High Altitude Hops Variety Trial

Old Fort at Hesperus

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This project is a partnership between Fort Lewis College, New Mexico State University and Colorado Department of Agriculture Specialty Crop program.

History:

2008: Dr. Ron Godin sent four different varieties of hops from the Orchards Mesa Research Center to Hesperus in March. The rhizomes were potted in the strawbale greenhouse and set out in May. The varieties included Magnum, Red Vine, Chinook and Nugget survived and an elementary trellis was built in 2010.

2012: With the encouragement of Amber Beye, an Americorp VISTA at the time, we applied for Specialty Crop grant to study different hops varieties of high altitude. The grant will provide educational opportunities including both hands-on workshops and more intensive all day trainings. It will also provide monies to test the cones produced from the 11 different varieties. Tests will include petiole tests for boron deficiency, SPAD meters to identify iron chlorosis, alpha and beta acids on cones produced.

Fall: Began constructing ¼ acre research yard.
Used hydraulic pounder to place 3 inch sleeves into the ground.
Welded caps onto 2 3/8 inch drill stem and created extensions for old trellis with caps.

2013:

Spring: Inserted drill stem into sleeves and welded them in place.
Laid weed fabric placing ground staples every 12 inches
Burned 6” holes in weed fabric
Laid 1” poly and inserted with 2 gph emitters in each hole
Summer: Planted 11 varieties of hops in 4 replicates/rows with 6 plants per replicate (two guard plants).
Because we received the plants in late June, they did not produce cones in 2013.
Attended Hops workshop in Farmington
Fall: Working on completing trellis by adding 5/32 cable perpendicular to metal poles
This cable will be attached to earth anchors.
1/8 in cable will run parallel to metal poles and attach to the thicker cable.
There will be two cables per row so the hops can be trellised in a v-shape in 2014
Winter: We will host an all day intensive workshop in Durango in January/February
Resources for building hops yard in Four Corners region:

Soil Testing: Servi Tech Plant Labs; [www.servitechlabs.com](http://www.servitechlabs.com); $20.00 complete test plus $5.55 Boron

2 3/8 inch drill stem (structural tubing): Mann Pipe; Farmington, NM; 505-486-6823; $30 for a 31’ joint

Weed Barrier; LaPlata Conservation District ($43/3’ by 300’ roll); [laplatacd@hotmail.com](mailto:laplatacd@hotmail.com); 970-259-3289 x 2

Ground staples/U-Pins: Grand Junction Pipe; Durango Nursery; $70/1000

1 inch poly for irrigation: Grand Junction Pipe; 970-385-6733 ($0.40/ft)

2 gallon/hour take apart emitter: Dripworks; [www.dripworks.com](http://www.dripworks.com) ($0.14 each)

Disease Free Plantlets: Summit Plant Labs; (800) 654-1017 or info@plantlabs.com; [www.plantlabs.com](http://www.plantlabs.com)

Large-scale, wholesale Hops orders are accepted during the months of September-January of each year for the upcoming planting season. Transplants are produced for spring-time and early summer-time deliveries. (Some restrictions apply). VARIETIES: Cascade, Centennial, Chinook, Crystal, CTZ, Fuggle, Galena, Nugget, Teamaker, Tettnanger, Willamette, Vanguard.

1/8 inch (7x7) aircraft cable; Break strength 1700 lb; 1000’ rolls - Fastenal; Durango, CO 970-385-1033; Smaller lengths can be purchased at Tractor Supply in Durango

5/32 inch (7 x 19) galvanized aircraft cable; Break strength 2800 lb; 500’ rolls- Fastenal; Durango, CO; 970-385-1033; Smaller lengths can be purchased at Tractor Supply in Durango

48 inch Earth Anchors: Midwest Vineyard Supply; Tractor Supply (Durango); Ace Hardware (Bloomfield); $20 each

Smaller lengths can be purchased at Tractor Supply in Durango

Internet Resources:

