



Spring 2024

## City Sprouts Farm Internship

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# COLLEGE OF THE ENVIRONMENT



**Internship Title:**

**Organization Worked For:**

**Student Name:**

**Internship Dates:**

**Faculty Advisor Name**

**Department**

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## **Abstract**

During spring quarter of 2024, I interned as a part of the farm crew at City Sprouts farm in Bellingham. City Sprouts is a mission driven farm that practices regenerative agriculture and aims to increase food access and security while honoring and revitalizing degraded urban land. As a part of this internship, I have also had the pleasure of working with a small cohort of students to manage an approximately 1000 ft<sup>2</sup> subsection of the farm, with the goal of providing weekly CSA boxes to 12 Western students experiencing food insecurity. In these past ten weeks, I have participated in the full range of springtime farm tasks, spanning nearly all aspects of regenerative urban agriculture, from preparing the land and setting up irrigation to transplanting crops and pruning tomatoes.

Over the course of this internship, I gained not just a deep understanding of the practical skills of regenerative agriculture, the experience also completely transformed my relationship with the land. For the first time in my life, I fully saw and felt and appreciated what it means to honor and steward the land we inhabit, and the gifts that it continually provides us with. Feeling the healing, transformative, and community building power of participating in community farming for myself has made me even more certain of what I want in my future career. I want to study urban planning and design principles and, using my knowledge of environmental science, I want to enact tangible change in urban communities and ecosystems, and to create cities that encourage and provide access for everyone to engage with land stewardship while also working towards stronger communities, food sovereignty and climate justice.

I learned more than I could have imagined in my time at City Sprouts, and a part of that was dealing with the reality of farming in an increasingly unpredictable climate, as well as learning about the specifics of production farming on the extremely small scale of the Tiny Farm. This was certainly a learning curve, and we experienced a high degree of crop loss due to pests, unfavorable/unpredictable weather, and the effects of using open pollinated seeds. In some ways I am grateful for this, because as the saying goes, failure is the best teacher (though I would not by any means call the Tiny Farm a failure).

## **Introduction**

City Sprouts farm is an urban community farm in the Birchwood neighborhood of Bellingham, which is the largest food desert in Bellingham. It started in 2018 with Ellie Duncan and Annah Young, who ran it as a mission driven business to increase food security and community vitality by providing fresh, affordable, organic produce in a cooperative farmers marked stand in Birchwood. City sprouts is located on land owned by the Kulshan Community Land Trust, which had sat unused and under chest high blackberry brambles for several years until Ellie and Annah began to transform it into the farm ecosystem it is today. Partnered with the Community Food Co-op, Bellingham Food Bank, Twin Sisters Markets, Birchwood Food Desert Fighters and SeaMar Community Health Center, City Sprouts provides thousands of pounds of organic produce to the community annually.

Starting in 2022, the farm began focusing on education, offering internships through WWU. Since the beginning of 2023, Ellie has worked as the farming and food systems program coordinator at the Center for Community Learning, expanding outreach and educational opportunities to the Western community. As a part of this, with the special instruction of Ellie, two Fairhaven students, Kate and Sam, started an experimental “Tiny Farm” on just under 1000ft<sup>2</sup> of City Sprouts land this year. The goal of the Tiny Farm is to increase food security for 12 Western students (which we chose by lottery) by providing free, weekly CSA boxes of produce grown in the Tiny Farm, while also providing experiential learning about regenerative farming in a collaborative, student-led space.

For my internship, I typically spent two days a week working with the Tiny Farm, and one day working with City Sprouts, though both are deeply intertwined, and we often worked on both sections of the farm in the same day, based on what needed to be done. Going into this internship, I had hoped to learn about the role of community farms in our food system, how they benefit both people and the environment, and how they can best engage with and support the communities they serve. In addition to this, I hoped to gain practical skills and knowledge related to regenerative urban agriculture. In regard to the Tiny Farm project specifically, I hoped to learn project management skills and get an in depth experience of the planning and administrative aspects of running a sustainable community farm.

In addition to my degree in environmental science, I intend to minor in sustainable design, so I also hoped to gain insight into the ways that urban farming can transform the urban landscape and communities. As an urban farm focused on food justice and sustainability, City Sprouts sits at the intersection of all of my educational goals. I intend to use what I learned from this experience to better understand the interactions between our built environment, our communities and the natural environment, and how we can work towards a more equitable and sustainable future for all.

