



2018 Virginia Hop Grower Survey: Results

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Hops (*Humulus lupulus*) are an essential component of beer production. Though hops have been grown in Virginia since the 1700s, Virginia hop production has been minor in past decades. Most major hop production in the U.S. takes place in Washington, Oregon, and Idaho. However, in recent years, the number of craft breweries in Virginia has increased and interest in local hop production has grown. Virginia Cooperative Extension has seen a steady increase in requests for hop-focused information and resources. Prior to 2014, no systems were in place to formally assess the scope of the Virginia industry, and national hop acreage reports did not provide data for Virginia. In 2014, Virginia Cooperative Extension faculty developed and distributed the first Virginia hop grower survey and shared the results in a publication. The state-wide survey effort was updated and repeated in 2015, 2016, 2017, and 2018.

Survey Process

A survey was distributed to Virginia hop growers in August-December 2018 to evaluate the status of the industry, draw comparisons to the 2014-2017 surveys, and develop benchmarks for future growth assessments. The survey was developed with Qualtrics online survey software and administered by Virginia Cooperative Extension.

The survey was marketed and distributed as widely as possible through email lists, grower groups, Extension agents, and social media. Industry stakeholders also assisted with distribution. As a result, exact survey distribution and the resulting response rate are unknown. In prior years, because some Virginia growers maintain very small plantings and mixed-use plantings, survey outreach efforts did not differentiate between hobby and commercial grower target audiences; beginning and prospective growers were also included in outreach efforts since portions of the survey assessed their growing experiences and future plans. However, due to industry progression, in 2017 and 2018 the survey was targeted at operations deemed “commercial” in nature, independent of hop yard size—growers were asked to self-characterize and complete the survey if they had intent to sell hops, acted as a farm brewery, or otherwise grew hops for purposes other than strict hobby.

Actual statewide yield and total plant numbers may differ from those shown in this survey if some growers chose not to complete the survey or if some growers were not reached by the survey. Furthermore, growers had the option to omit questions as desired, so not all respondents may not have chosen to report yield and other specific information

Though national reports supply acreage statistics for the major hops-producing states, the survey also assessed the total number of plants on Virginia operations. Many Virginia growers have hop yards of less than one acre, and trellis design and spacing vary. For these reasons, growers were asked to report cultivars grown and number of plants for each cultivar. For the yield report, growers were asked to distinguish between pounds of wet hops harvested and pounds of dried hops harvested since some growers choose to weigh their hops at harvest while others choose to weigh them after processing.

Survey Results: Hops in Virginia – Scope of the Industry

The following sections highlight key 2018 survey findings, with comparisons to the 2014-2017 surveys.

Grower Characterization

Table 1. Survey Participation.

Survey Year	Number of Survey Participants
2014	46
2015	78
2016	52
2017	31
2018	20

Using a Virginia Cooperative Extension district map for guidance, 20 participants reported their growing regions:

Table 2. Reported growing region.

Percent Respondents Per Growing Region	
Southwest	5%
Central	15%
Northern	60%
Southeast	20%

Years of experience growing hops

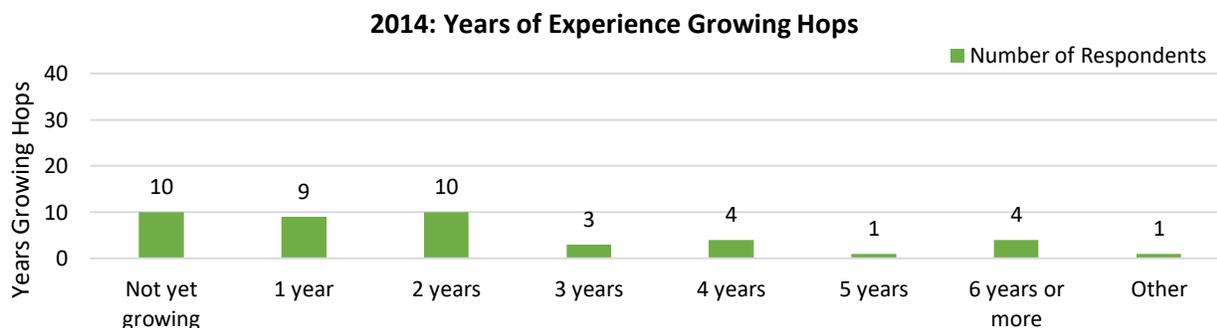


Figure 1. 2014 Years of Experience Growing Hops.

