donald Halseth & Steve McKay

Another demonstration of the generous resources available to Dilmun at Cornell, Dr. Donald Halseth, a Professor in the Horticulture Department, donated several unique varieties of potatoes to us from Freeville Research Farm. This included varieties such as Keuka, a white skinned and high yielding potato, and Purple 5, a novelty purple skinned potato. These potatoes were a colorful and unique addition to our farm stands. Steve McKay from the Freeville research farm donated 70 lbs of Gold Rush seed potatoes.
Crops

Brassicas

Kale

Winterbor
Toscano

2010 was the year of kale at Dilmun. With 5 forty foot long rows of Kale grown on the farm this year, we were never in short supply of the vitamin rich leafy green. The curly Winterbor and the dinosaur skinned Toscano were our two main varieties of the season. The kale was transplanted in late April and produced leaves ready to harvest from June until early November. Immediately after transplanting we covered the little kale plants in floating row cover, a white cloth sheet that acts as a physical barrier against pests if used preventative (ie before infestation). It is especially important to cover young brassicas with row cover, because of the damage that flea beetles can do to the plants in their developmental stages. When the kale plants were ready to harvest we took off the row cover to allow for easier harvesting. The Winterbor variety consistently outperformed the Toscano in terms of appearance and plant vigor. The Winterbor also tended to sell better at markets as well. We found that it was important to prune all the kale plants of dying leaves on a regular basis so that healthy leaves could get enough sun and water. Overall, Kale is not a consistently great seller at markets but it is a wonderful plant to let volunteers harvest for themselves and Manndible Cafe loves it.

Collards

Top Bunch

Collards have always seemed to play the second fiddle to kale at Dilmun. We grew one row of collards this summer and treated it much like kale in terms of management. The collards produced nice small green leaves but had slightly more flea beetle issues than the kale. Bunches of the plant did not sell too well at markets and despite the great flavor of collards we recommend focusing more on kale in future.
**Broccoli**

Arcadia

In early May we planted two 50ft rows of broccoli in our fields. With a purple and green headed variety we were excited to see how the color contrast would fare at markets. The plants did well; we got a head of broccoli from almost every plant. We were careful to check daily on the broccoli during harvest time so as not to miss any heads that could potentially bolt within the following days. This early harvest routine required storing some of the broccoli heads in the Pomology cooler in the Plant Science building for several days before market. We did not stagger the broccoli plantings which meant that there was a flush of broccoli in a three week period in July. We recommend staggering plantings in the future. The purple and green heads turned out beautiful though, and we sold many of them at market and to Mandible.

**Cauliflower**

Veronica

Fremont

Violet Queen

Two 40ft rows of cauliflower were planted at the same time as broccoli in the spring. We transplanted some classic white-headed varieties as well as a Romanesco type. The Romanesco varieties are supposed to form spiraling castle-like heads, but due to heat we had trouble with the heads bolting before maturity. Because of this almost none of the Romanescos ended up at market. The classic varieties fared much better although some heads turned slightly yellow before harvest because we forgot to blanch them by folding or tying down the leaves over the heads. For future years it might be easier to purchase a self-blanching variety. The heads sold fairly well at market although the yellow-tinged ones were obviously not as desirable.

**Radishes**

Cherriette

D’Avignon

We had several direct seed plantings of radishes over the summer. In our first direct seeding in the early spring we attempted a volunteer’s experimental idea to plant radish seeds over carrot seeds in rows. The plan was for the radishes to germinate, grow, and be harvested before the carrots germinated. The idea turned out to be fairly successful with the radishes coming up in tight rows that did not seem to deter the later germination of the carrots after harvest. We planted Cherriette, a small round red radish variety, and D'Avignon, a long red-white French radish. Bunches of both varieties proved to be successful at market and sold out often. This led us to plant several more successions later in the summer. The radishes required little maintenance and reached maturity fast. Besides covering them in row cover we found that it was important for the plants to be in cooler weather to avoid the radishes from becoming split and mealy. We encourage many more plantings of radishes in the future.

**Daikon Radishes**

Miyashige

We planted two 20ft rows of the Daikon radishes to a relatively successful germination. However the late planting of the radishes (late June) and the dense clay Dilmun soil may have led to their
demise. The radishes went to seed early and most of them never quite formed the long white tap roots they are known for. An unidentified worm-like pest problem also caused the roots to be riddled with holes. The few radishes we were able to bring to market sold out immediately and were asked for repeatedly by customers. A raised bed planting would probably have fared better.

**Cucurbits**

**Cucumbers**

Genuine

With 100+ feet of slicing and pickling cucumbers grown this season, there was a period of long, heavy harvests in the field. Unfortunately this was cut short by the devastating downy mildew we experienced. Downy mildew is a fungal pathogen that leads to the defoliation of an infected plant’s leaves. Symptoms of the plant are a mosaic like formation of brown-gray spores underneath the leaves near the veins. As this pathogen is a relatively new problem in the northeast, we did not recognize these symptoms as downy mildew until it was much too late to do anything. The first signs of the mosaic spore formation appeared on a few cucumber leaves in late July-early August. A few weeks later and all the leaves of the cucurbits in Tortilla Flats were crippled, brownish gray, and near death. The cucurbits also became victims to powdery mildew but no harm besides the presence of the pathogen’s signature fuzzy white spores on leaves was evident. In general the cucumbers, as well as the rest of the cucurbits, were planted much too close together (about a foot to a foot and half between) which may have caused serious air drainage issues. Good air flow is an important preventative measure against fungal pathogens such as downy mildew and powdery mildew. Also the dense plantings made harvest unnecessarily difficult. Overall we strongly recommend that the plantings of cucurbits and any plants in general are given adequate spacing. In terms of market sales the slicing cucumbers are popular at markets due to their immediate edibility but the pickling varieties were barely touched by customers. Mandible also ordered a great deal of slicing cucumbers on a regular basis. However, while healthy there were more cucumbers than necessary, so the numbers could be reduced in future years.

**Summer Squash**

Sunburst
Bush Baby Zucchini
Zephyr

A similar story to the cucumbers, the summer squash was prosperous for a long period in the season before the deadly strike of downy mildew. For several weeks there was about twice as much summer squash available as could be consumed by the combined efforts of customers, volunteers and managers. The three varieties we grew, a yellow bended summer squash, a light green striped zucchini, and a yellow patty pan, added color and unique shape to the stand. Customers seemed to be particularly in wonder of the flying saucer-like patty pan. Due to an early transplanting, the summer squash took off quite early in the beginning of the summer. Sales were strong at the market during this time, however when peak summer squash season arrived customers avoided the comically over-prevalent vegetable. With hundreds of pounds harvested every week, finding a place for the summer squash became more of a problem than anything else. Of all the cucurbits, the summer squash weathered the onset of downy mildew the best, but most of the plants still died from the pathogen. This lead to an unusual deficit of squash at markets. In future years we recommend planting less summer squash with more spacing in between plants.
Winter Squash

Honey Bear Acorn
JWS 6823 PMR Butternut
Cornell Bush Delicata
Baby Pam

Of all the vegetables on the farm this season, the winter squash probably has the saddest story. With copious amounts of Acorn, Butternut, Pumpkins, and Delicata transplanted in Tortilla Flats and the Pioneer Garden we had dreams of warmly baked squash and glowing jack-o-lanterns in the fall. Luckily due to the storing abilities of winter squash, the fruit of the downy mildew affected Acorn and Delicata varieties planted in the market garden survived until harvest time and did not rot (downy mildew only affects the leaves of the cucurbits). However in the Pioneer Garden, where the majority of the winter squash was planted (including all of the Pumpkins and Butternut), deer herbivory overwhelmed the plants and not a single winter squash reached maturity. Although we tried many protective measures, including row cover, the winter squash were too desirable for the deer to resist. With this in mind we do not recommend planting anything in the Pioneer Garden that will seem the least bit tasty to deer until a fence is put up. This should be carefully thought out in respect to future cropping plans. Due to the numbers of winter squash being too low, we do not know how they would have properly sold at market. Judging by requests from customers, there was an unfilled market for winter squash this fall.

