About Us

Mountain View Hops, LLC was established in 2018 with an initial focus in providing quality propagated hop plants at an affordable price with dependable growth characteristics to existing and beginning hop farms of a half-acre or less throughout the mid-Atlantic region. Our initial stock was planted in the spring of 2016 and has steadily grown in number of plants and varieties.

MVH has trialed over 25 different cultivars to date. We currently have over 15 varieties in production that are continually evaluated in our own small-scale hop yard nestled in the Blue Ridge Mountains of Southwest Virginia. This testing allows us to determine which commonly available cultivars and pest management practices perform best in the mid-Atlantic.

As viability testing continues and cultivars become available, the varieties we offer will change and expand. It is with this gained knowledge that we can more accurately provide existing and developing hop farms with cultivars that can do well in this geographic region. We furthermore test various trellising designs and other farming practices that can make small scale hop farming a more financially viable and less labor-intensive industry in which to get started.

As MVH has grown over time, we branched out into other markets with our hops that we initially didn't think would be viable. We expanded to selling cones to wineries and kombucha producers, as well as more beer brewers. MVH then began making and selling hop soaps, hop candles, hop ornaments, and other hop related products. We have found that there is a viable market for these products and for selling our cones and plants for other consumers.

We look forward to continuing our experiments in growing hops, but also in marketing and creating unique hop products that will expand the knowledge and understanding of the Mid-Atlantic hops industry.

Our Hop yard Design

Located at an elevation of 2,665 feet, the hop yard is laid out in a grid-like checkerboard pattern. Individual squares measure 6’ x 6’. Each pole is a 4” x 4” x 16’ treated post planted 2’ in the ground, or a 6” x 6” x 20’ treated post planted 3 feet in the ground. Plants are placed within the 6’ x 6’ dirt squares around the poles in a straight line pattern to facilitate ease of tilling the ground. All plants are approximately 6’ from the center of their respective poles.

The poles have a collar with a rope and pulley system to raise and lower the collars. A strong baling twine is attached to eye hooks in the collar, and when raised, is used as both a climbing medium for the hops as well as a guy wire to support the poles via a ground stake placed near each crown around the pole. This provides a 14’-15’ grow height for each hop crown for 16’ poles and a 18’-20’ grow height for each hop crown for 20’ poles. Certain tall-growing cultivars have been fitted with specially made extensions attached to the collars that increase growing height to 18’-19’ and 22’-23’ respectively.

Harvesting and bine maintenance are performed from the ground level by lowering the collars to the desired height using the rope and pulley system. Due, in part, to the distance of the crowns from the pole, bine breakage from raising and lowering the collars is near zero.

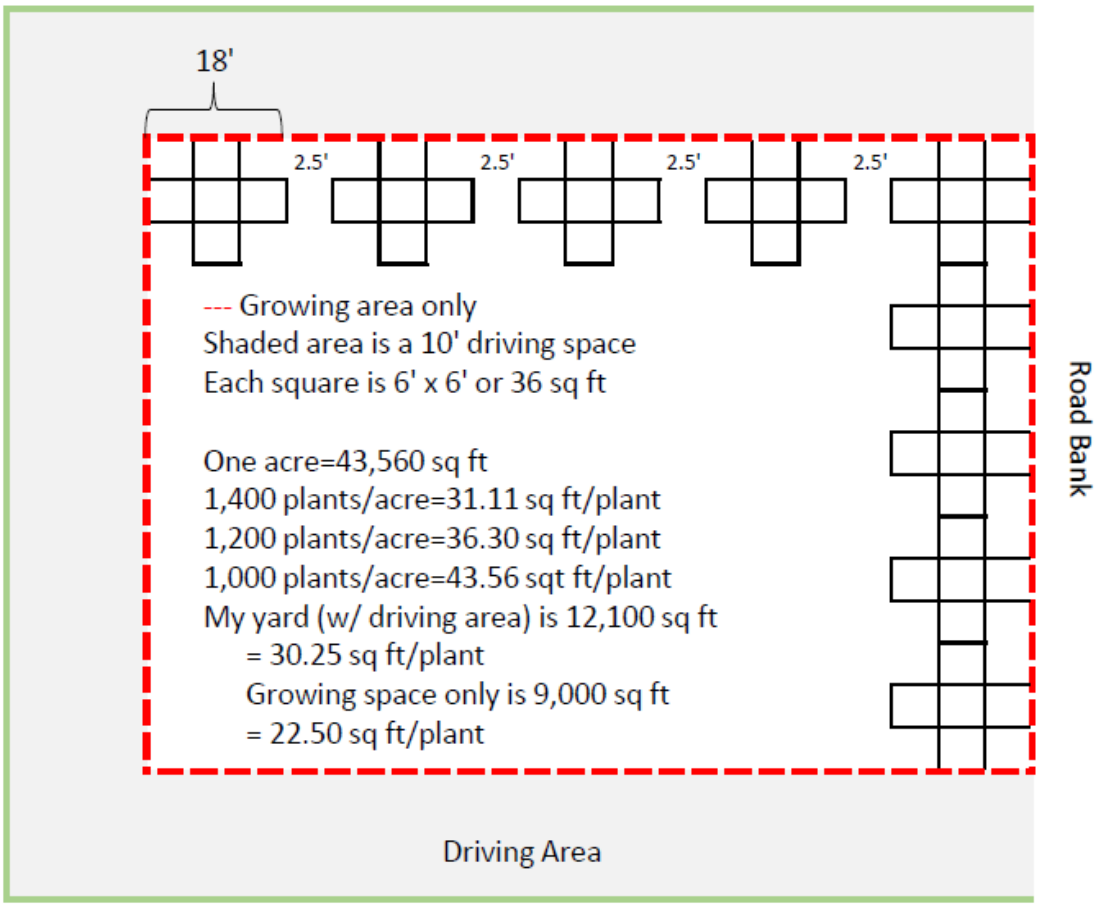
Irrigation, in the past, has been performed by hand, using a portable water tank and pump. This was a cost-effective system that also enabled the mixing of liquid fertilizers within the main tank which could then be metered out to each plant individually to test various fertilizer requirements between cultivars and within the same cultivars. Due to increased demand of our products, MVH is in the process of switching over to a more automated irrigation system complete with drip emitters, fertigation, and timers.