### **Internship Activities**

Spring is a busy time at the farm, so during my internship I got to help with a wide variety of farming tasks. Every day at the farm was very different, but we always began the same way: with a farm walk, and “yelp reviews”. Yelp reviews were a way for us to check in with each other about how we were feeling each day and any ways we might want support, where we would each rate how we are feeling emotionally/physically out of five, and why. I noticed that even when I was a 2 or 3 (which was fairly frequently), I always ended my yelp review the same way, with: “I am so grateful that I get to be here and be outside with all of you lovely people”. And that was always true: the farm and the community we built around it was (and still is) an incredibly special and healing space that never failed to make me feel better. Because so much of farming is unpredictable, and dependent on environmental factors, after we did yelp reviews, we started our work with a farm walk, where we walked around the farm, making note of how the

crops and soil are doing, and compiling a list of what tasks need to be done for the day based on these observations.

My first few weeks at the farm consisted mainly of preparing the beds for all the crops we would soon be transplanting. The first step of this was to remove and rotate the large tarps that cover most of the farm in the off season. We rotated the tarps in order of when we were planting in each section, which was largely based on how fast the soil in a particular area will dry out and depends on soil composition and elevation/drainage. The tarps help to dry out the soil both by preventing rain from landing on the soil, and by warming it up. This is extremely important, because working the soil when it is too wet will destroy the soil structure and result in compaction and erosion. The heat also helps to germinate any weed seeds, which sprout under the tarps and have no access to light, making them weak and easy to manage. Covering the exposed farmland with tarps also helps to prevent erosion during the winter rains in areas without a cover crop.

To prepare the land and nourish our crops, we first use a broad fork to aerate and loosen the soil, followed by a layer of compost on each bed, about 1-2 inches deep. In areas where we were growing root vegetables and other crops that benefit from a very loose soil structure, we incorporated the compost into the soil using a power harrow. Power harrows are similar to rototillers, but a power harrow's blades spin horizontally rather than vertically. This is important because regenerative agriculture is all about improving and sustaining the health of the soil, and tilling, which is the most common method of soil preparation in conventional agriculture, is incredibly damaging to soil structure. Tilling inverts the layers of the soil, bringing the oldest and deepest layers to the surface. This disrupts the soil ecosystem and exposes buried organic matter to the atmosphere, causing any sequestered carbon to be respired and re-released in the form of carbon dioxide. The way that tilling affects soil structure also increases soil erosion and contributes to the formation of a hard pan. The power harrow, on the other hand, is effective at breaking up clods and creating a level seedbed, but does not apply vertical pressure to, or invert the layers of the soil. Because City Sprouts is located on urban land that was previously used as a chicken hatchery and later as a dump for personal garbage, another essential and time-consuming part of soil preparation was picking out the garbage. There was a *lot* of garbage (and sometimes farm treasures like old boots and broken plates too!), so this was a daily task that will likely take many more years to finish. Because of this, we only grew crops with low soil contact in areas with the most garbage.

The City Sprout's greenhouse, where most of our crops started their lives, is made of stainless-steel arches cast into the ground and tightly covered with plastic sheeting. We started them in the greenhouse, which is equipped with retractable walls for ventilation, seed tray heating mats, and soil/air thermometers, so that we provided our seedlings with optimal germination and growing conditions for the first few weeks of their lives, when they were most vulnerable to pests and disease. Starting crops in the greenhouse also allowed us to essentially extend the growing season, as many crops require soil temperatures of 60-70 F in order to

germinate. There are relatively few crops that we direct seed. These are mostly root vegetables and other crops that do not tolerate root disturbance, as well as winter squash, which are sown in late spring, when soil temperatures are above their germination temperature of 65 F.

We sowed crops, both in the greenhouse and direct seeding, according to a detailed crop plan which includes the sow date, seed spacing, number of row feet, number of seeds, and expected harvest date for each crop. Sam, Kate, and Devon created the Tiny Farm's crop plan in the off season, based on the days to maturity, environmental conditions required, and desired harvest date of each crop. The crop plan also told us which row to plant each crop in. This is important because we used two different types of irrigation – drip and overhead – and each crop typically only grows well with one type of irrigation. Some plants, like kale and lettuce will wilt and grow bitter if their leaves don't get wet when they are watered, but others, like tomatoes and squash are made more susceptible to rot and disease if their leaves get wet.