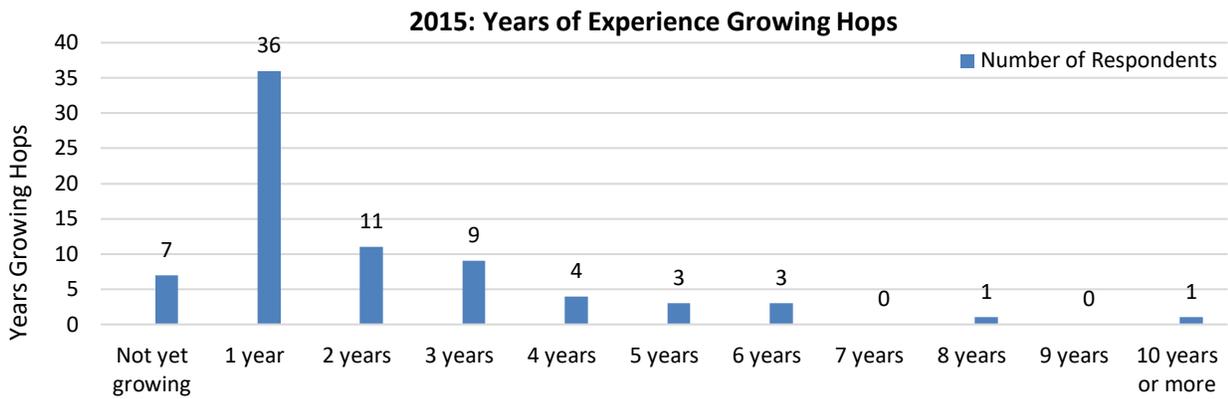


Figure 2. 2015 Years of Experience Growing Hops.

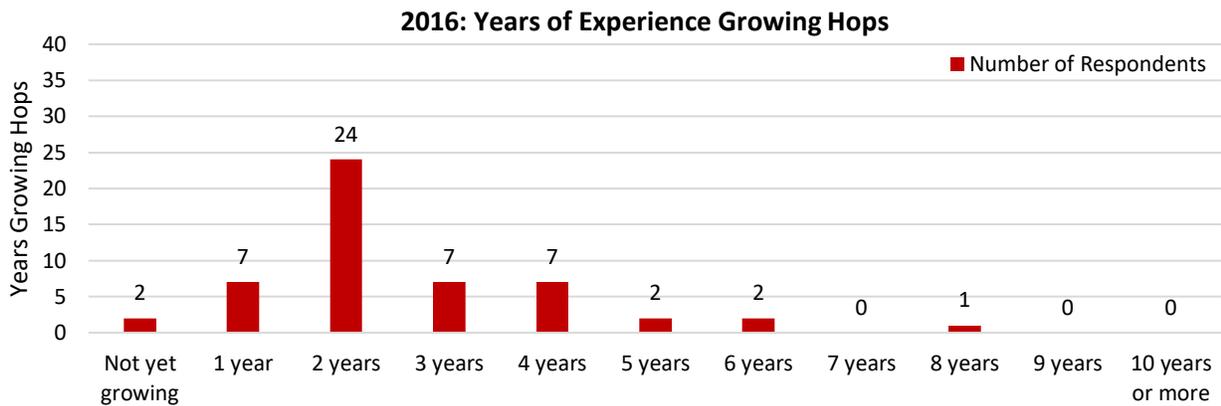


Figure 3. 2016 Years of Experience Growing Hops.

