MONTANA-GROWN HOPS

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.

BITTERROOT ISLAND HOPS FARM | BILLINGS

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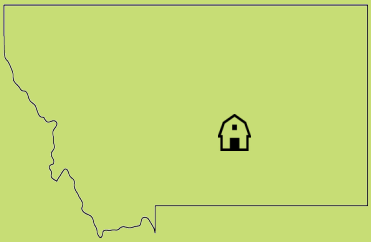
BITTERROOT ISLAND SNAPSHOT

Location: Gage, MT

Acres in Production: 3

Operator(s):
Chris Hamilton

Crops: Hops



INTRODUCTION

In 2014, veteran Chris Hamilton acquired a 146-acre farm in Musselshell County that produces feed grasses for the cattle industry. Since that industry is getting harder for small acreage farms to work in, Chris decided to transition three acres of the farm into hops production. He hopes this diversification into specialty crops will make the farm more profitable and help retain critical jobs in his area. Chris shares designs he implemented after visiting farms and attending conferences about hops production. In the future, Chris hopes he can collaborate with other growers on processing and marketing of Montana-grown hops.

MONTANA HOPS

Hops are perennial crops that require long days and winter temperatures below 40°F for one or two months. They are a long-season crop that needs 120 frost-free days and can only withstand a few early frosts. They also need well-drained soil. Establishing hops production requires a large initial investment; Chris estimated ten to fifteen thousand dollars an acre for trellising poles, cable for training the hops bines, animal fencing, an irrigation system, and labor. Chris is new to growing hops and has to wait to see how the hops perform after the bines mature.

MATERIALS PURCHASED

- Trellis poles—6”-8” diameter, 23-24’ long
- Toro Drip Tape, filtration system, connections, with .5 gallon/hr drip heads
- Hops vines (Cascade, Comet, Crystal, Nugget, Chinook, Zeus)

Hops Yard Design

Trellises

The hops grow on a trellis of 20’ tall poles. Chris used steel drill pipe for the outside edges of his hops yard and every 5th row on the interior of the yard for support against wind. The hops yard is 200’ by 600’, with rows planted in a north/south direction to allow light to reach the lower portions of the plants as the sun travels across the sky. Chris angles the lines that support the hops bines so that the plants grow directly toward the sun. He plants hops every 3 ½’. He attaches the poles by a support cable to the top of the wooden poles threaded to the steel poles via a welded chain link. He attached the cable to wooden poles by a fencing staple that he painted over to prevent rusting. Chris also paints the bottom 3’ of the wooden poles to prevent rotting due to snow melt.