Granular fertilizers and other soil nutrients, if needed, are weighed out during the winter months for each pole or square based on square footage and manually applied in the spring. This is then followed by tillage of the ground beside each row of crowns using a standard garden tiller.

Grass between rows and around the hop yard is mowed using a self-propelled walk behind bagging mower and zero turn riding mower. All grass is either bagged or blown away from the yard to prevent grass clippings from covering the plants or the ground surrounding them.

Depending on level of vegetation and amount of control needed, foliar applications of fungicides, herbicides, or pesticides are applied using either a backpack style sprayer or an independent 25 gallon pull behind sprayer with a dedicated 12 volt pump.

MOUNTAIN VIEW HOPS



Cashmere (16)	Empty	Columbus (16)	Cascade (16)	Cascade (16)
Comet (16)	Pacific Gem (8)	Columbus (16)	Glacier (3)	Chinook (16)
Columbia (4)	Southern Cross (8)	Challenger (16)	Cascade (16)	Chinook (16)
Triple Perle (4)	Pacific Gem (8)	Challenger (16)	Empty	Canadian Redvine (4)
Triumph (4)	Local (4)	Zeus (16)	Empty	Kirin II (4)
Row 5	4	3	2	1

Currently 243 crowns for 2020

*() Indicate number of crowns

2020 Soil Amendments

No Soil amendments were applied during this season after a consultant indicated high levels of nutrients from previous growing seasons and recommended leaving the soil alone for this year. However, in the early spring, we received around 9 inches of rain in a few weeks which caused many of these nutrients and minerals to be leached from the soil.

In retrospect, hi-calcium lime should have been applied to continue aiding in raising the soil pH, as well as a better nutrient program directly after the large amounts of rain. More on the consequences of this failure will be detailed later in this report. This was not the consultant's fault.

SAMPLE HISTORY

Sample ID	Field ID	LAST CROP		LAST LIME APPLICATION		SOIL INFORMATION				
		Name	Yield	Months Prev.	Tons/Acre	SMU-1 %	SMU-2 %	SMU-3 %	Yield Estimate	Productivity Group
ROW1	FLD01HOPS					22C 100				

LAB TEST RESULTS (see Note 1)

Analysis	P (lb/A)	K (lb/A)	Ca (lb/A)	Mg (lb/A)	Zn (ppm)	Mn (ppm)	Cu (ppm)	Fe (ppm)	B (ppm)	S.Salts (ppm)
Result	246	369	2097	259	8.4	21.9	0.1	16.6	0.5	
Rating	VH	VH	H+	VH	SUFF	SUFF	SUFF	SUFF	DEF	

Analysis	Soil pH	Buffer Index	Est.-CEC (meq/100g)	Acidity (%)	Base Sat. (%)	Ca Sat. (%)	Mg Sat. (%)	K Sat. (%)	Organic Matter (%)
Result	5.9	6.12	8.4	19.7	80.3	62.1	12.7	5.6	

SAMPLE HISTORY

Sample ID	Field ID	LAST CROP		LAST LIME APPLICATION		SOIL INFORMATION				
		Name	Yield	Months Prev.	Tons/Acre	SMU-1 %	SMU-2 %	SMU-3 %	Yield Estimate	Productivity Group
ROW02	FLD01HOPS					22C 100				

LAB TEST RESULTS (see Note 1)

Analysis	P (lb/A)	K (lb/A)	Ca (lb/A)	Mg (lb/A)	Zn (ppm)	Mn (ppm)	Cu (ppm)	Fe (ppm)	B (ppm)	S.Salts (ppm)
Result	221	416	1707	264	7.6	15.6	0.3	18.5	0.5	
Rating	VH	VH	H	VH	SUFF	SUFF	SUFF	SUFF	DEF	