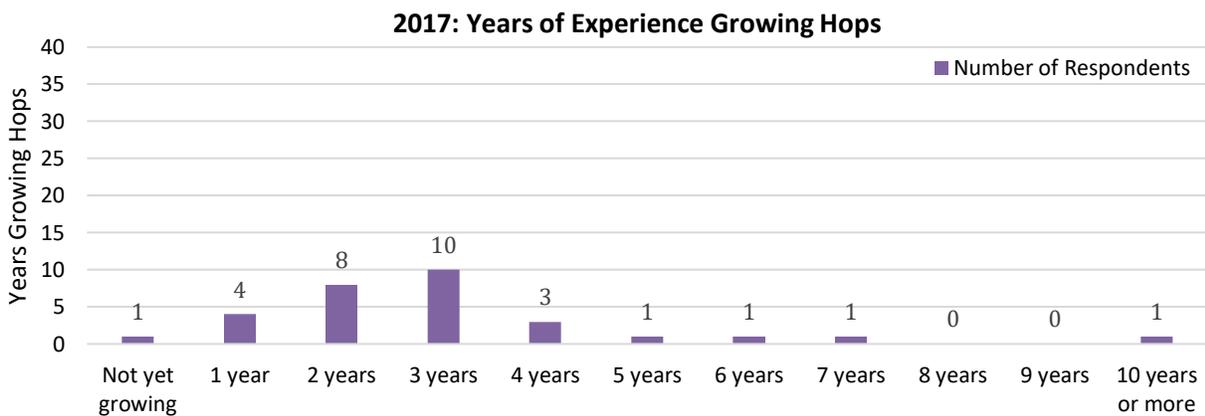


Figure 4. 2017 Years of Experience Growing Hops.

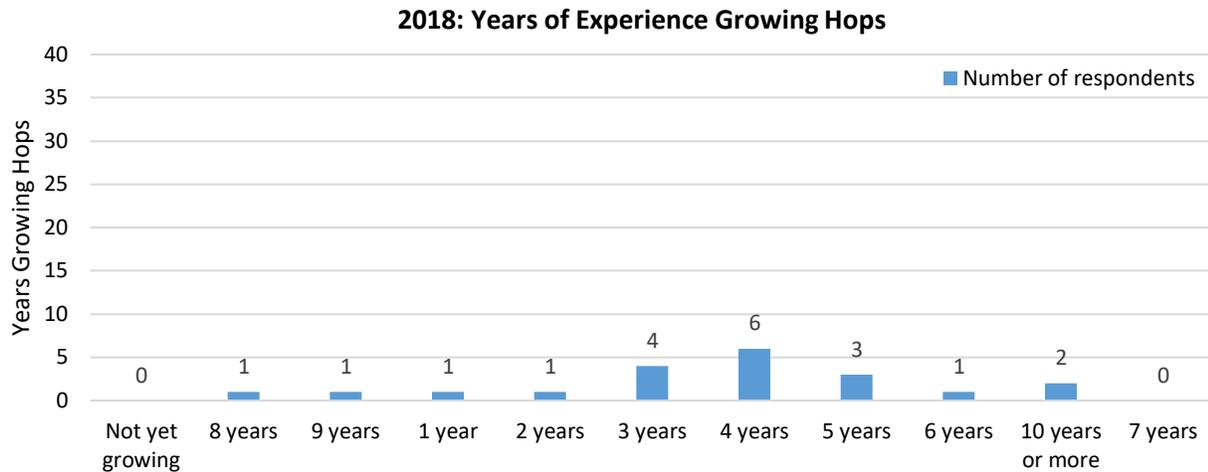


Figure 5. 2018 Years of Experience Growing Hops.

Cultivar Distribution and Yield

Growers provided a list of cultivars grown, number of plants of each cultivar, and harvest data expressed in “wet” and/or “dried” pounds, as measured by the grower. Figures 6-9 depict the cultivar distributions in 2015, 2016, 2017, and 2018:

**2015 Hop Cultivars Reported in Virginia,
Shown by Number of Plants and Percent of Total Plants**

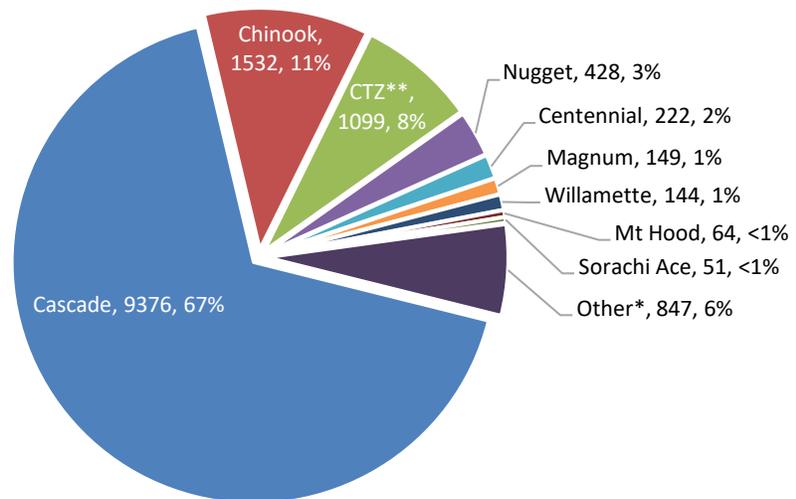


Figure 6. 2015 Cultivar Distribution.