I spent a lot of my time at the farm setting up the irrigation, a task which reminded me of playing with tinker toys. We used a modular irrigation system of hoses, connectors (called couples), forks, and valves that allowed us to adjust the irrigation each season, according to the crop plan. During my internship, we set up three main lines to irrigate the entire farm – two for drip irrigation, and one for overhead. They had to be on separate main lines because the overhead irrigation requires far more pressure in the hose than the drip tape, and they had separate timer programs. Because we reused irrigation hosing from season to season and had several different areas with different bed lengths, this process involved a lot of unrolling and rerolling of hosing until we found a piece (or, more likely, two pieces that can be coupled together) that is the perfect length for a given row.

Once our crops were in the field, we continued to tend to them with regular hand weeding, or scuffling. Scuffling is used when weed seeds have only just sprouted and involves using your hands like little rovers to disturb the top inch of soil. If it is done regularly, scuffling is a very efficient way to weed, because when the weeds are that young it only takes a small amount of disturbance to kill them. In the pathways and around larger crops like kale, we used hula hoes to do essentially the same thing, but more efficiently and with less back strain. For most crops, this along with regular watering was all the care they needed to thrive, but some required a little more help.

For our tomatoes and cucumbers, this involved setting up trellises. Our trellises consisted of 6ft wooden poles, connected on top by wires. Cucumbers are vining plants, so we simply tied strings to the wire and to the base of the plant, and they happily climbed up the string as they grew. For tomatoes, we used tomato clips to attach the string to the plant in a V-shape, which we weaved the primary branches into as they grew. This helps to increase airflow (reducing the risk of fungal infection) and keep the plants upright even as their branches become heavy with fruit. Tomato plants also require regular pruning to ensure that the plants are putting their energy towards the fruit, rather than growing more leaves.

One of the most physically challenging things we did at the farm was moving and covering the hoop houses. Hoop houses are essentially open-air greenhouses, which are covered and uncovered with plastic sheeting and cinched with rope (in a similar way to how you would lace up a shoe) seasonally. City Sprouts uses them for tomatoes, eggplants, peppers, and Persian cucumbers, which love the extra heat and protection from the elements. City Sprout's hoop houses generally stay in the same place for multiple seasons, but during my internship, Ellie decided we should move the pepper tunnel. Crop rotation is an important aspect of regenerative farming, and in doing this, we hoped to reduce wireworm damage as they are particularly fond of eggplants and peppers, and had built up in population over the course of growing these crops in the same place for several successive seasons. Moving the tunnel involved undoing the wire stabilizers, removing the metal hoops from their rebar anchors, wrestling the rebar from the wet and unwilling earth, and then putting it all back together again. This was also the only time I used algebra on the farm – we had to measure out the placement of the rebar using the hypotenuse of the footprint of the hoop house to make sure it was perfectly square, and all the pieces would fit together.

### **Internship Achievements**

One of my favorite things about farming was how tangibly we got to see all our hard work pay off. Even in the short few months of my internship, I witnessed the farm undergo a complete transformation – on my first day at the farm in the beginning of April, most of the beds were still covered with tarps, and the greenhouse was nearly out of space for all of the seedlings. In the last week of my internship, in mid-June, the greenhouse was mostly empty, and only two rows had yet to be filled with crops. And, in just a few short weeks from the time I am writing this, we will literally be harvesting the fruits and vegetables of our labor.

Our work paid off not just in terms of the crops we grew, but also in terms of the community we built with each other, and the relationship we built with the land. There is something so magical about being part of a group of people working towards the same goal of nurturing life and producing nutritious foods. It is one of the most powerful community building forces I have witnessed, and now more than ever, I feel called to working towards making it an experience that is accessible for everyone. This collective effort helped me develop a much more grounded and meaningful understanding of how I fit into the Earth's ecosystem and cycles of life. It allowed me to feel connected to the land I inhabit in a way I had never experienced.