Analysis	Soil pH	Buffer Index	Est.-CEC (meq/100g)	Acidity (%)	Base Sat. (%)	Ca Sat. (%)	Mg Sat. (%)	K Sat. (%)	Organic Matter (%)
Result	6.2	6.15	7.4	20.2	79.9	57.9	14.8	7.2	

SAMPLE HISTORY

Sample ID	Field ID	LAST CROP		LAST LIME APPLICATION		SOIL INFORMATION				
		Name	Yield	Months Prev.	Tons/Acre	SMU-1 %	SMU-2 %	SMU-3 %	Yield Estimate	Productivity Group
ROW03	FLD01HOPS					22C 100				

LAB TEST RESULTS (see Note 1)

Analysis	P (lb/A)	K (lb/A)	Ca (lb/A)	Mg (lb/A)	Zn (ppm)	Mn (ppm)	Cu (ppm)	Fe (ppm)	B (ppm)	S.Salts (ppm)
Result	114	341	1343	259	4.1	13.5	0.2	17.1	0.5	
Rating	VH	VH	M+	VH	SUFF	SUFF	SUFF	SUFF	DEF	

Analysis	Soil pH	Buffer Index	Est.-CEC (meq/100g)	Acidity (%)	Base Sat. (%)	Ca Sat. (%)	Mg Sat. (%)	K Sat. (%)	Organic Matter (%)
Result	6.1	6.18	6.2	21.2	78.8	54.4	17.3	7.1	

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SAMPLE HISTORY

Sample ID	Field ID	LAST CROP		LAST LIME APPLICATION		SOIL INFORMATION				
		Name	Yield	Months Prev.	Tons/Acre	SMU-1 %	SMU-2 %	SMU-3 %	Yield Estimate	Productivity Group
ROW04	FLD01HOPS					22C 100				

LAB TEST RESULTS (see Note 1)

Analysis	P (lb/A)	K (lb/A)	Ca (lb/A)	Mg (lb/A)	Zn (ppm)	Mn (ppm)	Cu (ppm)	Fe (ppm)	B (ppm)	S.Salts (ppm)
Result	130	324	1225	183	3.4	10.0	0.2	15.1	0.4	
Rating	VH	VH	M+	H	SUFF	SUFF	SUFF	SUFF	DEF	

Analysis	Soil pH	Buffer Index	Est.-CEC (meq/100g)	Acidity (%)	Base Sat. (%)	Ca Sat. (%)	Mg Sat. (%)	K Sat. (%)	Organic Matter (%)
Result	6.0	6.12	5.9	28.2	71.8	51.9	12.8	7.0	

SAMPLE HISTORY

Sample ID	Field ID	LAST CROP		LAST LIME APPLICATION		SOIL INFORMATION				
		Name	Yield	Months Prev.	Tons/Acre	SMU-1 %	SMU-2 %	SMU-3 %	Yield Estimate	Productivity Group
ROW05	FLD01HOPS					22C 100				

LAB TEST RESULTS (see Note 1)

Analysis	P (lb/A)	K (lb/A)	Ca (lb/A)	Mg (lb/A)	Zn (ppm)	Mn (ppm)	Cu (ppm)	Fe (ppm)	B (ppm)	S.Salts (ppm)
Result	68	390	1132	136	3.8	13.8	0.2	14.0	0.4	
Rating	H	VH	M	M+	SUFF	SUFF	SUFF	SUFF	DEF	

Analysis	Soil pH	Buffer Index	Est.-CEC (meq/100g)	Acidity (%)	Base Sat. (%)	Ca Sat. (%)	Mg Sat. (%)	K Sat. (%)	Organic Matter (%)
Result	5.8	6.15	5.4	27.6	72.4	52.6	10.4	9.3	