Watermelon

Little Baby Flower

These sugar baby watermelons were a hit at the one farm stand where they made an appearance. Packed with flavor and easy to transport, customers salivated over the melons at an Ag Quad market in the late summer. These are also a fun fruit to break out at work parties after a hard hour or so of weeding. With downy mildew, and the ever-present hunger of the local woodchuck, these melons were faced with problems from the start. We recommend that future managers make a strong effort to grow many of these melons in future years as they have a huge sales and smiles potential.

Fabaceae/Chenopodaceae

Beans

Italian Tongue of Fire
Fortex
Carson

Beans were somewhat neglected, but despite our ignorance performed beyond our expectations. We seeded the Italian Tongue of Fire, Fortex, and Carson beans directly in the field and nearly all of them succumbed to insects eating the cotyledons or the plants were unable to break through the crusted soil. Those that grew were subjected to rodent blight, until the rodents were distracted by the peas next door. Eventually we had a few scraggly bean plants, and when we found a seed stash in the barn from years past we decided 'what the heck' and seeded about 60 Carson beans in the greenhouse. We
transplanted them in rows between the islands of older plants and they had much better success. Carson was a yellow bush bean that sold well and produced for 3-4 weeks. The low hanging beans are vulnerable to mouse damage, which can be mitigated by exposing the area around the beans to aerial supervision by raptors. To ensure the Italian Tongue of Fire beans didn't mold in the field we cut the whole plants when the beans had matured and allowed them to dry in the barn. While they didn't yield much, shelling the beans was a fun workparty activity. In years past we have given the dry beans to NWAEG for the Horticulture Department cook-off. This year they didn't participate and we didn't plan enough to attend, but next year Dilmun should compete. The Fortex bean was okay, but the convenience of bush beans was enough to make them the superior variety in our eyes.

Swiss Chard

*Bright Lights*

This Rainbow Chard grew great all summer, and never really slowed down. We stopped keeping row cover over it in June and the pests left it alone. Remind volunteers that the biggest leaves aren't the best, because washing and managing bunches that are 12-14” tall is easier and more efficient than the 24” monster leaves. Even if all the chard isn’t needed, the plants produce more if every week the older leaves are pulled off.

Peas

*Snow Sprint*

*Sugar Sprint*

The peas were one of our least successful but most popular crops. We should clarify- they were most popular with the woodchucks and insects. When we noticed that few had emerged, we dug up some of the peas to find the cotyledons had been excavated by some sort of bugs, and those that did come up were regularly mowed by the rodents. They never really recovered, but we did put some trellises around them and harvest about 2 quarts of peas in August.

Beets

*Golden Beets*

*Chioggia Guardsmark*

*Bulls Blood*

We underestimated beet’s earning potential, and as a result ended up buying seed at Agway later in the season. The golden beets grow very slowly, but people seek them out at the farm stand. Cutting the Chioggia in half to show off its candy cane / bulls eye pattern was a good way to show them off, but we generally sold out of beets every week. 200 row feet of beets would not be excessive, judging from our experience this summer. Making sure the rows were wide enough to work in, and mowing the areas of lawn near the beets to discourage mammals was the secret to success.

Liliaceae

We started all of the alliums in the greenhouse, even shallots. It worked for us because they were so slow to emerge which made mulching & weeding hard, and for onions and shallots the season really can’t be too long. The alliums can’t take much weed pressure, so heavy straw is the rule.

Onions

*Alisa Craig*

*Redwing*

*Dilmun seems to have a unique ability to grow amazing alliums. This year was no exception,*
we grew a hard storage red onion and a Spanish type that grew to enormous proportions. The spacing is important to make sure they aren’t interfering with each other when they reach 4-5” diameters.

Leeks
   Tadorna
We chose this leek because it was resistant to leaf diseases. It did well, although we did not plant it in a very deep trench so the stems were not blanched as far up the stem as those in the supermarket. The leek roots itself so well that planting it deep would make harvesting even more of a chore- we generally had to cut the roots on all 4 sides of the stem with a harvest knife to pull the leek without damaging it. Maybe heavy mulching would blanch the stem as well, but make sure leeks are planted in successions or you will be trying to sell the whole crop before they outgrow the optimum harvest diameter.

Shallots
   Ambition
This hard red storage shallot was great. It grew slowly, but by the end of our season we had a good number of shallots that weighed ¼ lb. It had tons of spicy garlic-oniony flavor, and several visitors to the farm exclaimed they had simply never seen shallots as large.

Scallions
   Deep Purple
   Evergreen Hardy White
Scallions (green onions) were pretty easy to grow and sold well. There didn’t seem to be a preference for red or white varieties, although we thought the red were more eye-catching. We seeded them in 3-4 per cell and didn’t thin when we planted them, they are happy enough to share space with each other and the stems would not deform too much at 3-4 weeks.

Garlic
   German White
   Kettle River
   KFB Softneck
   Rocombole
The Garlic that Becky, Davis & Alex planted for us in the fall of 2009 was great. It peeked out of the mulch and gave us some early scapes, and generally didn’t need much other caretaking until harvest. We had a good amount and decided to save our own seed. We thought the German white did the best, it produced the largest bulbs that were also not prone to breaking from the stem when dug up. The cloves are also relatively easy to peel. We planted around 120-140 cloves for next year in the minutes before a heavy rainstorm during a fall work party.

Solanaceae

Eggplant
   Machiaw
   Rosa Bianca
   Nadia

The eggplants got off to a rocky start because we neglected to notice that as new leaves were
being formed they were quickly being devoured by Flea Beatles. After 2 weeks of wondering why our transplants were the same size, we decided to do something. Row covers was not enough prevention as the infestation had already begun. We applied Surround, a kaolin clay pest deterrent that proved to be controversial decision (See Amendments pg 9) Make sure applications are always cleared with the Organic Farm Coordinator. Some foliar feeding with fish emulsion got the eggplants back up to par and they began to do well. The Asian variety Machiaw and the traditional looking purple Nadia sold well, but an heirloom ‘Rosa Bianca’ (round, white with purple shoulders) was largely ignored at market.

*Potatoes*

- Gold Rush
- Purple 5
- Cheiefan
- Keuka Gold
- Reba
- Superior

Dilmun was fortunate this year to have multiple varieties of potatoes donated from Cornell’s Homer C. Thompson Vegetable Research Farm in Freeville. Six 30 ft. rows of the Gold Rush variety were planted in the Solanaceae section of the Market Garden. This variety yielded large potatoes and the plants had few pest issues. Potato beetles were spotted frequently on the leaves but the population never reached high numbers. We made sure to control the population by hand picking and squishing the beetles off the leaves weekly in the summer (this is a good work party/field trip activity). The Gold Rush potatoes sold okay at market and Mandible purchased them occasionally. It may be worth looking for a more consistent sales outlet for potatoes in future years. The other assorted varieties of potatoes (see Seeds section) were planted in the Pioneer Garden. Like in the Market Garden, the potato seeds (pieces of potatoes) were planted and then consistently hilled as the plant grew. Also due to greater weed pressure in the Pioneer Garden, we mulched the potato beds with straw. We found this to be a fairly successful measure. The plants grew well despite a few deer issues with leave-eating (the Pioneer Garden does not have a fence). However because of an unidentified pest/pathogen issue related to the Pioneer Garden soil, the majority of the potatoes harvested where riddled with holes, chew marks, and rot spots. While we never discovered what this pest issue was, we encourage future managers to take this into account when considering what to plant in the Pioneer Garden in the future.