The work I did at City Sprouts gave me this deep sense of connection, which so many of us have been deprived of because we live in a capitalist, individualist society, that only values the land for what can be extracted and turned into profit. This realization, more than anything affirmed to me the necessity of community farms, and urban design that prioritizes community and the reintroduction and improvement of natural ecosystems in creating a hopeful future. All of us, every single person that lives on and eats from the land, has a duty to steward the land.



There is no life without the land, and I truly believe that if we have any hope of making it through climate change, each and every one of us must start to rebuild our relationship with the land outside of the capitalist, colonial relationship we are taught.

Regenerative farming is not just mentally and socially healing, but it is also imperative to making our food system sustainable for the future. Prior to my internship, I had read plenty of literature about the many ways that regenerative agriculture creates and sustains healthy ecosystems, but witnessing it for myself has been a profound experience. This internship taught me that regenerative farming is more a mindset of working in partnership with the land and natural ecosystems than any one set of agricultural practices. Because it is a partnership, regenerative agriculture is highly site specific, and involves adjusting farming practices and observing the changes, with the goal of improving natural systems to improve crop quality and yield. It is, at its core, an experiment in ecological science. All the practical skills I learned at the farm inspired and gave me the means to start my own garden at home. Shortly after starting my internship, I started the process of turning what was once an unusable area of land, completely overgrown with invasive weeds, into a garden full of native wildflowers and vegetables. When I dug into the soil at the farm – even in areas full of trash – it was teeming with all sorts of life: beetles, worms, millipedes, beetle pupae, spiders, and so many other critters. But when I dug into the soil at home, where the land had been neglected for years, I was lucky to find anything other than worms and the occasional spider. Seeing how the careful stewardship of City Sprouts brought so much life back to the land, which was once like the land in my back yard gave me so much hope. Sometimes climate science makes our situation feel incredibly desolate and irreversible, but regenerative agriculture is such a tangible way to make a difference, and seeing the success of City Sprouts, and transforming my own back yard made change feel more achievable. And now, when I walk around Bellingham, I see the potential in every unused area of land, and I am excited for the possibilities of what is to come.

## **Discussion and Evaluation**

At the end of my internship, the Tiny Farm was set to deliver its first CSA boxes on June 20<sup>th</sup>, which we were all very excited and proud about. However, while many of our crops ended up doing quite well, we experienced a rather high degree of crop loss, which forced us to push back the planned start date of the CSA by about three weeks. This was the Tiny Farm's first season, and it was certainly a learning curve for us. We realized that though there are things we could've done differently to reduce crop loss, the planned start date of May 28<sup>th</sup> was probably rather unrealistic for our climate and size restrictions.

When Sam, Kate and Devon created the crop plan, they accounted for a 15% loss, which is the recommended amount agreed upon by many urban farmers and is the model Ellie follows for City Sprouts. However, because we were operating on such a small scale, though we lost about the same number of plants, this accounts for a much larger percentage of our yield than if

we were managing a larger area. For example, 8 out of the 18 romaine starts we planted in our first succession were decimated by slugs nearly overnight, and we did not have enough backup seedlings to replace the damage, requiring us to adjust our CSA plan so that the first succession of head lettuce will be butter lettuce, and will be sent out a week later than initially planned. If we had a larger crop, this loss would've represented a much lower percentage of our yield.

We also suspect that our seed choices contributed to some of the crop loss we experienced. One of our main objectives with the Tiny Farm was food sovereignty, so seed choice was very important. Most conventional agriculture uses F1 hybrid seeds, which are hybrids between two varieties, created in a highly managed process in what are essentially greenhouse laboratories. Because they are created this way, F1 hybrids are very reliable, resilient crops, but the seeds that they produce cannot be saved for the next season, because when they are open pollinated, the seeds end up with a completely random, unreliable genetic mix of the two varieties. For this reason, we only used F1 hybrid varieties for our tomatoes and collards (both of which are growing extremely well). For the rest of our crops, we used open pollinated seeds from our local seed company Uprising Seeds. The difference in reliability became very apparent: whereas all of the tomato and collard plants were about the same size, and had little pest/disease damage, our other crops were much more varied in size, and many were heartily munched by critters.