General Cultivar Observations

Kirin II Row 1, Pole 1	This variety is an exceptionally good type to grow in our hopyard. It has height and yield capabilities rivaling Canadian Redvine. It is not as resistant to Downy Mildew as CRV, but has very good resistance. Height is around 20'-25' with long 2'-3' sidearms and very large clusters of good-sized cones. Cones are loose that could make mechanical harvesting more difficult.
Canadian Redvine Row 1, Pole 2	CRV has the best growth & yield characteristics of all the cultivars in our yard. It consistently produces the most amount of cones. It has excellent resistance to DM and grows to 20'-25' tall with 2'-3' sidearms. It also boasts loose cones that could make mechanical harvesting more difficult.
Cascade Row 1, Pole 5 Row 2, Poles 3 & 5	Cascade has shown to be very resistant to crown rot, DM, and PM. It grows to around 14'-16' tall with up to 1' sidearms. It yields very well and keeps the cones close to the main bine structure. Overall, a very good hop to start with for new growers.
Chinook Row 1, Poles 3 & 4	Chinook has shown to also be very resistant to crown rot, DM, and PM. It grows to around 15'-18' tall with up to 1' sidearms. It yields very well and keeps the cones close to the main bine structure. Overall, a very good hop to start for new growers.
Glacier Row2, Pole 4	Glacier grows 22'-25' tall with short 6"-8" sidearms. It produces high yields of cones close to the main bine structure, however the AA% appears to be very low in our yard. Trials will continue to be advanced to determine if AA% can be increased. Oddly, it appears to have moderate resistance to DM in our yard as well.
Zeus Row 3, Pole 1	Zeus grows to around 12'-14' tall with short 6"-8" sidearms. Cones are very large and concentrated close to the main bine structure. It appears to have decent resistance to DM & PM, but further trials are needed to determine resistance better. Initial progress shows promising. It appears to have very similar growth characteristics to Columbus and Challenger.
Challenger Row 3, Poles 2 & 3	Challenger has consistently performed well in our yard. It grows to around 12' tall with lots of large cones concentrated around the central bine structure. Sidearms are only 6"-8" at most. It appears to have moderate resistance to DM & PM. However, it is susceptible to crown rot in wet years, like Columbus.
Columbus Row 3, Poles 4 & 5	This variety grows identical to Challenger. It does have susceptibility to crown rot in wet ground conditions. It has been reported that this cultivar is susceptible to DM, however we have not seen this issue in our trials yet. All indications seem to be that it has a moderate to good resistance to DM. Cone yields and size are also identical to Challenger.
Local Row 4, Pole 1	This variety is susceptible to crown rot and has some susceptibility to DM. However, it produces yields like Kirin II and CRV. It grows to around 20'-25' with long 3'-4' sidearms. Cones are large and long with high yields. It has aroma & flavor profiles of strong rose/floral with an underlying base of Chinook pine-like essence. One brewer noted bubblegum flavor. Cones are loose which could make mechanical harvesting an issue.

Southern Cross Row 4, Pole 3	This variety grows very tall and fast, up to around 25', however it is very susceptible to crown rot and DM. If the disease can be controlled, it can produce high yields of good-sized cones. Sidearms are 3'-4' long.
Pacific Gem Row 4, Poles 2 &4	This variety grows identical to Southern Cross except that flavor and aroma are different. It does have even more susceptibility to crown rot and decay in wet conditions, as well as poorer systemic DM resistance in the crown.
Triumph Row 5, Pole 1	This variety was started this year and is in trials. No information yet.
Triple Pearl Row 5, Pole 2	Triple Pearl appears to have very good resistance to DM. It grows to at least 20' tall with fairly good cone size and yields. It is still in trials, but is showing promise.
Columbia Row 5, Pole 3	Columbia appears to have very good resistance to DM and grows to around 20' tall with good cone yields, but the cones are very small. It is still in trials, but may be culled if cone size does not improve.
Comet Row 5, Pole 4	Comet grows to around 14'-16' tall with large long cones that cluster around the central bine structure. Sidearms are up to 1' long. Yields are fair and DM resistance appears to be very good. It is still in trials, but is showing promise.
Cashmere Row 5, Pole 5	This variety did well the first two years, but this season it barely got to 8'-10' tall. It also is starting to show signs of DM susceptibility. Cone yields are great but AA% is lower. It is still in trials and more information will be available in coming years.

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2020 MVH Harvest

Cultivar	Year	Rank	lbs (Wet)	lbs (Dry)	Oz (Wet)	Oz (Dry)	# of Plants Harvested	Crown (Wet)	% Dry Matter @ Harvest
Canadian Redvine	2017	1	8.26	2	132.2	32	4	2.06	
	2018	1	24.29	5.69	388.6	91	4	6.07	
	2019	1	20.91	4.17	334.7	66.71	4	5.23	
	2020	1	30.33	5.47	485.28	87.56	4	7.58	23.84
Columbus	2017	4	4.18	0.86	66.9	13.8	4	1.05	
	2018	2	14.22	3.73	227.6	59.7	10	1.42	
	2019	3	12.57	2.73	201.1	43.67	13	0.97	
	2020	4	13.38	3.39	214.1	54.24	8	1.67	24.4
Challenger	2017	6	3.91	0.85	62.6	13.6	4	0.98	
	2018	3	10.28	2.67	164.5	42.7	10	1.03	
	2019	5	9.89	2.04	158.3	32.74	14	0.71	
	2020	6	6.97	1.62	111.6	25.9	5	1.39	25.15
Local	2017	18	0.16	0.03	2.6	0.59	1	0.16	
	2018	4	7.62	2.39	121.9	38.2	4	1.91	
	2019*	2	12.23	2.79	195.8	44.68	4	3.06	
	2020	8	3	0.77	48.08	12.4	3	1	22.77
Pacific Gem	2017	3	4.83	1.27	77.2	20.3	4	1.21	
	2018	5	9.99	2.22	159.8	35.5	4	2.5	
	2019		1.09	0.25	17.5	4	2	0.5	
	2020	13	2.92	0.64	46.8	10.2	5	0.58	N/A
Cascade	2017	2	6.93	1.71	110.8	27.4	9	0.77	
	2018	6	9	2.16	144.1	34.5	12	0.75	
	2019*	4	9.17	2.09	146.8	33.51	16	0.57	
	2020	12	9.57	2.68	153.1	42.9	15	0.64	26.31
	BK 20'		11.78	3.34	188.48	53.46	12	0.98	26.98
Chinook	2017	8	2.91	0.61	46.5	9.8	4	0.73	
	2018	8	7.51	1.84	120.2	29.5	10	0.75	
	2019	6	5.87	1.29	94	20.7	16	0.37	
	2020	9	15.52	3.65	248.32	58.47	16	0.97	25.15
Glacier	2017	10	0.82	0.22	13.1	3.5	4	0.21	
	2018	18	0	0	0	0	0	0	
	2019		0	0	0	0	0	0	
	2020	3	6.41	1.47	102.56	23.4	3	2.14	21.6
Cashmere	2018	N/A	0	0	0	0	0		
	2019	9	4.2	0.96	63.3	15.45	4	1.05	
	2020	11	3.18	0.72	50.8	11.5	4	0.79	25.12
Columbia	2018	N/A	0	0	0	0	0		
	2019		1.94	0.4	31.1	6.3	2	0.97	
	2020	10	3.43	0.75	54.88	12.06	4	0.86	20.66
Comet	2018	N/A	0	0	0	0	0		
	2019		1.41	0.31	22.6	5	2	0.7	
	2020	9	4.98	1.07	79.68	17.16	4	1.24	21.36
Kirin II	2018	N/A	0	0	0	0	0		
	2019		7.8	1.8	124.9	28.13	4	1.95	
	2020	2	12.57	2.71	201.12	43.45	3	4.19	23.04
Triple Pearl	2018	N/A	0	0	0	0	0		
	2019		2.02	0.42	32.4	6.72	3	0.67	
	2020	5	6.44	1.38	103.04	22.06	4	1.61	21.15
Zeus	2019	N/A	0	0	0	0	0		
	2020	7	1.37	0.95	21.92	15.16	1	1.37	N/A
	Rank is based on "lbs Per Crown (Wet)"								
	* Indicates that the hops were sold wet and the dry measurements were calculated based on dry matter %, plus 8% estimated final moisture content.								