*Peppers*

- Ace
- Flavorburst

We only grew hybrid sweet bell peppers. They did well but produced a large number of fruit that was slow to ripen, so we harvested green peppers from half of the plants and allowed the other half to ripen. Our plants were spaced about 1.5ft apart in the rows, which was too close as the season progressed. Soft rot was a problem where fruit grew in contact with other fruit or between branches, especially after rain. Picking off half ripened rotting fruit was demoralizing but important for sanitation. If possible, putting peppers on the east side of the garden helps buffer them from the wind. They had very brittle stems and several plants were killed by rough harvesting. We chose not to grow hot peppers and few customers asked about them, but there is surely a market for the production of a few Jalapeno bushes.
Tomatoes

Tomatoes were grown in two rows of the market garden, and also several blocks of empty space in the fruit tree rows on the hillside below Tortilla flats. We started our transplants later than we would have liked, but luckily Melissa Madden donated some Early Jet Star and Big Beef Hybrids that were planted around the second week of May. We transplanted them into the field one week before Memorial day, and promptly realized a cold scare. Double row cover was deployed with a lot of soil to seal wind draughts and the tomatoes were unscathed. Our Guterman-seeded transplants were ready for the field two weeks later. They were started in the greenhouse on 4/25 and 4/26, and should have been started 2-3 weeks earlier. Interestingly, the market for heirloom varieties was soft. Selling tomatoes at prices comparable to the farmers market means charging $3.50-4 per pound, and it's hard to blame people for balking at spending $7 on one tomato. More people seemed to prefer the familiar varieties than seek out the heirlooms. The ability to sell high volumes of valuable tomatoes to Mandible is a good strategy, and they were hesitant to buy heirlooms because they didn't know if they would hold up and look nice in the cooler for hours after being sliced. They payoff for growing 4 heirloom varieties didn't justify the trouble. Mandible would be open to an heirloom that sliced well and stayed firm, and of the heirlooms German Striped stood out as the primary candidate for that purpose as well as generating the most interest at the farmstand. Our recommendation is to grow an early hybrid, a high yielding, good tasting summer hybrid, and an heirloom. Also, don't forget cherry tomatoes, which by August we referred to as 'money trees'. Nearly every week we sold out of $5 quarts. This crop suffered the most predation by managers, but was otherwise very disease resistant.

Early Jet and Jet Star

These hybrids were vigorous and had a predictable level of production. Irrigating was important, try to keep the soil moist all of the time and especially in the days before predicted rain so that fruit does not split when soil moisture increases quickly. These plants had low resistance to Septoria Leaf Spot but were easy to prune. After the first couple tomatoes from each plant ripen, any fruit still in contact with mulch should be excised to divert resources to higher fruits (Ripening low fruit = slug and mouse jackpot). In greenhouses as the season progresses, growers lower the trellis and vines of these varieties and let them form roots higher on the stem but this was unpractical for us and resulted in broken stems and branches.

Brandywine

This was a very good tasting heirloom that had a fine skin with a purple/pink hue around the stem. It was easily damaged and generally from ½ to 1 ½ lbs. The plant was more confusing to prune, but it had a lot of giant elephant ear leaves and judicious pruning was very helpful in keeping the heavy plants from collapsing our trellis. Don't let more than one primary stem grow or you will be sorry.

German Striped

This was a giant heirloom that was a major hit with customers. It was yellow fleshed with some red patches on the skin that could be described as 'northern lights'. This tomato is close to being the vegetable equivalent to a cheeseburger, and it wasn't uncommon to have fruit over 2 lbs. When displaying it at the market, make sure it is stem-down on the table to show off the colors.
Reif Red Heart

This tomato was grown on the hillside in virgin soil. It did so-so, did not produce a steady crop. The fruit were resistant to bruising and very sweet. It was easier to prune than the other heirlooms.

Gold Nugget

This was our hybrid cherry tomato, it produced a high volume of very sweet yellow cherry tomatoes. We planted it on the side hill in abandoned tree rows. We didn’t prune these very much and used cages instead of trellising.

Tomatoberry Garden

I never got a full explanation of this plants taxonomy. We treated it like a cherry tomato, and it produced a good amount of red fruit that was more heart-shaped than round and quite sweet.

Miscellaneous

Okra

Encouraged by 6ft tall stories from visitors of East New York Farms, we decided to give this unusual crop for the Upstate New York region a try. Due to a late planting, the okra plants did not reach the epic heights and harvests that we hoped, but we did get a glimpse of the potential this Gumbo ingredient has at Dilmun for future years.

Nasturtium

Kaleidoscope Mix

These edible flowers are a Dilmun tradition. A fun plant to show off on tours, Nasturtiums also add nice color to the fields of the farm. We harvested flowers from the plants all summer, but production did not pick up until late in the season. The flowers do not keep well on their own at markets but are a good addition to salad mixes to add color and value.

Sweet Corn

We hadn’t planned on growing sweet corn, but found some open pollinated corn leftover from previous years in the barn. We started it in the greenhouse (only around 60 plants) and transplanted it to
get an early start. It did surprisingly well in Tortilla Flats, and we had enough to bring to market a few times. It was well received and took up less space in the garden than we imagined it would. Be aware that insects may be enjoying the kernels as it matures.

**Fennel**

Zefa Fino

With a high market value in mind we transplanted two 50ft rows of fennel in early June. The small fennel bulbs were a great snack for the Dilmun woodchuck at first which lead us to cover the small transplants with row cover for protection. With this protection the fennel took off and formed beautiful licorice-scented bulbs and branches. While the bulbs sold well at several markets, the demand was not as high as expected. The extra bulbs in the field ended up bolting into beautiful forms that were unfortunately not saleable at market. We definitely recommend planting fennel in future years, but at a smaller amount then in 2010.

**Carrots**

Yellow Sun  
Purple Haze

Due to Dilmun’s eroded silty clay loam soil, carrots have never had too much success on the farm. This past season, we planted two successions of carrots, including a set of purple and yellow varieties. The carrots germinated well (even the ones grown under the radishes) but grew overly slow and many were stunted or deformed when harvested due to the soil. The carrots brought to market sold out almost every time and the colorful varieties were commented on often. This is a crop that would do particularly well at markets in the fall with students looking for readily edible foods. We recommend that a raised bed system is used for carrots and other root crops in future seasons so that soil compaction and density is less of a problem. The raised beds in the BMP can provide good guidance for great carrots.