**2016 Hop Cultivars Reported in Virginia,
Shown by Number of Plants and Percent of Total Plants**

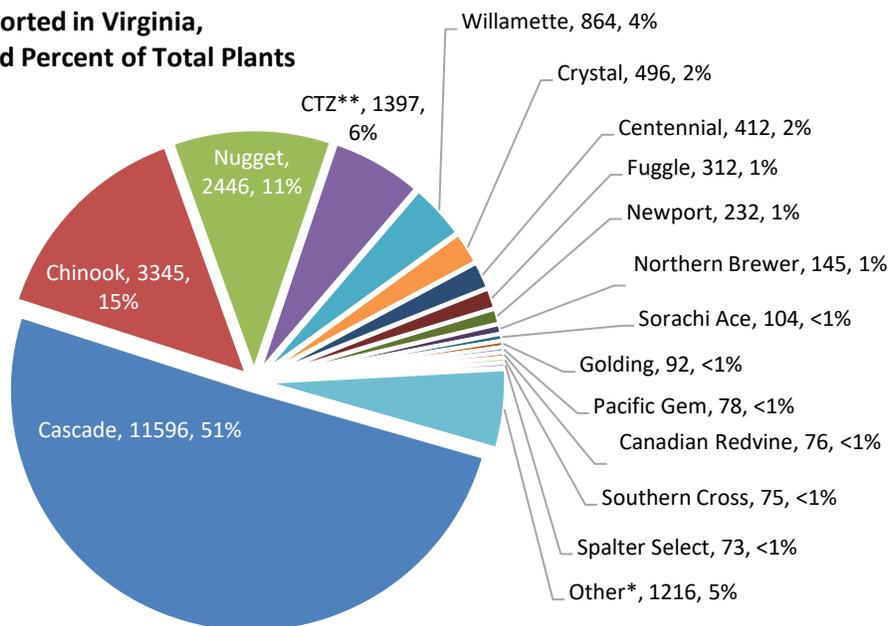


Figure 7. 2016 Cultivar Distribution.

**2017 Hop Cultivars Reported in Virginia,
Shown by Number of Plants and Percent of Total Plants**

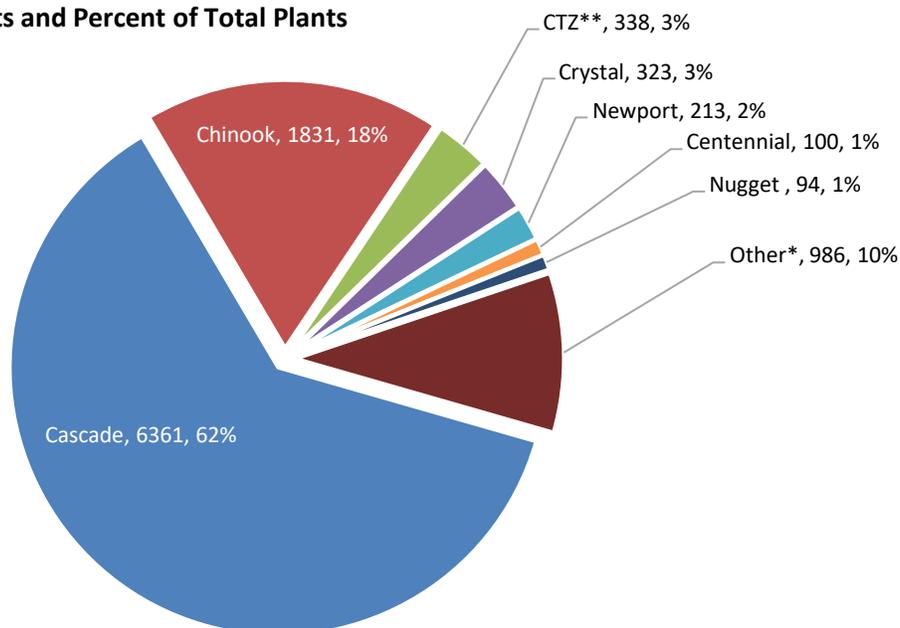


Figure 8. 2017 Cultivar Distribution.