University of Vermont Hops Project: [http://www.uvm.edu/extension/cropsoil/hops](http://www.uvm.edu/extension/cropsoil/hops)

UVM Extension’s Instructional Wiki for blueprints for a small-scale harvester, small-scale balers, and a small-scale oast: [http://www.uvm.edu/extension/cropsoil/wikis](http://www.uvm.edu/extension/cropsoil/wikis)

Selecting correct cable size: [http://schmidthops.com/hop_yard_cable](http://schmidthops.com/hop_yard_cable)

Ron Godin’s Hops page: [http://www.coopext.colostate.edu/TRA/PLANTS/Hops.shtml](http://www.coopext.colostate.edu/TRA/PLANTS/Hops.shtml)
Hints for constructing Hops Yard

Cutting 2 3/8 inch pipe

1. 31’ joints are very heavy. If you pick up your own pipe, be prepared to haul an extremely heavy load
2. The pipe is also very dirty so handle as little as possible
3. We left ours on the flat bed and slid the joints off as needed to cut
4. We used a chop saw to cut pipe

How to lay weed barrier

Materials needed:

1. Weed fabric, 3’ by 300’ roll from La Plata Conservation District
2. Ground staples/U-Pins: from Grand Junction Pipe or Durango Nursery
3. Two or more helpers

Steps:

1. Starting at beginning of row, pin fabric in place by placing four ground staples across front edge.
2. Roll fabric out.
3. Be sure to hold fabric taut and place ground staples on both sides every 12 inches.
4. Continue step 3 until end of row.
5. Using knife cut fabric from roll and place four ground staples across edge.
How to burn holes in fabric for planting

Materials needed:

1. Can of spray paint
2. Plant spacing and method for measuring it
3. Modified weed burner

Steps:

1. Starting at 4 inches from beginning of row spray an “X” with spray paint
2. From middle of “x”, measure 3 ft (or your plant spacing) and spray another “X”.
3. Continue step 2 until entire row marked off.
4. Light weed burner and heat up coffee can, with hole facing down, for 35-45 seconds.
5. Turn off burner and immediately press bottom of coffee can directly on the fabric over the marked “X’s”.
6. Remove burner from weed fabric as soon as you see the can has burned through.
7. You can do about 3 to 5 “X’s” before you need to reheat can again.
   a. Note that the can will get very hot after about 15 minutes. Let it sit for 10 to 15 minutes before continuing on.
How to lay Irrigation

Materials:

1. 1 inch poly to reach hops yard and as header row
2. ¾ inch poly for hops yard
3. End caps
4. Clamps
5. T-joiners that reduce from 1 inch poly to ¾
6. 2 gallon/hour take apart emitter from Dripworks
7. Poly punchers
8. Saw
9. Screw driver
10. Mallet

Note: Poly will be curled up and stiff, to prevent bending or creasing, carefully unwind poly and allow it to sit in sun to soften and relax.

Steps

1. Lay out poly over hop row with weed barrier in place, leave enough line to connect to header and leave 6 inches at end of row. Cut from main roll.
2. Connect lines to header using joiner and clamps at each connecting point.
3. Straighten line out over middle of the holes in weed barrier using landscape staples every few feet to ensure alignment along row.

4. At the end of each line, place end cap and pound in with mallet. Clamp cap in place.

5. Once all the lines are connected to the header and end caps are in place, turn on water.

6. Wait until all lines are full.

7. Once lines are full, with the water still on, punch hole in tubing directly over the hole in the weed barrier and insert emitters.
   a. Lines need to be full of water when puncturing holes as the lines expand and contract with the heat from the sun and the cooling of the water.
   b. If you puncture emitter-holes in line directly over holes in barrier with the water not on, the line and emitter will move up to 6 inches away from the hole in weed fabric when the water is turned on.
   c. Puncturing holes with poly puncher is difficult; make sure that puncher is new/sharp. Twisting puncher while applying pressure to the poly does help.

8. Continue step 7 until all holes in weed fabric have their own emitter.