**Salad Mix**

Encore Mix  
Spicy Mesclun

The salad was a perfect crop for the first part of the summer. When we first began the farm stand and didn't have a great variety the salad was a workhorse. We seeded it in 3” wide bands and in solid blocks, the bands were easier to harvest and weed but it was easy to seed them too heavily. Presentation was everything at the stand- the salad cannot be bagged. We dumped the salad out of the spinner into garbage bags, and then put the garbage bags in a basket with the top opened, and let customers fill their smaller bags themselves so they could see how fresh it was. The bags held about ½ pound, and we found that customers generally put less salad in them than we would if we pre-packed them and sold for the same price. Keeping the salad fresh gets harder as the summer gets hotter, and we ran into problems on the production side as well. In July we had a very hard time getting the seeds to germinate, and we eventually gave up growing it until the weather cooled down in the fall. The last week in August is a good time to start again.
**Spinach**

*Summer Perfection*

Spinach was an astounding hit at the market. It wasn't very difficult to grow and the first crop didn't bolt for several weeks. It was most successful in the raised beds behind the barn. We used shade cloth to keep it a little cooler and protect it from the woodchucks. We sold it in the same way as salad, letting customers fill their own bags. Germination was also difficult for this crop in the heat of the summer and we were unable to produce a crop after mid July.

**Cover Crops**

*Sorghum Sudangrass*

We planted this to combat compaction and out compete weeds, two of our biggest challenges in a public garden with lots of foot traffic. We also wanted to add organic matter to the soil. We seeded it heavily to compete with weeds, and mowed it once to stimulate belowground root production. The sudangrass grew to 7-8 feet tall and insulated much of the garden from the sounds of the roadway, but as the summer went on we found out it was also a safe place for woodchucks to hide.
Dilmun Hill Rotation Plan

Last year, the rotation plan was a little out of whack because of the retreat from Blocks 1 and 2. Now that we’re settled on Tortilla Flats with a new irrigation system, we decided that the crops families will run east to west in the majority of the garden, and with the help of the software program “Dilmun Tools” (see collaboration with Cornell classes) we were able to map last year and this year’s crop plans. A plan for next year is appendix B. The Pioneer Garden is not included. It has not yet produced a fully successful crop and the lack of a deer fence is an issue that needs to be addressed before considering the space in the crop rotation.
2010 was an interesting year for the sales of Dilmun Hill produce. Many new and alternate avenues of sales were explored, but in the end it was Dilmun’s stand by produce outlets that we relied on!

Farmstands

Farm stands on the Ag quad and Ho Plaza of Cornell’s campus are the bread and butter of Dilmun Hill sales and exposure. Over the summer we have one farm stand a week every Tuesday on the Ag Quad. In the fall, an additional farm stand is added on Ho Plaza every Friday. The stands offer Dilmun an opportunity to reach out to members of the Cornell community that have not heard about their student farm. The farmstands offer fresh produce to staff, faculty, and students on campus. This past year Dilmun had one of its earliest starts ever, with the farm stand on the Ag Quad beginning in early June. With training from Davis Archer, a 2009 Market Garden Manager, we followed the hallowed Dilmun tradition of harvesting, washing, and transporting produce from the farm to campus.

We typically started harvesting the day before or the day of the farm stand and transported produce to campus using the infamous Dilmun bike carts. The Dilmun bike carts are two wheeled trailers that can hook up to the back of just about any bicycle. Conveniently the Dilmun harvest crates fit nicely into the carts, making produce transportation fairly simple. With the farm being just off of main campus, the bike carts are an easy way to transport the produce directly to our cooler and farm stand locations, without the hassle of parking on campus. Also the bike carts embody the Dilmun Hill values of sustainability and student empowerment, so we love them!
To store the transported harvested vegetables, we use the Pomology cooler in the Plant Sciences building next to the Ag Quad. An old, beautifully antique looking structure, the Pomology cooler is a great example of the resources available to Dilmun through the College of Agriculture and Life Sciences. Over the summer and fall we also took advantage of the cooler to store other materials for the market such as signs and tablecloths. It is important to keep the cooler clean and store produce efficiently so that other faculty and staff are able to use it.

On the Ag Quad, we hold farm stands underneath a tree on the southeast corner between Mann Library and the Plant Sciences building. Weeks before we start, we check in with folks at Mann Library and the Organic Farm Coordinator submits the necessary Use of University Property form to cover our use of CALS’ property. During the season, we check out two folding tables from Mann Library, making the set-up of the market quick and convenient. We also hold markets inside Mann’s lobby during rainy days. The Mann staff is incredibly helpful and encouraging to work with. Their support of the farm stands is unmatched, and many of them are weekly customers too!

The Ag Quad markets have traditionally been our most successful and that pattern continued to hold true this past year. Different from the norm however was our stronger customer base in the summer compared to the fall. In past years, markets have had stronger sales during the fall semester due to the return of the student body. However, this past year the markets on the Quad consistently made more money on a weekly basis in the summer (especially late July and early August when harvest was large) when compared to fall. This may partly be due to the decline of tomatoes in the fall and the eventual wipe-out of the cucurbits (for various reasons) that we experienced. We also unintentionally concentrated many of our plantings to be harvested in the summer rather than the fall.

On Ho Plaza in the fall, Dilmun used tables provided for all clubs on campus. The Ho Plaza markets have been significantly less attended then the Ag Quad markets over the years which caused us to reassess the Friday market location early in the summer. We came to the conclusion that the area outside of Sage Hall on East Ave would be more accessible and visible due to its central location on campus. We hoped this location would attract faculty, staff, and students on their way home or waiting at the Statler bus station across the street. However the centrality of the location became the problem. Due to risk management issues related to the foot traffic and space size of the area we were told the market could not feasibly be held outside of Sage Hall. After this venture, we decided to continue keeping our Friday markets on Ho Plaza. Reflecting on the generally low sales we experienced there this past season, a new location or time for this market may still be a worthy consideration in future years.

Dilmun markets are not exclusively produce from the farm. This year we had several additions to our markets at different points in the season. As in past years, the McDaniels Nut Grove, the recently re-discovered nut grove run by Professor Ken Mudge and is adjacent to Dilmun, sold fresh shitake mushrooms and a variety of dried mushrooms. New to the stand was Liz Burritcher (now a GMG manager at Dilmun), an intern at the nut grove this past summer, who sold the mushrooms every Tuesday. We appreciated the help that Liz offered throughout the summer. The mushrooms are a strong addition to the market that helps to expand our customer base, we are happy to have them!

Also for sale at a few markets this summer were bunches of wild flowers picked and arranged by the Growing Mosaics Garden managers. Looking to establish an independent income source for their project, Melissa Madden and the Growing Mosaics managers decided to begin flower sales this past summer. The beautiful flower arrangements certainly caught the eye of many customers but had overall mixed sales. As the flower sales at Dilmun continued to be developed, we expect an excellent addition to our markets.

A new comer to the markets in the fall was apples from SoHo, the Cornell Graduate Student Horticulture Society. They gave us a few varieties of apples to sell at markets in the fall. SoHo split
the profit 60% SoHo, 40% Dilmun. The apples sold alright and we are always happy to form a relationship with another club on campus. Brian Emmet, the current secretary of SoHo help set up the sales.

The largest struggle with farm stands in the 2010 season related to the lack of a consistent financial recording system. Several solid strategies were implemented throughout the season, including an attempt to track every single sale in the summer, but the lack of a single system used from beginning to end led to the loss of important financial data over the season. Markets can be a hectic environment, and a well devised strategy for record keeping must be decided on and prepared, so that managers can effectively follow it during the rush of a market. Whatever system is decided on, it is important that it is stringently followed throughout the course of the season. This requires close communication among the management team. We recommend the use of online documents (particularly Google Docs) and Dilmun Tools to increase the effectively and efficiency of this process.