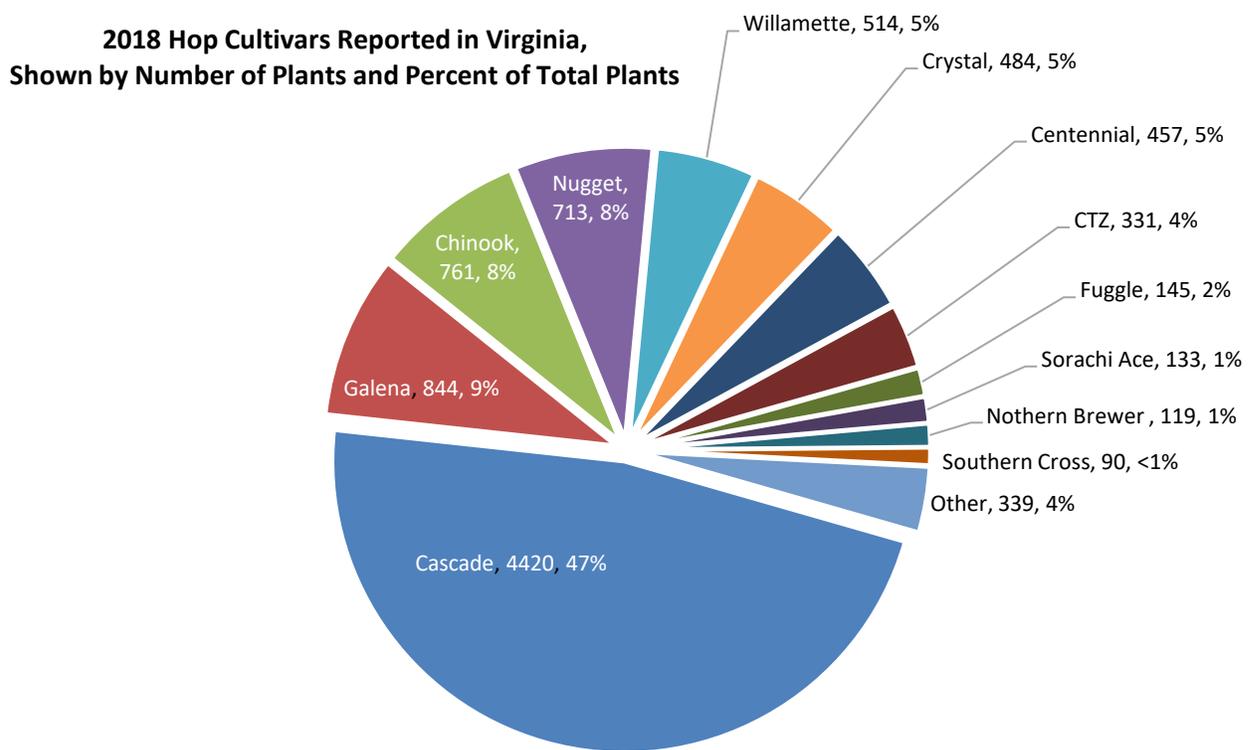


Figure 9. 2018 Cultivar Distribution.

*26 different cultivars were reported in 2018. To protect the confidentiality of grower data, the “other” designation was utilized for any cultivars with fewer than 50 reported plants in the state OR any cultivars grown by only one respondent. The “other” category also includes data from growers who reported plants but did not specify cultivars or provide data by cultivar. One grower provided yield information by email to contribute to this survey but did not complete the survey—their yield information was included here.

**Totals for plants reported as “CTZ,” “Columbus,” and “Zeus” were reported as “CTZ.”

Yield by cultivar for 2018 is detailed in table 4.

Table 3. Total Plant Counts.

Survey Year	Total Number of Plants Reported in Virginia
2014	13,317
2015	13,912
2016	22,959
2017	10,246
2018	9,350

Table 4. 2018 Hop Yield Report.

