

FIELD
TESTED



Building Efficiency on a Micro-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 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.

BLACK BEAR SOUPS AND PRODUCE | MISSOULA



Ellie Costello
blackbearsoups@gmail.com
www.blackbearsoups.com

BLACK BEAR SOUPS & PRODUCE SNAPSHOT

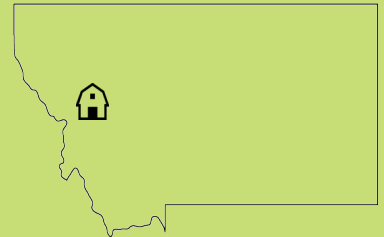
Location: Missoula, MT

Acres in Production:

1/2 acre

Operator(s): Ellie Costello

Crops: Mixed vegetables
and flowers, direct to consumer soups



INTRODUCTION

Ellie Costello farms part-time on a half acre in Missoula. Her micro-farm is located on a farm incubator and she also rents greenhouse space close by. She operates using a shared tractor and tools, which means she has to be especially flexible and efficient with resources, including time, on her farm.

This year she made purchases to increase her efficiency in a few key areas, including controlling pests and weeds, seeding, and harvesting crops. Ellie hopes others, especially those contending with shared resources and a part-time schedule, can learn from her experiences with the purchases she made to help increase her on-farm efficiency.



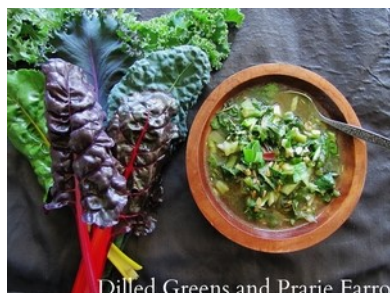
The view from Black Bear Soup's micro-farm.

MICRO-FARMING FOR VALUE ADDED PRODUCTS

Ellie's micro-farm supplies her business, Black Bear Soups and Produce, with ingredients to make fresh soups for sale at farmers markets and special events. She uses local ingredients in addition to those she grows herself and follows the seasonality of local produce.



Green Garlic



Dilled Greens and Prairie Farro



Dad's Best Chili



Moroccan Berkuzbera

Examples of Black Bear Soups' seasonal offerings: (clockwise from top left) summer, spring, fall, and winter.

MATERIALS PURCHASED

Pest control supplies:

- Agribon+ AG-19 row cover, 83" x 2,000' (\$350)

Weed control supplies:

- Pro 5 Weed Barrier Landscape Fabric, 4'x250' (\$380)
- Red Dragon Backpack Flame Weeder (\$280)
- Bio360 Biodegradable mulch, 4'x500' (\$120)
- Other supplies: String trimmer, Wheel hoe, cover crop seed

Seeding supplies:

- Hoss push seeder (\$320)
- Hydrofarm Seedling Heat Mat, 20"x48" (\$85)

Crop harvest supplies:

- Wheel barrow and garden fork (\$220)

MICRO-FARM EFFICIENCY SUPPLIES

Pest Control

In 2016, Ellie spent a lot of time removing leaves from greens that had been damaged by flea beetles. To prevent that, she decided to keep her greens under floating row cover. Floating row cover keeps pests like insects from being able to reach the crops, and it has the added bonus of protecting them from cool nights in early spring. It can be reused for up to three years.

TIP

Floating row cover worked to control flea beetle for Ellie, but she found that the large roll of fabric was unwieldy for a single farmer to use without crushing seedlings. She would buy a smaller roll in the future.



Ellie with her large roll of Agribon brand floating row cover.

Weed Control

Ellie has to prepare beds all at one time, even if she's not planting them immediately. Last year she lost some beds to weed pressure because as a solo farmer she just wasn't able to keep up with necessary hand weeding. This year, Ellie invested in several methods of controlling weeds:

- **Biodegradable mulch**

Ellie's found that biodegradable mulch was not a good fit for her farm, which suffers from quack grass problems. It was flimsy, ripped easily, and required a lot of work to bury the edges by hand. It also did not stifle the quack grass, which grew right through the mulch. Despite the mulch being 'biodegradable' it still had to be removed at the end of the season and thrown away to meet organic standards.



Biodegradable mulch with quack grass

- **Landscape fabric**

Ellie used landscape fabric for the edges of her farm; she found it to be robust and kept weeds from encroaching. She does recommend landscape fabric for areas you aren't planting but want to keep weed-free.