**Manndible**

In Dilmun’s third year working with Manndible Café, a locally-food focused eatery in Mann Library’s lobby, we continued to experience the special support and mentorship that the Café offers to the student farm. Kathleen Pasetty, one of the co-owners of Manndible works closely with Dilmun helping to create the strong relationship between our two businesses. Manndible often posts Dilmun flyers in their café and labels Dilmun ingredients on their pre-made food.

Kathleen met with us early in the spring of the 2010 season to begin devising an ordering and delivery system that would work for both Dilmun and Manndible in the following summer and fall months. We decided to continue the successful ordering system practiced in past years. This system involves Market Garden managers sending Kathleen and the Manndible Kitchen staff (the Manndible kitchen, which operates at another location in Ithaca, orders separately) a weekly order form on Friday’s with a list of produce available in the next week and price units. Manndible typically responds quickly and the produce is delivered by managers the following Monday directly to the café on campus.

We continued to use the invoice designed by last year’s manangers for produce deliveries. The invoice includes the produce amount delivered, the associated prices, and additional payment information. We printed off two copies for each delivery, providing one for Manndible and keeping a second signed copy for the farm. Due to a few mid-week sales we lost track of our numbering system for the Manndible invoices which created confusion in record keeping at the end of the season. We recommend that future managers keep an orderly numbering system for the invoices to prevent this from happening in future seasons.

This past year, the Market Garden purchased new ½ bushel wax boxes to deliver the packed and washed veggies to Manndible. These boxes were easy to fold and provided reliable storage for the veggies on the bike trek to campus. Manndible also did us the huge favor of saving all the produce boxes they received from their deliveries. Each week we picked up used produce boxes to bring back to the farm. This was extremely helpful in maintaining our supply of produce boxes over the season and we are grateful to Manndible for their help.

The farm also consistently worked with Kathleen over the season to ensure that our quality of produce appearance and packaging was maintained. As Dilmun’s only consistent “restaurant sales”, Manndible acts as a mentor for the farm in terms of helping us reach the standard of other produce selling farms. Kathleen provides important constructive criticism on packaging and other aspects of delivery and appearance. We value her help immensely.

This past season Manndible purchased a wide variety of produce from Dilmun. Produce that Manndible trended in buying included hybrid tomatoes, summer squash, cucumbers, kale, chard, and
potatoes. Some produce such as hybrid tomatoes, were desired by Manndible in greater quantities than we had available. We recommend that future Market Garden managers consult closely with Kathleen before seed ordering and planting so that Dilmun is best able to provide produce in the quantities that suite Manndible’s needs.

Cornell Dining

With the successful 2009 sales to Cornell Dinning and Catering for the Fall Harvest Dinner and the Trustee Dinner, Dilmun was excited to expand its reach with Cornell Dining this past season. With every-day access to the dinner and lunch plates of a large portion of the Cornell student body, sales to Cornell Dining have long been a dream of the student farm. The ideal of students eating food produced by fellow student farmers on campus has continued to motivate the effort within Dilmun to work with Cornell Dinning.

In the past few years Cornell Dining has been making an extra effort to broaden its local food sources and Dilmun has kept a close involvement with the process. The Organic Farm Coordinator has served as Dilmun’s primary liaison with this effort. Dilmun has also had a manager or volunteer sitting on the CDFLAC (Cornell Dinning Local Foods Advisory Committee) since its start. Major differences in the size (Dilmun small, Cornell Dining, huge), scale, and processes (ordering system) of our respective businesses made finding a consistently working relationship difficult. However, we discovered that there is serious motivation on both sides to provide Dilmun produce at Cornell Dining locations.

In the spring, with Melissa in the lead, many meetings took place to establish a place for Dilmun in Cornell Dinning. It was decided that due to Dilmun’s size and production output that it would be most effective for us to focus on sales to one small dining hall or café on campus. Much effort was also put into adapting the ordering and payment process so that it would be more accessible for Dilmun’s sales. It was eventually set-up that Dilmun would sell to a small dining hall on Cornell’s West Campus for the 2010 season and that Dilmun would do orders and sales directly through the head chef of the dining hall. While this set-up eventually fell through due to feasibility issues we see it as the best potential working-model that has been created so far for Dilmun.

While Dilmun did not sell produce to Cornell Dining over the summer it was not the last time Dilmun was in contact with Dining. In the fall Dilmun turned down an opportunity to sell produce for the Fall Harvest Dinner due to time constraints. However in late October, Dilmun was contacted by a group of students from HADM 4432:Contemporary Healthy Foods wondering if Dilmun would be interested in selling produce for a “Into the Woods” dinner event at Risley Dinning Hall. Eventually we were put in contact with Lorna Bradshaw, the Chef Manger at Risley Dinning to help make it happen. Through dialogue with her we agreed to sell onions and garlic for the event. The ordering and delivery process was followed out very similar to the Manndible system and worked great for Dilmun. We hope to continue our relationship with Cornell Dinning in ways like this.

Hotel School

In late summer we contacted Bob White, a chef at Taverna Banfi, a restaurant at Statler Hotel on Campus. While Dilmun was not a feasible option for Banfi at the time, through Chef White we were directed to Mary Tabacchi, a professor in the Hotel School. Teaching a Healthy Cuisine course in the fall, Tabacchi was interested in using Dilmun as both a produce source and an educational resource/field trip location for students in the class. We worked to identify produce the class would be interested in and provided Professor Tabacchi with a tour of the farm. While the relationship did not yield sales in the end we think that the pursuit of selling produce to Cornell classes is one that is definitely worth looking into in future years.
**Cornell Orchards**

Towards the end of the fall season the market garden experienced a surplus in its salad mix. Referring back to the resolution of a similar situation in 2009, Becky contacted the Orchards in hopes that they would have space for our produce. Deb Clover, the sales manager at the Cornell Orchards, responded back quickly and within the next week there were bags of Dilmun salad mix (with nasturtiums, fancy!) on shelves. While the Orchards splits the profit with Dilmun, they are easy to work with, and have a large customer base that brings more attention to the farm. The bags of salad mix all sold out at the orchards, proving the stores large customer base. This neighborly relationship (the Orchards sits right next to Dilmun) is one that we definitely value and recommend continuing.

**Loaves & Fishes**

Dilmun has a long standing tradition of donating its seasonal produce and Loaves & Fishes has been a popular location for this the past few years. Loaves has been serving free meals to the community since 1983. This past summer we were able to donate produce every week to the kitchen located in St. John’s Episcopal Church in downtown Ithaca. We estimate that over 400 pounds of produce were donated by the student farm this past summer. The staff and volunteers at Loaves are extremely helpful and kind. While we never had a specific contact person at Loaves over the summer, there was always a helpful hand to lead us to the pantry every week. We encourage future managers to continue this tradition and to also try a meal at their weekly community lunches, it is delicious!

**Collaboration & Outreach**

**Collaborations with Cornell Classes**

This fall, Dilmun was able to expand its reach to many Cornell classes. This included Jane Mt. Pleasant’s class HORT 2200- Practicing Sustainable Land care. Dr. Mt Pleasant’s class, had three laboratories at Dilmun in the fall. The Market Garden helped to facilitate the first laboratory. The lab dealt with exploring different soil preparations for transplanting in vegetable production. Three soil preparations were evaluated: a double dug bed, a tractor tilled bed in the market garden, and a square foot bed constructed with wood and filled with a mixture of peat moss, vermiculite, and compost. Working closely with Dr. Mt Pleasant, Dan built the square foot bed which had cross beams over it to help space the plantings. During the laboratory students created the double dug bed and transplanted bok choy into all three beds. Over the fall students watered and checked on the bok choy, eventually harvesting the plants late in the season. Through their evaluations we discovered that the market garden bed had comparably larger bok choy plants to the plants in the other two bed systems.