Support Cables

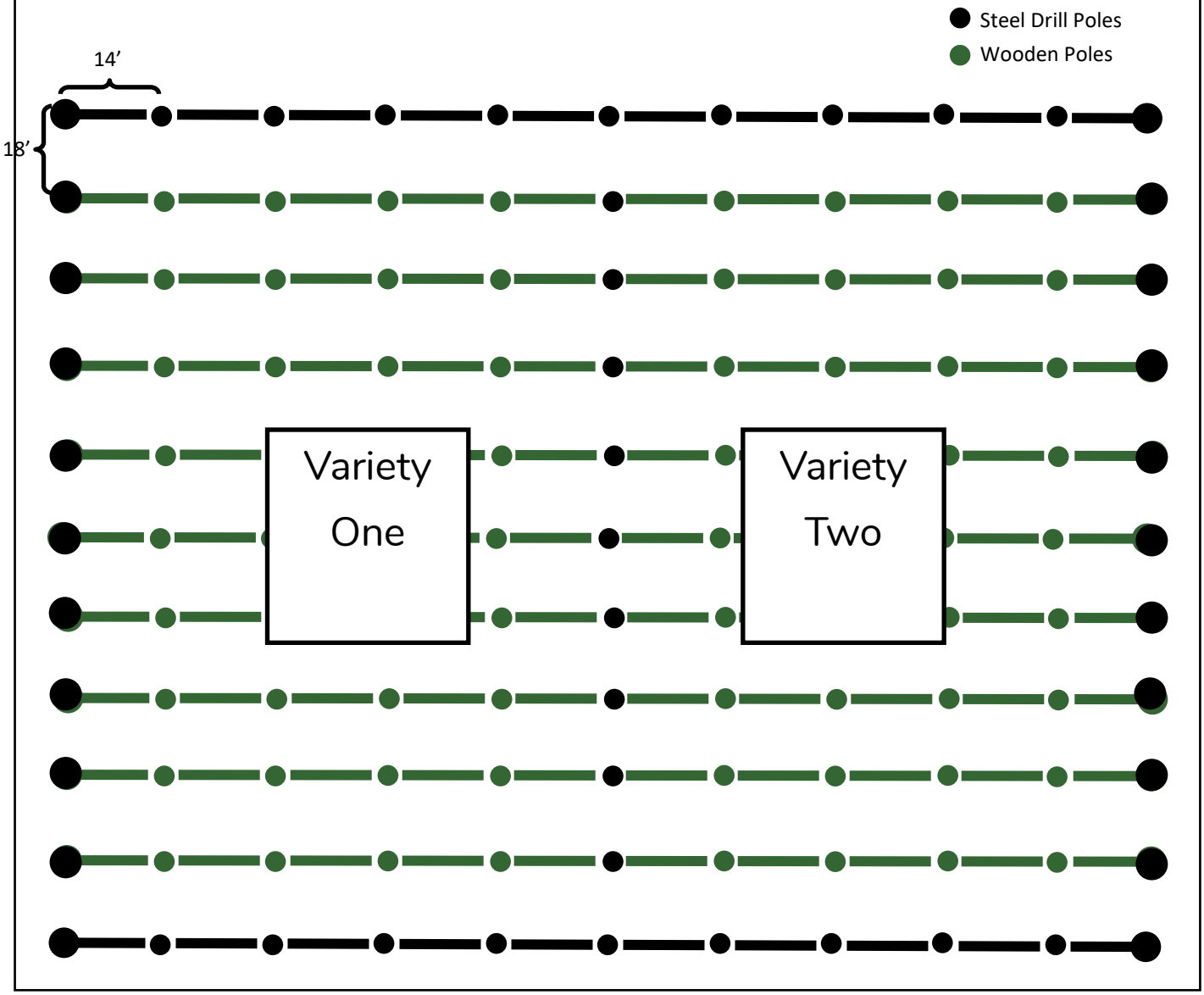
Chris used 3/8th or 5/16 th oil field camera cable that he scrapped for the support cables. His best piece of advice for tightening the support cables once you’ve got them threaded and attached to all the poles is to use real twist-in anchors that are 4-5’ long and have a 5-6” twist-in plate. He says anything but a real anchor will not stand up to the weight and will have to be replaced. He also used turn buckles on both sides to allow in-line tightening after come-along tightening for double the amount of slack to be pulled out of the line since you can pull from both directions.

Chris installing support cables on the wooden poles. This process took eight or ten days for the 340+ poles.

TIP

Chris welded old plow shovels to the bottom of the support poles to prevent settling into the ground after he placed them (left). He welds chain links to the tops of the poles at 12, 3, and 6 o'clock so that the trellis lines can be threaded no matter the position of the pole (right).

HOPS YARD EXAMPLE DESIGN



Growing Hops

Irrigation

Chris uses a Rain Bird timer for his irrigation system. He waters plants once they have been trained and the weather starts to warm. Then he irrigates 2-3 hours a day to make sure that the plants reach the top wire by late July. He increases irrigation when plants are pushing out sidearms, but adjusts water and nutrients once the cone sets. He is always careful not to stress the plants.

The Rain Bird irrigation timer that Chris uses.

The Irrigation System Design on the next page illustrates how Chris set up the irrigation in his hops yard.

Fertilizing

Hops need a lot of Nitrogen and micronutrients all season. Chris fertilizes with heavy nitrogen in the spring, micronutrients during the growing season, and some potassium in the fall. He also applies compost and composted chicken manure in the fall so it breaks down over the winter to ensure the Nitrogen is available for the plants in the spring. During the growing season he also monitors the hops and applies Nitrogen fertilizer through drip irrigation as needed.

Weed and Disease Control

Chris recommends spraying hops fields for weeds prior to installing a hops yard. He sprayed and then tilled 3 or 4 times the Fall prior to planting to ensure weed competition would be minimal. Hops can also be susceptible to powdery mildew and aphids so he has been spraying to prevent infestation, however, he has not noticed any problems with either in the Musselshell Valley yet. He also cleans out all debris from planting and harvesting so as to not leave any bugs or mold around for the next year.