- **Backpack flame weeder**

Ellie found that the backpack flame weeder required specific timing. For a part-time farmer, getting the correct timing was too difficult for it to be extremely useful.

- **Cover crops**

Ellie seeded cover crops between beds but thinks that she didn't seed densely enough since she still had weed problems. She plans to seed cover crops in the future, but will seed more thickly.

- **String trimmer / weed whacker**

Ellie's resounding recommendation for weed control, though, is the string trimmer (weed whacker). For her farm, it gave a noticeable boost—it knocked back weeds quickly and gave her a mental boost when she could look back and see how much work she'd accomplished in a short amount of time.

TIP

Because Ellie borrows a tractor, she prepares all her beds at the same time. Before she is ready to plant, she lays down landscaping fabric to prevent weeds from germinating. When she is ready she plants into a clean bed despite the delay.



Landscape fabric worked to protect the edges of Ellie's farm from getting too weedy.

Seeding

Ellie wanted to improve the efficiency of her seeding methods so she could make the most of her time when farming. She also wanted to prevent losses from un-germinated seeds, especially for high value flower crops. She purchased several pieces of equipment to help in these endeavors:

- **Hoss push seeder**

Ellie purchased a single row seeder, but found it hard to perfect its use for her scale. The seed plates needed to be modified to drop more seed. It was hard to tell if the seeder was working properly before the row was finished being planted because her beds were short. She plans to redesign her planting style and crop layout and is optimistic that it will be useful in the future for seeding greens.



The Hoss Push Seeder.

- **Heated seeding mats**

Ellie rents greenhouse space so she must be efficient when germinating seeds and producing transplants. Last year, she had trouble getting some flower seeds, like snapdragons, to germinate well so she purchased heated seeding mats to increase germination rates. She found some of the plants got leggy if she left them on the mats too long, but the weed mats saved her a lot of money and greenhouse space in terms of getting seeds to germinate well.

Crop Harvesting

As a solo farmer, Ellie also needed an efficient way to harvest crops. For this, she purchased a broad fork, a garden fork, and a wheel barrow.

- **Broad fork**

Ellie had an injury this summer that made the broad fork hard to use, but otherwise, she says it works really well and that visitors to the farm really enjoy using it and watching it being used.

- **Garden fork and wheel barrow**

For harvesting crops on a small farm, Ellie says a garden fork and wheel barrow are necessities. She wishes she had purchased a spare fork or two since they are so helpful.



Ellie with her favorite crop harvesting tool: the garden fork.

Results

Ellie improved her efficiency and methods for weed control, germinating seeds, and harvesting crops. The most important thing that she learned was biodegradable mulch did not work well and she will not purchase it again. Instead, Ellie will invest in more landscape fabric and other woven mats. She will continue trying to improve her methods for using the push seeder and will invest in more heated seeding mats. The mats may not have saved time, but they saved a lot of money by increasing seed germination. Finally, Ellie wishes she'd purchased more broad forks and garden forks, as using them has increased her efficiency when harvesting crops and they've proven useful for a variety of tasks.

BLACK BEAR FARM EFFICIENCY INVESTMENTS & IMPACTS

Supply	Planned Impact	Ellie's Hints for Effective Use	Conclusion
Floating Row Cover	Control Flea Beetle on leafy greens	Buy a roll that's a manageable size	Worked well
Backpack Flame Weeder	Control weeds prior to seed germination	Timing was too difficult due to Ellie's part-time schedule	Did not work for Ellie's farm
Wheel Hoe	Control weeds between plants with large spacings (e.g. squash)	Easiest to use in soft soil	Worked well
Biodegradable Mulch	Control quack grass in beds	Quack grass grows right through it, don't bother with it	Did not work
Landscape fabric	Control weeds on edges and prevent weeds in beds until ready for planting	Lay it on prepared beds until you're ready to plant	Worked well
Cover crops	Control weeds between beds	Seed thickly to ensure a thick crop	Adjustments
String Trimmer	Control weeds as a last resort	Use as a morale boost to show your progress	Worked well
Hoss Push Seeder	Plant beds efficiently	Design beds to be long enough to make a seeder worth it	Adjustments needed
Heated Seeding Mats	Germinate seeds in the greenhouse	Don't leave seeds too long or they get leggy	Worked well

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](#).

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

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](#)