Other classes that visited Dilmun over the season included:

HORT 2200 - Practicing Sustainable Land care  
DSOC 1200- Sociology of Food  
HORT 1101 - Horticultural Science and Systems  
HORT 4260 - Practicum in Forest Farming  
CSS 2600- Soil Science  
The farm was also involved in curricula that took place in the classroom, away from the fields.
SNES Colloquium

Three Dilmun managers presented as part of a seminar series in the Science of Natural & Environmental Systems major. The topic of the seminar was Food Systems, and we discussed how we felt the farm fit into our own local food system, and how some of the major topics in food distribution were highlighted by our experiences as students attempting to operate a farm in the institutional framework. It was a great opportunity to meet students that might not otherwise hear about the farm, and gave the farm visibility beyond our core market on the Ag quad.

Dilmun Tools

In the fall Dilmun was approached by Igor Gorodezky, an applied math graduate student in a software engineering course (CS 5150) with a passion for local foods. For a class project, Igor was interested in developing a custom online application for Dilmun that would help make our administrative operations more accessible and efficient. Igor and his project team pitched the idea at a steering committee meeting and were met with a consensus approval.

Partially due to the high turnover rate of Dilmun managers and volunteers, consistent record keeping has been a long term issue at the farm. Important details like aspects of crop rotation plans, distribution of produce sales, and pest management techniques have been lost along the years. The software design team’s project sought to create a tool that would enable easier, more consistent record keeping with an accessible format.

Through many meetings and surveys, Igor and his team worked closely with Melissa and us to tailor the software to our specific needs. After lots of research and information gathering, the team decided to focus the design of the software towards compiling and presenting crop data (variety, seeds purchased, pest problems, transplant numbers, harvest data, sales) and designing crop rotation plans.

While the product was being created, several user training sessions were set up to gather feedback and train managers on how to use the program. The team decided to make the software online based so that it could be accessed from many locations. Melissa and Becky worked with the team to decide on other specific details, such as units for produce numbers, so that records could be kept in a more uniform and consistent style in the future.

The program eventually dubbed “Dilmun Tools” was completed at the end of the fall semester. The final product includes an array of new features and tools for Dilmun. The site enables users to add crop data from the season and to search for previous data from past years. The ability to modify and delete data is also an important aspect of the software that allows users to keep the information relevant and accurate. Users can search for crop data by year and/or name and can find information on the quantity of the crop planted, transplanted, harvested, sold and donated. With the use of old farm reports, the team added data from past season so that we had numbers to work with immediately.

The feature with the most wow factor was the cropping plan design tool. The crop design tool provides a scaled layout of our fields at Dilmun including Tortilla Flats, the Pioneer Garden, and Block 1. The layouts are composed of 2 by 2 foot blocks. Users can choose crops with associated colors and fill in the layouts with the color of the crop grown in the area of the garden. This program allows managers to keep track of crop rotations, an important issue on the farm. With Dilmun Tools complete we feel that Dilmun can continue to expand its reach and efficiency of operation. CUAES’ Anja Timm now holds the administrative keys to Dilmun Tools, and will help each generation of managers navigate this exceptional tool.
Collaborations with Campus Organizations

As always Dilmun benefitted this past year from relationships with other clubs and organizations on campus.

Alpha Zeta
In the spring Dilmun participated in Alpha Zeta’s (a co-ed agriculture fraternity) Ag Day on campus. The event is held on the Ag Quad and Dilmun set up a t-shirt making table with stencil designs created by two members of the Steering Committee.

Take Back the Tap
In the fall, Dilmun Steering Members represented the farm at a meeting put on by Take Back the Tap concerning the Student Assembly resolution calling to phase out bottled water on Cornell’s campus.

Farm to Cornell/Kyoto Now
In October, Michelle Fonzi, a manager with the Growing Mosaics Garden, teamed up with Farm to Cornell to organize a Global Work Party at Dilmun. This was one of many work parties coordinated by Kyoto Now across the world on 10/10/10 (ours was a few days after due to fall break) to commemorate the movement towards a more sustainable world. The Beehive Collective, a group of artists who create posters to visually teach important concepts relating to sustainability and life sciences, visited the farm and hung up a copy of their work in the barn during the event.

Presentation to the Dean of CALS
With the help of our Organic Coordinator, Melissa Madden, Dilmun managers and committed volunteers were given the opportunity to present to Kathryn J. Boor, the Dean of the College of Agriculture and Life Sciences in November. Given the state of the economy and Cornell’s partial status as a land grant school we felt that this was an important opportunity. As Cornell’s student farm we wanted to restate our value to the College of Agriculture and Life Sciences, the University, and the Ithaca community. During the presentation all three projects at Dilmun gave a summary of their work with a specific focus on outreach and extension. The event went well and we appreciated the effort extended by the Dean to attend our presentation.

NWAEG/ East New York Farms
In the spring we were visited by a small group from East New York Farms, a community farming project in NYC that promotes food justice through the use of sustainable agriculture. The group was visiting Cornell to give workshops on food justice through urban agriculture and was connected with Dilmun through our friends at NWAEG (New World Agriculture and Ecology Group), a graduate student club that shares many of the same values as Dilmun. We provided the group with a tour of the farm and in return the visitors provided us with a wealth of stories and advice. We were surprised to find many similarities in the challenges and rewards of both our farms. One memorable story shared about the incredible height and health of the East New York Farm okra plants inspired us to give the plant a try in our fields.
Collaborations with off-campus Organizations

Finger Lakes CRAFT

A great new development for Dilmun and the Ithaca farming community was the birth of CRAFT in the area this summer (Collaborative Regional Alliance for Farmer Training). First started in the Hudson Valley/Berkshires region, CRAFT offers young and starting-out farmers the chance to visit established farms. For one day each month over the summer a different farm in the Finger Lakes Region hosted a group of local apprentice farmers. Through the help and guidance of our Organic Coordinator, Melissa Madden, and Joanna J. Green, one of the primary organizers of the program, Dilmun managers were each able to attend one CRAFT session over the summer. These sessions were located at farms like Northland Sheep Dairy, an artisan cheese making sheep dairy, and Kingbird Farm, a diversified live-stock/crop growing operation which raises antique breeds of cattle, turkeys, and pigs in addition to growing fine herbs in high tunnels. We all agreed that the visits were an inspirational and educational experience and have been invited to participate in 2011.

Small Farms Program and 4H Career Exploration

In late June, Cornell hosted the annual 4-H Career Event Fair, a multi-day event in which many of the state’s 4-H groups convene on campus. Violet Stone, the Program Coordinator of the Small Farms Program, set up a visit to Dilmun for one group of 4-H high school youth. With some of the managers being 4-H alum, this was an event that Dilmun highly valued. We gave the 4-H youth a tour of the farm and had them mulch eggplant beds, weed brassicas, prune tomato plants, and plant herbs in the Pioneer Garden.

BCS Event

John Wilhelm, a BCS tractor salesman and mechanic, gave a demonstration to Dilmun volunteers and managers in late September. BCS, a European walk-behind tractor company, is the brand of tractor that Dilmun uses. Wilhelm demonstrated how to use the walk-behind tractor with the addition of several different implements. This included a sickle-bar mower that John demonstrated by cutting some of our sorghum sudan cover crop and a rotary plow that John created a raised bed with. The rotary plow in particular caught Dilmun’s attention as an implement that could offer more self empowerment for student managers, who are currently not allowed to use four wheel tractors for tillage on the farm.