GREEN - Indicates an increase over the previous year
RED - Indicates a decrease from the previous year

MVH Testing and Evaluation

Mountain View Hops, LLC is continually testing general hop growing practices and evaluating what varieties grow best and produce relatively well in our general area using standard currently acceptable fertilizer and micro-nutrient rates. Tests also include various pesticide/fungicide/herbicide products for proper control of intended targets and evaluating the results. Types of mulches, propagating methods, and other cultural practices from pre-emergence to final packaging and marketing are also being evaluated at MVH.

Our long-term goals include more detailed studies of various fertilizer application rates and disease/pest control measures as they pertain to specific individual varieties. The intent is to take individual varieties that MVH has determined already grew well in our hopyard and further test their reactions to various Nitrogen, Phosphorous, and Potassium application rates, as well as fungicide/pesticide application schedules. These tests will take time, but it is hoped that the results from these annual studies will eventually lead to a more solidified understanding of what hop varieties perform well in our area, as well as using the collected data from our farm combined with others' to help grow hops in the Mid-Atlantic region overall.

2020 MVH Research

Experiment 1: Increase several varieties to full double string capabilities around entire poles.

Purpose: To see what, if any, adverse effects might happen when a full complement of 16 double strung crowns are attached to one pole.

Result: Overall, this method of double stinging for teepee designs appears to be very efficient on micro-scale hop growing (1/4 acre or less). Teepee designs would not be beneficial when approaching ½ acre or more due to time consumption from certain procedures that would normally be done mechanically. One area that emphasizes this problem is tillage of the soil, which has to be done by hand rather than with a tractor and implements that are typically used on normal hopyard layouts.

Experiment 2: Remove and install two 6"X6", 20 foot treated poles around CRV and the Local varieties.

Purpose: To allow for increased growing height, as well as the ability to possibly double string these taller growing varieties using a teepee design while reducing the congestion issues at the top of the pole that were found in the 2018 & 2019 growing seasons.

Result: The taller poles helped in allowing more sunlight to hit the interior of the plant canopy when using the teepee design. This in turn allowed for better cone development towards the top. One problem is the entanglement of the bines & sidearms around the pulleys and collar at the top. Too much entanglement causes the collar to not slide down the pole and requires additional effort to lower the canopy for harvest. On taller poles, this can be a more problematic issue due to the increased height.

Experiment 3: String shorter growing varieties to only 10' tall on their respective poles

Purpose: To determine if the shorter growing varieties might be able to be trellised using 4'x4'x12' poles instead of the current 16' poles thus saving initial startup costs for individuals wishing to grow these cultivars.

Result: It was found that shorter poles can be used to grow varieties such as Columbus, Challenger, and Zeus. However, the crowns must be located closer to the pole for double stringing to work on a teepee design. It was found that the outside string was at too tight of an angle and prevented the bines from easily wrapping around the twine. It appears that an angle of less than 135-130 degrees prevents the bines from wrapping around twine on their own in a uniform motion. This requires the grower to constantly help the bines grow until they reach terminal height and is not efficient.