2018 Harvest Report			
Cultivar	# Crowns	Reported Wet Yield (pounds)	Reported Dried Yield (pounds)
Cascade	4,420	1,376	162.1
Galena	844	206.6	49
Chinook	761	27.5	23.2
Nugget	713	15	13
Willamette	514		
Crystal	484	50	40
Centennial	457	5	2.94
CTZ	331	16.2	13.5
Fuggle	145		
Sorachi Ace	133		2
Northern Brewer	119		9.5
Southern Cross	90	14.1	
Other	339	52.57	22.5
Totals as Reported	9,350	1,763	337.7
Total estimated yield, dried basis**:		690 lbs	

* The figures shown represent the values growers provided. Growers reported wet yield (for harvested batches that were measured wet/fresh) or dried yield (for hops that were measured in a dried state). Some growers were unable to report harvest data with their plant and cultivar totals, and some chose only to report plant numbers or to omit this question.

**This figure includes total reported pounds of dried hops, plus the total reported pounds of wet hops converted to a dried and pelletized basis. This relies upon an estimated wet-hop-to-dried-hop poundage conversion rate (5:1) and an assumption of 8% moisture pelletized. This conversion rate was guided by input provided by industry personnel. Please note, however, that yield converted to a dried basis is an estimate only—other factors during processing and variations in actual moisture leave room for deviations between estimated dried yield and any actual dried yield.

Table 5. Plant and Yield Comparisons.

Year-by-Year Comparison of Plant Totals and Reported Yield					
	2014	2015	2016	2017	2018
Total Plants	13,371	13,912	22,959	10,246	9,350
Total estimated yield, dried basis	1,622	1,102	2,662	1,052	690

Reported Hop Acreage

Table 6. Total Estimated Planted Area per Grower

	Estimated Total Planted Area							
	Several plants (0.01) to 0.25 acres	0.3-0.5 acres	0.6-1 acres	1.1-1.5 acres	1.6-2 acres	2.1-2.5 acres	2.6-3 acres	3.1-5 acres
Number of growers in this range (20 responses)	5	4	5	2	1	0	2	1
Total reported planted area 2018	Estimated 16.35-24.25 acres							
Total reported planted area 2017	Estimated 10.7-21.8 acres							

Hop Sales

Growers characterized the forms in which hops were sold; participants could select multiple responses to characterize their hop sales.

- 30% reported selling hops “wet/fresh/green”
- 39% reported selling hops dried, but not pelletized
- 9% reported selling pelletized hops
- 22% indicated that they did not sell/use their hops or that this question was not applicable for their situation.

Growers reported on their ability to sell or utilize their 2018 harvest. 10 out of 19 question respondents reported that they were able to sell or utilize their entire harvest. 7 respondents reported that they did not sell or utilize their entire harvest. 2 respondents chose “other.” Commentary from growers is summarized below:

- Some growers have farm breweries or utilized their harvest for their own purposes
- Some growers packaged hops for farmers’ market sales when harvested quantities were too small for brewery sales
- Some growers provided hops to brewers as samples
- Some growers did not have marketable hops and/or did not harvest their crop due to pest, disease, and environmental challenges in 2018
- Some growers experienced difficulties finding buyers

Prices Received

Growers were asked to provide the price received for their hops. While responses for dried hop and pelletized hop prices were too few in number to generate useful averages, 8 responses for wet/fresh hop prices showed an average of \$14.7 received per pound for wet/fresh hops.



Future Growth

Growers commented on their expansion plans. On the 2018 survey, growers indicated a collective planned increase of 2,026 plants to the existing reported total of 9,350.

Grower Outlook

Using their experiences, observations, and personal feelings, growers rated their perceptions and outlooks on the Virginia hops industry.