Dilmun Hill-McDaniels Field Day

In early September, Dilmun held its annual field day with the McDaniels Nut Grove crew. The Dilmun field day is held at the beginning of each school year to attract new volunteers to the farm. This year over fifty people came out to Dilmun! Each management team created a station for the event. The Market Garden team gave tours, vegetable quizzes, and showed visitors how to take soil penetrometer tests in the field.
In June first graders from Beverly J. Martin Elementary School in Downtown Ithaca visited the farm for a morning field trip. With a brand new garden at the elementary school, the purpose of the trip was to introduce the students to the workings of a fellow local organic farm in hopes of generating connections to their own garden. Together the managers of all the projects created a three station curriculum for the first graders. This included planting sun flowers, a tour of the market garden, and an insect collection and observation activity. While this age group was definitely a less frequent presence at the farm over the summer we enjoyed the energy, enthusiasm, and fresh perspective they offered. The field trip was not without its tears and challenges but overall was a rewarding experience for the managers and students.

**Finances and Looking Forward**

The Market Garden is funded predominately through a grant from the New York Farmers. While we would not exist without this financial support it is still of the upmost importance that Dilmun is able to function as a business and find revenue sources to help support the farm. This past season Dilmun’s main sources of selfearned revenue were the farm stands (around 75% of revenue) and Manndible (around 20% of revenue). We found that even with these produce outlets there was still a large amount of left over produce on a week to week basis, particularly in the summer. While Dilmun will always reserve a large portion of its produce for volunteers and managers on the farm, we believe that Dilmun still does not have enough outlets to match its production output. This may continue to become more relevant in future years as the Market Garden looks to expand its land base on the Dilmun site. The addition of the Pioneer Garden this past season is an example. A large portion of the 2010 season was spent exploring new produce outlets or revising strategies to make our current produce outlets more profitable. Attempts were made to further build relationships with the Hotel School, Cornell Dinning, and food related student groups on campus as well as to relocate our market to a higher visibility sight and to grow more produce that fits Manndible’s needs. We hope that future managers of the Market Garden will continue to develop the reach of Dilmun.
Appendices

A. Important Contacts

The personnel listed below are not part of any official list, but should be considered as valuable assets throughout the growing season. If by the end of the season you don’t recognize the majority of these faculty/staff/business partners on campus you’ve missed out on one of the most fun aspects of managing Dilmun hill!

Anja Timm
ait4@cornell.edu
Anja maintains the Dilmun hill website and also knows a lot of the history of Dilmun’s relationship with administration & dining. She needs to be updated with events as quickly as possible so she can post them to our website.

Craig Cramer
cdc25@cornell.edu
Craig helps us out when we print big things, and also has a camera that can be borrowed. He’s an expert in all forms of communication.

Loaves and Fishes
(607) 272-5457
We took extra vegetables to this community kitchen downtown after farm stands. This year they accepted donations from 10-2 but call ahead to check the first time you donate.

Damian Parr
dmparr@ucdavis.edu
Damian is interested in our governance structure and may contact steering or a manager to check in on the farm from time to time. He was part of the development of our various early organizational instruments as part of his PhD research.

ORCHARDS

Eric Shatt
es222@cornell.edu
607-255-4543
Eric is the farm manager at the Orchards. He’s really friendly and (so far) likes us; give him a call when you are ready for the irrigation to be turned on. Also, call him every time before harassing the blueberries (and make sure managers from other projects do the same) because the orchard staff need to know if students are planning on being in the patch. The orchards also have some specialty tools that might be useful like high-tensile fence splicers that they will let you borrow with advance notice.

Deb Clover
dc287@cornell.edu
Deb works at the orchard store and is our contact for selling excess produce.

MANNDIBLE
Kathleen Pasetty  
kpasetty@yahoo.com
Kathleen is one of the owners of mandible and a huge asset to the farm. She’s very supportive of managers in relation to ordering and logistics but when school starts she is not as available. Occasionally she will put us in email contact contact directly with managers at the café or the chef in their commercial kitchen across town.

Pam Gueldner  
pam@manndiblecafe.com
Pam is a co-owner of Manndible cafe. Last year most of our communication was with Kathleen, but Pam also buys from Dilmun.

Sharon Corbitt  
manndiblekitchen@yahoo.com
Sharon is the chef at the Manndibles commercial kitchen, and should be included in the order form distribution. She also has a supply of waxed boxes.

DEPT OF HORT

Marvin Pritts  
mpp3@cornell.edu
Department of Horticulture Chair
Marvin is very enthusiastic about Dilmun. He may be contacted for any department related issues including any events that Dilmun might be tabling. Ask Marvin when the blueberry patch can be raided, it is his project and they usually like to hold a few departmental picks before we can have free range.

Dolores Higareda  
(607) 255-1789  
134A Plant Science Bldg.
Administrative Assistant & Graduate Field Assistant Department of Horticulture Dolores will be happy to help with any room reservations, department announcements, or any other administrative needs.

Jane Mt. Pleasant  
Jm21@cornell.edu  
607-255-4670
Dr. Mt. Pleasant is the Faculty advisor in the growing mosaics garden and a reliable source of thoughtful advice. This year she brought her new class HORT 2200 to the farm to look at a few seedbed preparation techniques in the market Garden.

Ian Merwin  
im13@cornell.edu
Horticulture Professor
Dr. Merwin knows a lot about the early years at Dilmun and the planning of the fruit tree installation. If
you stop by his office he is happy to chat and offer his sage advice concerning the farm, and you may be able to lure him to the farm to give a workshop on pruning the kiwifruit or pollinating pawpaws.

Ken Mudge  
kwm2@cornell.edu  
(607) 339-6950 (mobile)  
Horticulture Professor 13 Plant Science  
Dr. Mudge is the boss at McDaniels Nut Grove, which is adjacent to the farm. Ken has a great program developed with shitake mushroom culture, and is happy to contribute to farm events. He and his technicians use part of the barn downstairs.

Rachel Brinkman  
rab392@cornell.edu  
Rachel is Ken’s full time technician and knows about anything going on with his program. She helps manage some of the data-gathering for the maple tree & hazelnut trial on the hill.

DEPT OF CROPS & SOIL SCIENCE

Jonathan Russell-Anelli  
Jmr5@cornell.edu  
607-255-2485  
Dr. Russell Anelli is a very supportive faculty member than brings his introductory soil science class to the market garden for a soil testing lab. I’m sure he would share the results with managers, and he is also an investigator in the HSHC project in the old market garden.

Chuck Mohler  
Clm11@cornell.edu  
Dr. Mohler is the weed guru and if you have questions about how to neutralize a weed (after you’ve diligently identified it of course) he will lend his extensive weed ecology & biology wisdom to your strategy.

CUAES

Mike Hoffman  
(607) 255-2552  
Associate Dean of CALS  
Director of CUAES  
Professor of Entomology  
Dr. Hoffman’s lab lent us sweep nets to catch insects with the school field trip visitors, and as the director of CUAES he will visit the farm at least once to see what’s going on at the farm. It’s important that he knows what’s happening at Dilmun, being our most senior advocate in CUAES.

Tim Dodge  
255-3234 (campus),  
327-2844 (mobile)  
Plant Breeding Supervisor III Love Lab  
Tim is the man to talk to if you need mechanical help, gas, straw, tractor work or just about anything
else.