Experiment 4: Apply a pre-emergent herbicide

Purpose: To test the viability of weed control using a pre-emergent herbicide

Result: MVH used Trifluralin 4EC as a spring pre-emergent and found that this product worked extremely well all the way through summer. We will be trialing other approved pre-emergent herbicides in the future to determine their efficacy in our hopyard. Overall, pre-emergent herbicide is a great tool for controlling weeds.

Additional Notes of Importance for the 2020 Season

Rain, Rain, Freeze, Rain

The previous winter barely got down into freezing temps the entire season and the ground stayed very wet from two 2019 fall hurricane systems and a rainy winter. The spring and early summer or 2020 were fraught with more rain and cold temperatures. The cold and constant rain persisted until the end of May and early June.

This caused lots of crown rot from so much moisture over such a long period of time and resulted in about a 1/3rd of the hopyard needing to be replaced. The cold, rainy, and cloudy spring also made the growing season very late. The plants were about 15-30 days late from past seasons on everything from training dates to flowering to harvest. Plants were stunted in growth and nutrients that had been applied in early spring were washed away from all the rain.

Applications of foliar Miracle-Gro were applied in an effort to quickly bring the plants back to health. However, the indications of nutrient problems were found too late and the foliar nutrients were not enough to provide recovery from an already bad season. Yields did increase from the previous year due to increased plantings, but were not to the levels expected.

What Did We Learn This Season (2020)

Every season is a learning experience and this one proved to be a big one.

1) When there is lots of rain, it can easily wash away your nutrients from the root zone. This in turn can cause severe nutrient deficiencies that may not be seen for several weeks later and may actually look more like disease rather than a deficiency.
2) Potted plants can become root bound which can lead to a lack in the roots ability to spread out and grow when planted from pots. When planting new hops plants that have been in pots for many months, it is good practice to break apart the root ball and sometimes trim off the outer layer of roots to stimulate growth. Otherwise, the plants just sit in the ground and look sickly the entire growing season.
3) Do not use Phosphorus Acid fungicides within 2 weeks of Copper fungicides. Phyto toxicity can occur which can leave burn spots on the leaves in the center and on the edges. Also, too much copper can also leave copper colored burn patches on leaves.
4) There is nothing you can do when the weather turns fowl. We had everything planned out and were right on target with our Nitrogen applications and trimming/burn back dates…….right up until mother nature decided we had to stop. After the cold weather and rain came in late April and early May, everything was blown out the window and there was no coming back. It's farming and it happens.

Key Dates for 2020

Feb 24 – Took soil samples from hopyard and applied pre-emergent

March 16 – Hop shoots began elongating and growing

March 27 – Applied Aim herbicide to burn back initial growth

April 22 – Applied Aim herbicide to burn back second growth & watered w/ 75 lbs/A of Nitrogen

April 28 – "Weed Wacked" the tops off the crowns for a third & final time (this was a mistake!)

-Due to the cold and continuous rain later, the hops did not grow much after this.

May 13 – Lightly tilled the topsoil in the hopyard

May 28-29 – Installed growing twine on poles and trained all plants

-Training was supposed to have been done on May 10-15

June 5 – Applied a foliar application of Miracle Gro to hopyard

July 1 – All plants in yard are at full burr stage (Normally at full burr by mid-June)

Aug 10 – Aug 29 – Harvested hops and re-strung to produce cones for secondary markets

-Harvest typically starts in late July. This harvest was slightly too early due to future rain forecasts.

Dec 17 & 22 – Cut down all secondary growth material in preparation for the winter