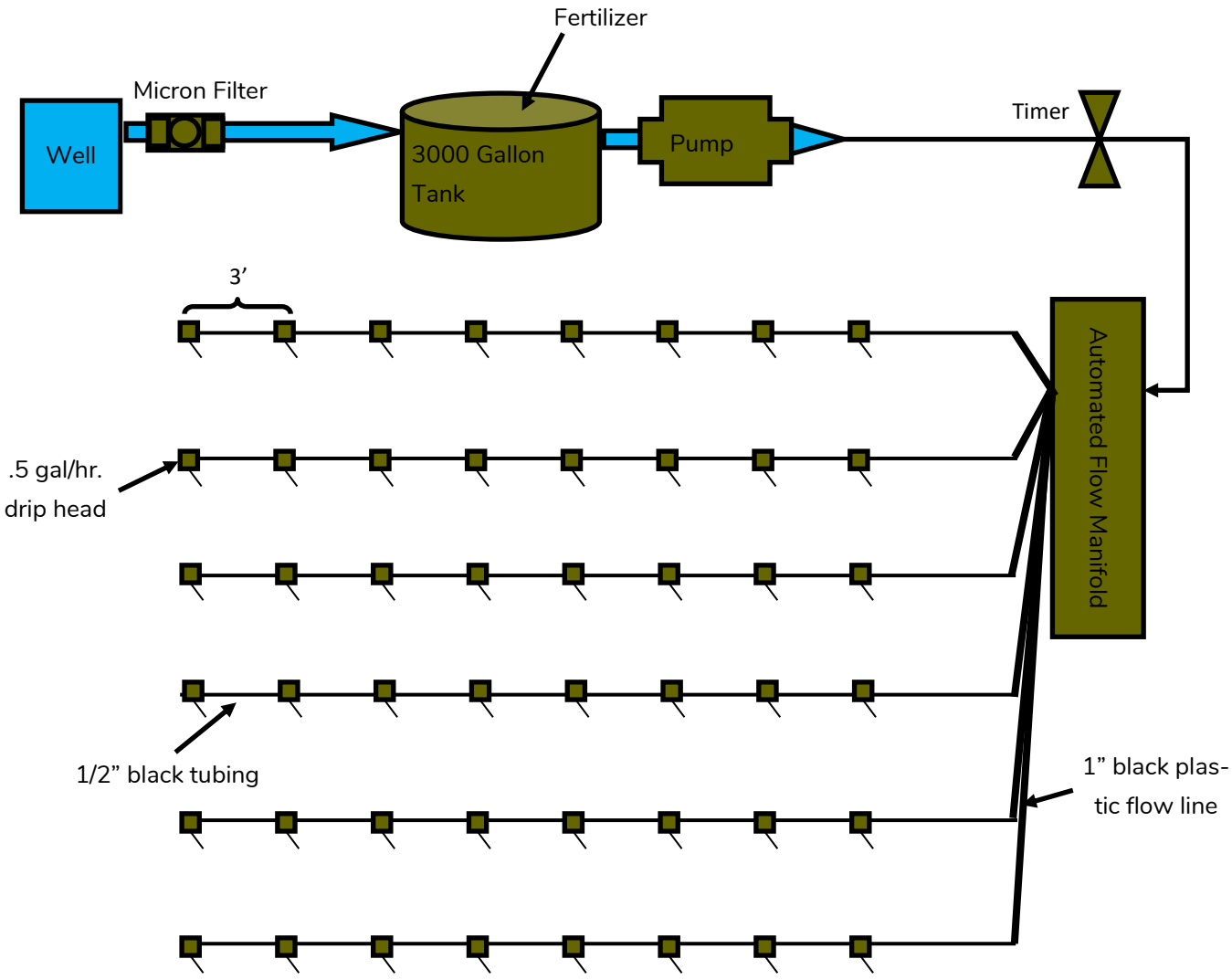

One of the test varieties being trialed at Bitterroot Island Hops.

Varieties

Chris asked for advice from brewers when selecting varieties for his new hops enterprise. He grows Chinook, Cascade, Comet, Crystal, Zeus, and Nugget and is also trialing a 75-year-old heritage hop variety from the Roundup area. He has not noticed differences in production yet, but expects to learn more as the hops bines mature.

IRRIGATION SYSTEM DESIGN FOR CHRIS'S HOPS YARD

Chris uses well water to irrigate his hops rather than river water because he didn't want to build a settling pond and have to add more filtration systems. His system looks something like this:



TIP

Chris uses each 1/2" line for a different hops variety so irrigation can be adjusted for that particular variety's needs. Each drip head feeds an individual plant.

TIP

Chris recommends working with local USDA Extension Agents to calculate the pressure and flow rates needed for a hops yard.

Results

Chris's hops yard has been going strong for two years and his hops are nearly ready to harvest. He is passionate about helping other farmers learn about trellis design, irrigation systems, and field preparation. He is working with other hops growers to market their product and is now the president of Musselshell Valley Hops Association and Farm Co-op. He is excited to show that Musselshell Valley farmers can increase their viability and profitability by considering specialty crops such as hops.

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