John Conklin
607-327 2842
John is the mechanic at the Love lab.

Melissa Madden
mam233@cornell.edu
(607) 351-3313
Former Organic Farm Coordinator
Melissa is one of the owners of The Good Life Farm and if you ask her nicely would give you a tour of her farm and answer questions relating to organic growing.

Marguerite Wells
mw38@cornell.edu
Former Dilmun Staff Person
Marguerite was Dilmun’s first summer manager in 1996 and a subsequent staff person from 2003 to the Fall of 2005. She has valuable information about the farm’s first years of production.

Andrew Leed
(607) 227-4595
CALS Greenhouses Manager
Andrew can help out with greenhouse issues and is also a source of great potato seed. Crustacean

Brian Caldwell
607) 280-3652
Dept of Crop and Soil Sciences
You may run into Brian in the greenhouse starting plants for the organic management systems trial at Freeville. He's very knowledgeable and can answer questions about a lot of vegetables.

Sal Princiotto
(607) 254-1666
Grounds Dept. Univ. Solid Waste Manager
Call Sal when you need the recycling or garbage picked up.

Jeff Gardner
607-255-3032
jg48@cornell.edu
Jeff works in Mike Hoffman's lab at the Insectary. Contact him to borrow sweep nets or other equipment. He has expertise in the field, and is definitely willing to help battle the bugs.

MANN LIBRARY

Mary Ochs
mao4@cornell.edu
255-2285 (campus)
Director, Mann Library
Mary will help set up the reservation for the Mann library farm stand and borrowing of tables.

B. Cropping plan for next year
### C. Dilmun 2010 Season Farm Stand/Manndible Income

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<td>$61.00</td>
<td>$114.25</td>
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<td>$0.00</td>
<td>$42.00</td>
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</tr>
<tr>
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<td>$0.00</td>
<td>$0.00</td>
<td>$42.00</td>
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<tr>
<td>Cash</td>
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<td>$77.00</td>
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<td>$103.75</td>
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<td>$0.00</td>
<td>$0.00</td>
<td>$42.00</td>
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<td>Cash</td>
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<td>$22.50</td>
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<td></td>
</tr>
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<td>$0.00</td>
<td>$0.00</td>
<td>$42.00</td>
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<td>Cash</td>
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<td>$42.00</td>
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<thead>
<tr>
<th>Date</th>
<th>10/15/2010</th>
<th>$0.00</th>
<th>$25.58</th>
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</table>

### D. Distribution of Sales

- **75%** Market Sales
- **21%** Manndible Sales
- **2%** Cornell Orchard Sales
- **2%** Risley Dining Sales
### E. Dilmun Market Sales Spreadsheet (used only in summer)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Price Unit</th>
<th># of sales</th>
<th>availability</th>
<th>Gross</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arugula</td>
<td>$4</td>
<td>2</td>
<td>sold out</td>
<td>8</td>
</tr>
<tr>
<td>Collards Bunch</td>
<td>$2.50</td>
<td>2</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Kale Bunch</td>
<td>$3</td>
<td>5</td>
<td></td>
<td>12.5</td>
</tr>
<tr>
<td>Radishes Bunch</td>
<td>$2.50</td>
<td>7</td>
<td></td>
<td>17.5</td>
</tr>
<tr>
<td>Rainbow Chard Bunch</td>
<td>$3</td>
<td>7</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Rhubarb Bunch</td>
<td>$2</td>
<td>2</td>
<td>sold out</td>
<td>4</td>
</tr>
<tr>
<td>Salad Mix .5#</td>
<td>$2.50</td>
<td>4</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Scapes Bunch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinach .5#</td>
<td>$3</td>
<td>3</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Courtesies</td>
<td></td>
<td></td>
<td></td>
<td>-1</td>
</tr>
<tr>
<td>Total Gross Sales</td>
<td></td>
<td></td>
<td></td>
<td>$86</td>
</tr>
<tr>
<td>Donations-Loaves+Fishes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 pounds greens, radishes, kale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
R. Farm Stand Price list (some prices varied over the season)

<table>
<thead>
<tr>
<th>Produce</th>
<th>Price</th>
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<tbody>
<tr>
<td>Arugula</td>
<td>$4/bag (1/2lb)</td>
</tr>
<tr>
<td>Radishes</td>
<td>$2.50/bunch</td>
</tr>
<tr>
<td>Kale</td>
<td>$3/bunch</td>
</tr>
<tr>
<td>Collards</td>
<td>$2.50/bunch</td>
</tr>
<tr>
<td>Broccoli</td>
<td>$3/#</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>$3/#</td>
</tr>
<tr>
<td>Summer Squash</td>
<td>$2.50/#</td>
</tr>
<tr>
<td>Winter Squash</td>
<td>$2.50/#</td>
</tr>
<tr>
<td>Cucumbers</td>
<td>$2/#</td>
</tr>
<tr>
<td>Watermelon</td>
<td>$3 each</td>
</tr>
<tr>
<td>Eggplant</td>
<td>$3/#</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>$3-4/# (depending on variety)</td>
</tr>
<tr>
<td>Cherry Tomatoes</td>
<td>$5/qt</td>
</tr>
<tr>
<td>Green Peppers</td>
<td>3 for $1</td>
</tr>
<tr>
<td>Potatoes</td>
<td>$1.5/# or $3/qt</td>
</tr>
<tr>
<td>Garlic</td>
<td>$2 each</td>
</tr>
<tr>
<td>Onion</td>
<td>$2.50/#</td>
</tr>
<tr>
<td>Leeks</td>
<td>$.75 each</td>
</tr>
<tr>
<td>Shallots</td>
<td>$1 each</td>
</tr>
<tr>
<td>Scapes</td>
<td>10 for $1</td>
</tr>
<tr>
<td>Salad Mix</td>
<td>$3/bag (.5 #)</td>
</tr>
<tr>
<td>Spinach</td>
<td>$3/bag (.5 #)</td>
</tr>
<tr>
<td>Rainbow Chard</td>
<td>$3/bunch</td>
</tr>
<tr>
<td>Celery</td>
<td>$2/bunch</td>
</tr>
<tr>
<td>Blueberries</td>
<td>$4/pint</td>
</tr>
<tr>
<td>Basil</td>
<td>$2/bunch</td>
</tr>
<tr>
<td>Sweet Corn</td>
<td>$5/ dozen</td>
</tr>
<tr>
<td>Yellow Beans</td>
<td>$3/#</td>
</tr>
</tbody>
</table>
G. Sample Invoice

![Dilmun Hill Logo]

**Invoice**

**Dilmun Hill Student Farm Produce Delivery**

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Balance</td>
<td>$0.00</td>
</tr>
<tr>
<td>20 # Summer Squash @ $1.50/#</td>
<td>$30.00</td>
</tr>
<tr>
<td>1 Box Kale @ $10/box</td>
<td>$10.00</td>
</tr>
<tr>
<td>10 # Tomatoes @ 2.25/#</td>
<td>$22.25</td>
</tr>
</tbody>
</table>

**Total**  $62.25

---

Dilmun Hill Student Farm  
Rt. 366 & Pine Tree Road  
Cornell University Campus  
Contact Number #: 774-279-6509  
(Ryan)  
Contact Number #: 515-945-7184 (Dan)  
**Please Mail Check To:**  
Melissa Maddien  
147d Plant Science Building  
Cornell University Campus  
Ithaca, NY 14853  
Contact 607-351-3313