2019 MVH Hop yard Spray Record

Date	Location	Product	Target Pest	Application Rate	Total Gallons Used
Feb 14	MVH Yard 1	Trifluralin 4-EC	Pre-Emergeant	1.5 Pints/Acre	28 Gallons
March 27		Aim & Clethodim	Weed & Control Burnback	2 oz/A Aim, .68 fl oz /gal Clethodim	28 gallons
March 27	Nursery	Ridomil Gold & Copper	Downy Mildew (nursery)	1/8 fl oz/half gallon Ridomil, 1 oz/gal Copper	1/2 gallon
April 8	Nursery	Cueva Copper	Downy Mildew (nursery)	1 oz per 1/2 gallon	1/2 gallon
April 16	Nursery	Cueva Copper	Downy Mildew (nursery)	2 oz per 1/2 gallon	1/2 gallon
April 22	MVH Yard 1	Aim EC	Burnback	2 oz/A	5 gallons
April 29	Nursery	Cueva Copper	Downy Mildew (nursery)	1 oz per 1/2 gallon	1/2 gallon
May 4	Yard & Nursery	Ridomil Gold & Copper	Downy Mildew	1 fl oz/4 gal Ridomil, 2 fl/oz per gal Copper (crown drench)	8 gallons
May 16	Yard & Nursery	Phostrol	Downy Mildew	6 tsp / gal	8 gallons
May 17	Main Yard	Seven Granules	Earwigs	dogfood can sprinkled around each post on top of mulch	3/4 of a bag
May 22	Yard & Nursery	Curzate & Copper	Downy Mildew	20g in 4 gal of Curzate, 2 oz/gal of Cueva	7 gallons
May 29	Yard & Nursery	Oxidate	Down Mildew	1.28 fl oz/gal	15 gallons
June 4	Yard & Nursery	Phostrol	Downy Mildew	6 tsp / gal	22 gallons
June 12	Yard & Nursery	Curzate & Copper	Downy Mildew	4.5 g per gallon Curzate, 2 fl oz per gal Cueva	23 gallons
June 21	Yard	Aim EC	Burnback (selective)	2 oz/A	6 gallons
June 21	Yard & Nursery	Oxidate	Downy Mildew	1.28 fl oz/gal	20 gallons
June 26	Yard & Nursery	Copper	Downy Mildew	2 fl oz /gal	24 gallons
July 3	Yard & Nursery	Phostrol	Downy Mildew	6 tsp / gal	20 gallons
July 14	Yard & Nursery	Copper & Insect. Soap	Downy & Hoppers	2 oz/gal of Cueva, 2.5 oz/gal of Soap	24 gallons
July 21	Yard & Nursery	Oxidate	Downy Mildew	1.28 fl oz/gal	20 gallons
July 29	Yard & Nursery	Copper	Downy Mildew	2 fl oz /gal	23 gallons
Aug 7	Yard & Nursery	Copper	Down Mildew	2 fl oz /gal	25 gallons
Aug 20	Yard & Nursery	Ridomil Gold & Copper	Downy Mildew	2 fl oz/ 15 gal Ridomil, 2 fl oz/gal Cueva	15 gallons
Aug 30	Yard & Nursery	Oxidate	Downy Mildew	.64 fl oz/gal	12 gallons
Sept 6	Yard	Clethodim	Grass	.68 fl oz/gal	5 gallons
Sept 7	Yard & Nursery	Phostrol	Downy Mildew	2.5 pints / Acre	10 gallons
Dec 17	Yard	Roundup	Weeds	6 oz/gallon	30 gallons

The following section contains the analyses performed by the Virginia Tech Department of Food Science and Technology, Enology Analytical Services Laboratory on multiple cultivars post-harvest and post packaging.

Cultivars Analyzed:

Canadian Redvine

Cashmere

Challenger

Chinook

Columbia

Columbus

Comet

Glacier

Kirin II

Local

Triple Pearl

Zeus

Canadian Redvine

View Data

Invoice Number	AG069-1
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Canadian Red Vine

Result

Test	Results
Moisture (%)	5.6
Dry Matter(%)	94.4
Cohumulone (% of Alpha)	41.5
As Received:	
Alpha Acids (%)	4.23
Cohumulone (%)	1.75
Humulone (%)	2.48
Beta Acids (%)	4.74
Colupulone (%)	3.03
Lupulone(%)	1.70
Dry Weight Basis:	
Alpha Acids (%)	4.48
Cohumulone (%)	1.86
Humulone (%)	2.62
Beta Acids (%)	5.02
Colupulone (%)	3.21
Lupulone(%)	1.80

Cashmere

View Data

Invoice Number	AG069-4
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Cashmere

Result

Test	Results
Moisture (%)	10.9
Dry Matter(%)	89.1
Cohumulone (% of Alpha)	26.8
As Received:	
Alpha Acids (%)	4.57
Cohumulone (%)	1.22
Humulone (%)	3.35
Beta Acids (%)	4.03
Colupulone (%)	1.76
Lupulone(%)	2.26
Dry Weight Basis:	
Alpha Acids (%)	5.13
Cohumulone (%)	1.37
Humulone (%)	3.76
Beta Acids (%)	4.52
Colupulone (%)	1.98
Lupulone(%)	2.54

MOUNTAIN VIEW HOPS

Challenger

View Data

Invoice Number	AG069-5
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Challenger

Result

Test	Results
Moisture (%)	11.7
Dry Matter(%)	88.3
Cohumulone (% of Alpha)	26.5
As Received:	
Alpha Acids (%)	14.92
Cohumulone (%)	3.95
Humulone (%)	10.97
Beta Acids (%)	3.96
Colupulone (%)	1.98
Lupulone(%)	1.97
Dry Weight Basis:	
Alpha Acids (%)	16.90
Cohumulone (%)	4.47
Humulone (%)	12.42
Beta Acids (%)	4.48
Colupulone (%)	2.25
Lupulone(%)	2.23

MOUNTAIN VIEW HOPS

Chinook

View Data

Invoice Number	AG069-6
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Chinook

Result

Test	Results
Moisture (%)	9.4
Dry Matter(%)	90.6
Cohumulone (% of Alpha)	23.2
As Received:	
Alpha Acids (%)	11.11
Cohumulone (%)	2.57
Humulone (%)	8.54
Beta Acids (%)	2.66
Colupulone (%)	1.16
Lupulone(%)	1.51
Dry Weight Basis:	
Alpha Acids (%)	12.26
Cohumulone (%)	2.84
Humulone (%)	9.42
Beta Acids (%)	2.94
Colupulone (%)	1.28
Lupulone(%)	1.66

