FIELD TESTED

Efficiency Upgrades for an Urban Flower Farm

Field Tested is a series of reports about farm tools that have been tested by Montana farmers to enhance their specialty crop production. The reports describe these farmers' findings to help others make informed decisions about their specialty crop businesses. Visit FarmLinkMontana.org/fieldtested to read more Field Tested reports. This project is administered by the Community Food & Agriculture Coalition with funding from the Montana Department of Agriculture Specialty Crop Block Grant Program.

FARM HAND FARM | MISSOULA

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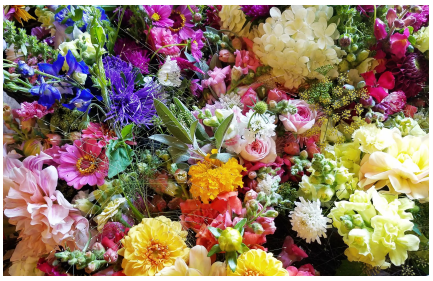
Farm Hand Farm Snapshot

Location: Missoula, MT
Operator: Adelaide Every
Acres: 1/4 acre urban lot
Crops: Seasonal cut flowers

INTRODUCTION



Farm Hand Farm (FHF) is a small urban farm in Missoula's Westside neighborhood, focused on creating a permaculture habitat and growing with organic practices. Since 2017, farmer Adelaide Every has produced seasonal cut flowers, Community Supported Agriculture (CSA) flower shares, heirloom produce, botanically based skin care products, and has a spring plant sale every year. FHF also offers seasonal flower wreaths, seeds, workshops, and floral design. In the winter months, FHF creates wreaths and flower crowns with dried flowers. FHF is Adelaide's second job, which she operates on a small plot of leased land. In growing season 2019, she had a 21-week flower CSA share for 12 customers. In growing season

2020 she offered an 18-week flower CSA to 20 customers and a nine week share to an additional 10 customers, with a call list. Adelaide applied for a Field Tested mini-grant to help her improve on-farm quality control and hoped that strategic purchases would support full circle, on-farm practices from increased decomposition rates of organic materials to cost savings for farm inputs. Some of her purchases also focused on extending her season for growing flowers in Montana.

PURCHASES FOR A FLOWER FARM

In a small, urban farm environment in Montana, space must be highly utilized and special considerations made to extend the short growing season. Adelaide made specific purchases to increase on-farm efficiencies and the quality of her product. She purchased a shredder to speed decomposition, row cover to gain time on the beginning and the end of the growing season, and CoolBot materials to increase the overall quality of her product.

Equipment Purchased

- Earthwise 15 amp Electric Chipper Shredder: $160
- CoolBot Cool Storage Temperature Control System: $399
- LG AC Unit 10,000 BTU: $355
- Cool Room Build-Out: $195

EFFICIENCY IMPROVEMENTS

Electric Chipper/Shredder

Adelaide purchased an Earthwise 15 amp Electric Chipper/Shredder to reduce the time it took to break down composted materials for mulching, which she previously did by hand. Creating smaller pieces of material accelerates decomposition in the compost system of organic materials on the small property. She's always in need of compost and is not currently bringing in material from off-site, due to concerns about sprays and sourcing. She thought the tool would help her to make more of her own compost.

Earthwise 15 amp Electric Chipper/ Shredder

After one short growing season of using the chipper/shredder, Adelaide reported on the consistency and rate that the compost biodegraded and on the time savings it allowed for her operation. She mentioned that the rate and consistency would be more apparent the following year, but she has already noticed less large pieces of wood and brown matter, which she

hypothesized increases the overall consistency of the compost. The tool handled up to 1.5 inches, but did not do well with wet or vining plants, like hop bines. She used it mostly for stalks, branches, and leafy material.