We also experienced a lot of extreme and sudden weather events, which contributed to our crop loss. Studying environmental science made me much more aware of the changes in weather patterns in the past couple years, and I noticed more and more how drastically and suddenly the weather (particularly in spring and fall) oscillates between warm and cold, sunny and rainy. But, until starting at the farm, I hadn't particularly noticed the effects these changes in weather patterns were already having on our ecosystems. Our crop plan relied on historical temperature/weather records to determine when to sow and transplant our crops. But, because our weather patterns are changing, this often put us in the position of deciding whether to transplant seedlings when weather conditions were far from ideal (particularly in regards to the heavy rain we experienced, as waterlogged soil can lead to fungal infection, higher pest populations, and stunted growth), or waiting and pushing back harvest dates, and risking the seedlings outgrowing their seeding trays (which can also stunt growth and lead to fungal infection). In most cases, we opted to stick to the crop plan. This resulted in high loss from slugs (whose populations were much higher due to high rains), as well as nearly all of our basil plants in both successions dying from sudden periods of cold. We also transplanted our cucumbers when conditions were very wet (and cucurbits are particularly intolerant of high moisture), of which all but one succumbed to dampening off. Due to the moisture, slug populations were much higher than normal, causing us to lose many of our early transplants to

Another contributor to our challenges was the simple fact of not having a lot of familiarity with the land we were stewarding. In the years prior to the Tiny Farm, the north bank of City Sprouts was resting under cover crop, so not even Ellie, who possesses a seemingly

endless repository of knowledge about farming and the City Sprouts land, could offer us much guidance about the specifics of the land. Because of this, we initially saw shockingly low germination rates with our beets and mustard greens. After replanting each crop twice, we realized that the issue may have been with the soil composition. We realized that we planted both crops in areas with high amounts of woody/fibrous debris, which we sifted out before replanting again. Woody debris reduces seed to soil contact, so we also tamped the soil after planting, leading to far more successful germination.

So much planning goes into a season of farming, but no matter how much you prepare, you are still working within an ecosystem and an increasingly unpredictable climate, and that means having to adjust to and account for the factors outside your control. For the Tiny Farm, we learned that this means accounting for a 30-40% loss rate and thinking of the crop plan more as a jumping off point that we anticipate having to adjust, rather than a rigid plan that we must stick to. It also means being more intentional about the varieties that we plant. Seed saving is an important goal for the Tiny Farm, so we are very reluctant to use more F1 hybrids, but we are optimistic that a combination of planning for greater loss, and focusing more on reliability (rather than visual interest/beauty) when selecting open pollinated varieties will help improve our yield in future seasons. So, despite ending the quarter with many thriving crops, my time at the farm was also a rather humbling experience, making it clear we still have much to learn.

Ellie, and everyone who was a part of the farm community created a rich and truly collaborative learning environment that allowed me to learn more about farming and myself in two months than I ever thought I would. Farming is like baking or painting, you can read or be told all about it, but without actually doing it, you will never learn. Everything I learned in my internship I could never have learned in a classroom, or without the passion, openness and commitment to learning that everyone at the farm brought.

The work of farming is extremely seasonally dependent, so while there are a few aspects of farming that I have not yet participated in, this does not represent a shortcoming of anyone at city sprouts, but rather that my experience at City Sprouts is far from over. I will be continuing as a paid employee over the summer, and then as a facilitator/leader of the Tiny Farm for the 2025 season. One part of community farming that I have not yet had the opportunity to experience is interacting with the broader community that we grow our food for because, at the time of writing, we have not yet harvested anything to give. I anticipate having a lot more opportunity for this later in the season, when we deliver to CSA members and the various organizations we are partnered with to distribute our produce. I am also looking forward to being more involved with the planning/administrative side of farming in the fall, when we will be creating the crop plan for the next season of the Tiny Farm.

## **Acknowledgements**

First and foremost, I would like to thank the Land, because we don't thank it enough, and it keeps on giving while we keep on taking.

I would also like to thank, from the bottom of my heart, Ellie, Sam, Ana, Bella, Ruby, Kate, Devon, Anna, and everyone else who makes the farm possible. Every single person who is a part of the farm collectively makes it what it is, and what it is is nothing short of magic. I would especially like to thank Ellie, for creating City Sprouts, and always sharing her knowledge and being an amazing mentor and wonderful human.

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