MOUNTAIN VIEW HOPS

Columbia

View Data

Invoice Number	AG069-7
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Columbia

Result

Test	Results
Moisture (%)	10.7
Dry Matter(%)	89.3
Cohumulone (% of Alpha)	22.6
As Received:	
Alpha Acids (%)	8.05
Cohumulone (%)	1.82
Humulone (%)	6.23
Beta Acids (%)	2.63
Colupulone (%)	1.21
Lupulone(%)	1.42
Dry Weight Basis:	
Alpha Acids (%)	9.02
Cohumulone (%)	2.04
Humulone (%)	6.98
Beta Acids (%)	2.95
Colupulone (%)	1.36
Lupulone(%)	1.59

MOUNTAIN VIEW HOPS

Columbus

View Data

Invoice Number	AG069-8
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Columbus

Result

Test	Results
Moisture (%)	8.8
Dry Matter(%)	91.2
Cohumulone (% of Alpha)	25.5
As Received:	
Alpha Acids (%)	16.78
Cohumulone (%)	4.28
Humulone (%)	12.50
Beta Acids (%)	4.30
Colupulone (%)	2.11
Lupulone(%)	2.18
Dry Weight Basis:	
Alpha Acids (%)	18.40
Cohumulone (%)	4.70
Humulone (%)	13.70
Beta Acids (%)	4.71
Colupulone (%)	2.31
Lupulone(%)	2.39

MOUNTAIN VIEW HOPS

Comet

View Data

Invoice Number	AG069-9
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Comet

Result

Test	Results
Moisture (%)	13.5
Dry Matter(%)	86.5
Cohumulone (% of Alpha)	34.7
As Received:	
Alpha Acids (%)	8.40
Cohumulone (%)	2.92
Humulone (%)	5.48
Beta Acids (%)	2.67
Colupulone (%)	1.47
Lupulone(%)	1.20
Dry Weight Basis:	
Alpha Acids (%)	9.71
Cohumulone (%)	3.37
Humulone (%)	6.34
Beta Acids (%)	3.09
Colupulone (%)	1.70
Lupulone(%)	1.38

MOUNTAIN VIEW HOPS

Glacier

View Data

Invoice Number	AG069-10
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Glacier

Result

Test	Results
Moisture (%)	9.1
Dry Matter(%)	90.9
Cohumulone (% of Alpha)	11.7
As Received:	
Alpha Acids (%)	2.26
Cohumulone (%)	0.26
Humulone (%)	2.00
Beta Acids (%)	4.28
Colupulone (%)	1.46
Lupulone(%)	2.83
Dry Weight Basis:	
Alpha Acids (%)	2.49
Cohumulone (%)	0.29
Humulone (%)	2.20
Beta Acids (%)	4.72
Colupulone (%)	1.60
Lupulone(%)	3.11

MOUNTAIN VIEW HOPS

Kirin II

View Data

Invoice Number	AG069-12
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Kirin II

Result

Test	Results
Moisture (%)	10.4
Dry Matter(%)	89.6
Cohumulone (% of Alpha)	43.6
As Received:	
Alpha Acids (%)	5.43
Cohumulone (%)	2.37
Humulone (%)	3.06
Beta Acids (%)	4.87
Colupulone (%)	3.24
Lupulone(%)	1.63
Dry Weight Basis:	
Alpha Acids (%)	6.06
Cohumulone (%)	2.64
Humulone (%)	3.42
Beta Acids (%)	5.43
Colupulone (%)	3.61
Lupulone(%)	1.82

MOUNTAIN VIEW HOPS

Triple Pearl

View Data

Invoice Number	AG069-13
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Triple Pearle

Result

Test	Results
Moisture (%)	8.9
Dry Matter(%)	91.1
Cohumulone (% of Alpha)	23.4
As Received:	
Alpha Acids (%)	9.31
Cohumulone (%)	2.18
Humulone (%)	7.13
Beta Acids (%)	3.29
Colupulone (%)	1.62
Lupulone(%)	1.66
Dry Weight Basis:	
Alpha Acids (%)	10.23
Cohumulone (%)	2.40
Humulone (%)	7.83
Beta Acids (%)	3.61
Colupulone (%)	1.78
Lupulone(%)	1.83

MOUNTAIN VIEW HOPS

Zeus

View Data

Invoice Number	AG069-14
Received	09/11/2020
Analyzed	09/15/2020
Vintage	2020
Varietal	Zeus

Result

Test	Results
Moisture (%)	9.2
Dry Matter(%)	90.8
Cohumulone (% of Alpha)	26.6
As Received:	
Alpha Acids (%)	18.21
Cohumulone (%)	4.84
Humulone (%)	13.37
Beta Acids (%)	4.32
Colupulone (%)	2.13
Lupulone(%)	2.19
Dry Weight Basis:	
Alpha Acids (%)	20.06
Cohumulone (%)	5.33
Humulone (%)	14.73
Beta Acids (%)	4.76
Colupulone (%)	2.34
Lupulone(%)	2.41