Perceptions and Outlooks Associated with Virginia Hops

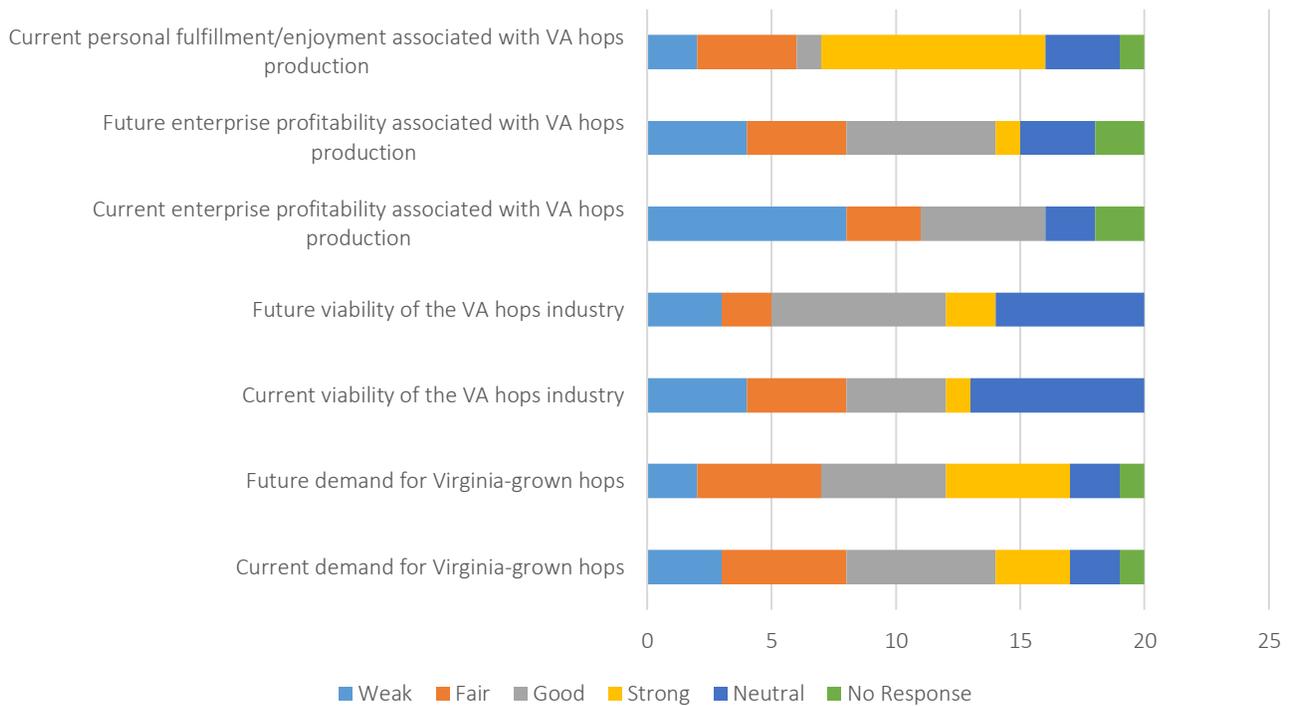


Figure 10. Grower Outlooks and Perceptions.

Marketing

Growers described how they marketed their crop in 2018.

Hop Marketing Strategies

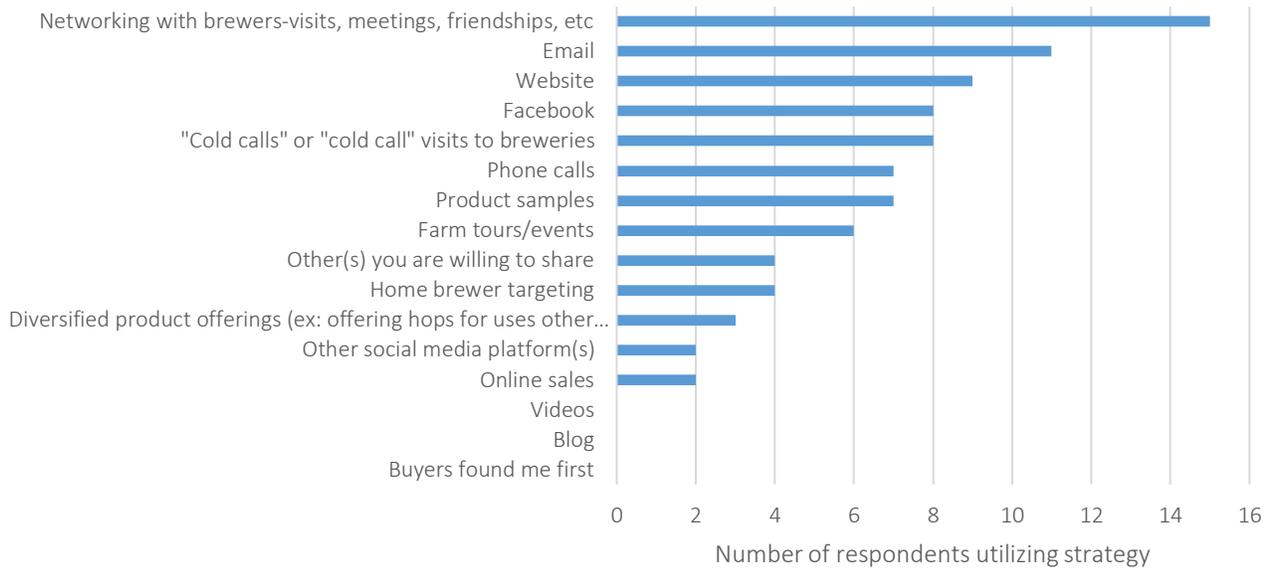


Figure 11. Marketing Strategies.