Time savings to the farm was easier to measure in a short period of time. Adelaide conducted two timed tests to compare the amount of brown material chopped by hand versus by the chipper/shredder. Chopping by hand with a standard pair of garden shears for five minutes, she gathered approximately 1⁄8 of a 5 gallon bucket of final product. The chopped pieces were chunky and difficult to cut through. In the same amount of time, using the Earthwise chipper/shredder, she was able to render about 4⁄5 of a 5 gallon bucket of final product. There was no stress on her hands and she found it quite easy to feed the material into the machine. The chopped pieces were noticeably finer then the ones chopped by hand, leading her to believe that the shreds would compost more quickly and with better consistency.

Floating Row Cover

The benefits of the Agribon + AG 19 10' x 250' row cover are felt at the start and end of the growing season during critical periods when ambient outdoor temperatures dip below 32 degrees. Agribon is advertised to raise temperature up to 3-4 degrees above ambient air temperature. She conducted her test with an analog thermometer with the outdoor temperature registering at 50 degrees. She set up Agribon over one of her flower beds and put the thermometer underneath the cover and checked the temperature after 15 minutes. It registered at 53 degrees. She hypothesized that a digital thermometer might measure the temperature more accurately.

CoolBot Pro

Adelaide looked into the benefits of purchasing a CoolBot System to lower the temperature of her flower storage area. The CoolBot Pro wires into a traditional air conditioner and is much less expensive than installing a traditional walk-in cooler. Using Styrofoam panels, insulation, a wood pallet, 2x4 angle supports, and a 10,000 BTU air conditioner, she built a 4x4x8 custom-built space, with four inches of insulation on all sides. She said it was easy to install and overall, took her about four hours to put together.

Adelaide completed a comparison test between her old cooler that she had set up the year before and her new CoolBot Pro system. She chose three test flower varieties that don't typically have a

long vase life: borage, calendula, and cosmos, in order to observe more immediate changes, if any, over the course of three days post-conditioning. She compared cuttings of similar maturity and size, in similar vases and water, in three different temperatures: 40 degrees, 60 degrees and 38 degrees. She did not see any noticeable differences between the two after this initial conditioning period, however, after one day, she could see that the borage conditioned with the old cooler had begun to wilt slightly.

After two days post-conditioning the cosmos flower from the old method had started to darken along the petal edges, the calendula petals had begun to curl up a little, and the borage began to noticeably wilt, whereas the flowers conditioned with CoolBot Pro looked as good as they did post-cutting.

Adelaide used the row cover to help insulate her outside nursery.

Adelaide is overall very happy with how the Coolbot cooler has improved her operation. Because of the Coolbot cooler she can harvest flowers at their prime and store them in the cooler until she uses them for her CSA, which may be a few days. Before having the Coolbot, she would cut within 24 hours of making bouquets and flowers would often be a little riper than she would want. The Coolbot was instrumental in allowing her to expand my CSA shares.

Efficiency Improvements

Reduction in Labor and Increased Quality of On-Farm Compost

Woody Material Chopped by Hand

5 Minutes = 1/8 of a 5 gallon bucket

Woody Material Chopped with Earthwise Chipper

5 Minutes = 4/5 of a 5 gallon bucket

Increase in Longevity of Product

Left: Not conditioned

Right: Conditioned with CoolBot

DAY 1

Left: Not conditioned

Right: Conditioned with CoolBot

DAY 4

Season Extension with Floating Row Cover

Temperature is increased by **3 to 5 degrees** for early season crops

Temperature is lowered by **3 to 5 degrees** on hot days to lower temperature for crops affected by high temperatures.

Additional Resources

Montana Department of Agriculture Specialty Crop Block Grant Program: The purpose of this program is solely to enhance the competitiveness of specialty crops in Montana. Visit their website to find funding opportunities and more information. Search Montana SCBG.

Field Tested Reports and Videos: Find more reports about other projects and see videos of tools in action at the Field Tested webpage, under Resources on FarmLinkMontana.org

Farm Link Montana: A project of the Community Food and Agriculture Coalition to connect Montana's beginning farmers and ranchers with the tools they need to succeed: farmlinkmontana.org