Challenges

Growers selected their top five challenges related to Virginia hops production.

Challenges Associated with Growing Hops



Figure 12. Grower Challenges.

Growers had the opportunity to provide commentary or indicate other challenges. Their responses included:

- Difficult weather and environmental conditions
- Difficulty with water management and weed control
- Prohibitive costs and large time investment reported by one producer seeking USDA organic certification

Summary

The cultivar distributions in 2014-2017 showed Cascade as the dominant cultivar; although it is possible that variations in survey distribution and response influence the 2018 cultivar distribution, it appears that Cascade is slightly less dominant than it was in past years as other cultivars are being grown in larger numbers. The most notable difference between this survey and previous surveys is a reduction in both respondents and reported yield and plant figures. Several factors may account for this. First, the survey was targeted towards commercial growers in both 2017 and 2018, whereas in prior years, the survey did not request “commercial grower” self-categorization as a condition for participation. Next, the survey distribution and/or response rate may have experienced a downturn or differed from previous years; it is also likely that some growers each survey year may choose not to complete it or to add their yield information. Third, as was noted in 2017, the industry has seen the exit of some growers and may also be experiencing a slowdown in hop yard expansion and/or new grower entrance. 2018 was a particularly wet year, and some growers experienced lower-than-expected yields due to climate, disease, and pest factors compounding existing management challenges.

Growers shared some final commentary about their experiences and outlooks in 2018 as well as commentary about their greatest future needs. Many of their perspectives are broadly summarized here:

- Success growing hops requires a considerable time investment and a commitment to all aspects of production from field management to marketing. While at least a handful of growers made the decision to close business, some growers had an excellent year and noted that niche marketing opportunities including farmers’ markets enabled them to succeed.
- Processing infrastructure will improve the marketability of Virginia hops, and any mechanization which reduces hand-labor will have a strong impact on the profitability of growing hops in Virginia. However, equipment remains too costly for most small-scale operations to purchase in under current circumstances. While shared processing equipment and cooperative efforts have been discussed, these services were not widely available statewide in 2018.
- Some growers are experimenting with propagation and novel management systems.
- Correctly timing shoot pruning and matching the management schedule to daylength and environmental conditions are high-impact opportunities for improvement; most growers



continue to adjust this schedule, and some are revisiting prior early growth pruning and crown management recommendations based on their on-farm findings.

- Growers wish to see breeding and cultivar development programs focused on yield challenges and specific hop traits. Hop research and resources remain key needs for east-coast growing conditions. Some growers feel that long-term viability will be challenging without the addition of well-adapted cultivars for the east coast. Patents serve as barriers to access to certain cultivars from other regions.
- Though growers are aware that not all cultivars are favored equally by brewers, several growers produced lesser-used publicly-available cultivars experimentally.
- While fostering a positive attitude towards locally-grown brewing ingredients is helpful, an incentive system may be particularly effective to enhance the use of Virginia-grown hops.
- Partnerships with research faculty and local Extension faculty have been valuable to some growers; growers value the resources they have gained from faculty and from peer groups and grower organizations.
- Many growers felt that 2018 was particularly challenging for weed control, disease management including management of downy mildew, and for water and nutrient management—many noted that nitrogen management was problematic in saturated field conditions, and many chores were delayed when fields stayed too wet for equipment.

Hops remain a specialty crop of interest in Virginia; meanwhile, the cohort of growers who entered the industry primarily around 2013-2015 gained another year of experience, and growers in this cohort are reaching critical decision points surrounding future marketing plans, pelletizing, expansion, quality, and pricing. This cohort of growers has also gained more management knowledge, and many growers are currently taking advantage of Extension services, industry services, and networking opportunities.

