



2020
US Hop Crop Report

Quality Hops Since 1845

Hopsteiner was first incorporated in 1845 as a small hops supplier in Laupheim, Germany. Today, 175 years since our founding, Hopsteiner continues to advance industry practices as one of the foremost international hop breeding, growing, processing, and trading firms in the world.

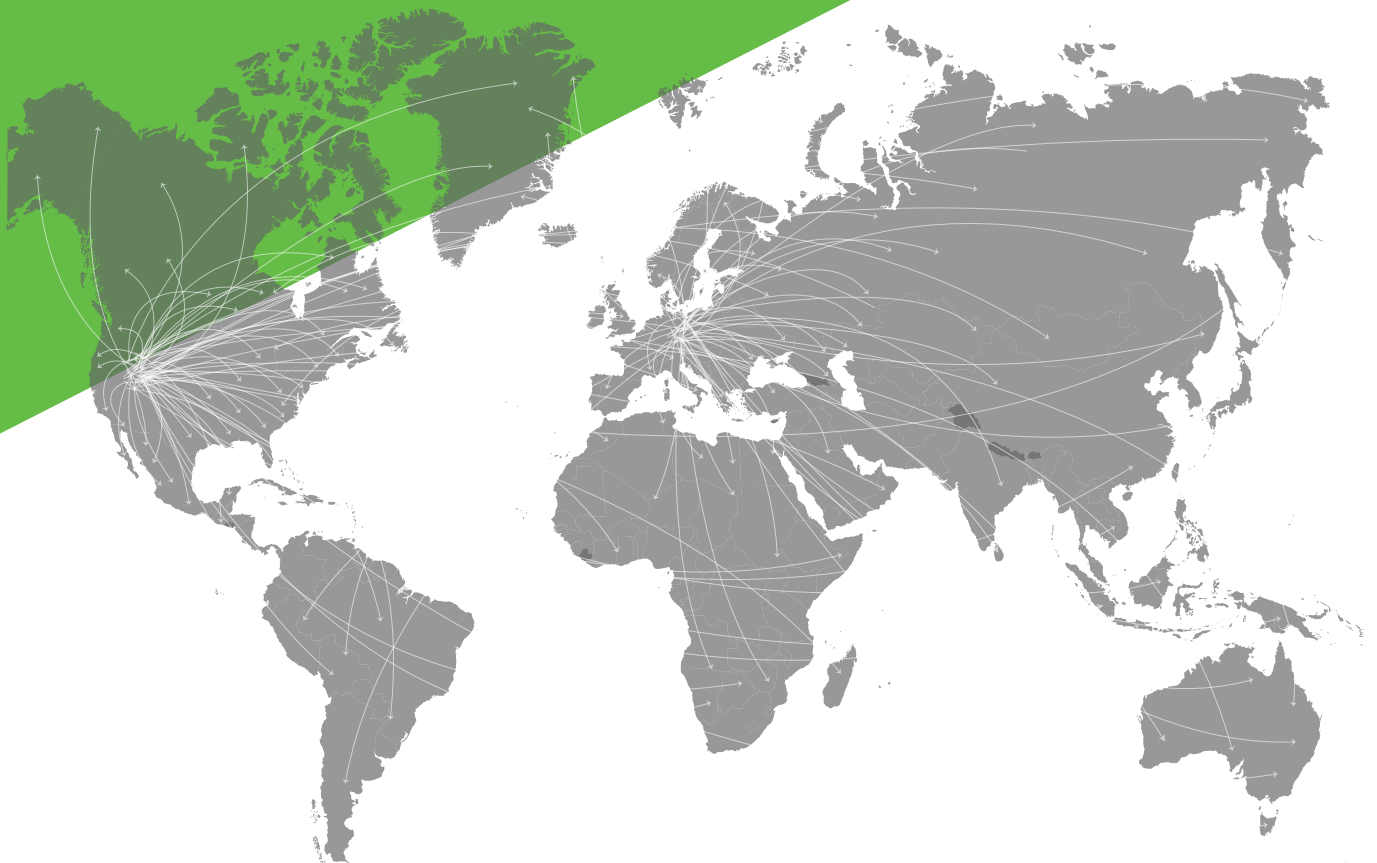
Hopsteiner is a sixth-generation family-owned and operated company, built on the success of its core values for growing and producing the highest quality hops and hop products available.

Our offerings include a broad range of globally sourced varieties including both public and cutting-edge proprietary hops from across the globe.

Beyond the farm, our capabilities include on-site quality assurance labs, pelletizing plants, hop extraction plants, a breeding program, distribution centers and cold storage management.

Connecting people through beer is one of our greatest passions. We work in one of the most fascinating industries in the world and we are delighted to share in this experience together.

Through innovative and sustainable practices, Hopsteiner is and always will be dedicated to the success of your brewery pledging to offer the choicest hops and hop products available.





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Hop Crop Forecast

The US hop acreage strung in the Pacific Northwest (Washington, Idaho, and Oregon) once again hit a record high. The region saw a 5% acre increase (+2,630 acres) compared to the 2019 crop, coming in at 59,174 acres for 2020. With the 5% acreage increase, production for the 2020 harvest was on pace to exceed 117-million pounds; however, adverse weather conditions this year will likely impact production yields. With some varieties still being harvested, more accurate expectations will likely approximate to 110-million pounds.

Demand is influenced by the still growing craft beer industry, up 4% by volume in 2019 according to the Brewers Association. With nearly 8,000 breweries and counting now established, demand for hop-forward beers seem to be the leading drivers for the resulting new hop acreage - mostly coming from those of flavor aroma varieties. Looking back seven short years ago, aroma/bitter acreage was nearly equal parts in the field, however; today's acreage has since shifted to 75% aroma and 25% bitter acreage split. This can be further broken down to include the dual-purpose category for hop varieties with higher than normal alpha ranges (10%-15% AA), yet also offering aromatic characteristics that fit both molds in a less traditional sense. When observed from this point of view, acreage split is as follows: 22% bitter, 49% aroma, 29% dual.

All three Pacific Northwest States (WA, ID, & OR) saw acreage increases. Washington State remains the largest growing region and accounts for 72% (42,343 acres) of total US acreage, followed by

Idaho at 16% (9,374 acres), and Oregon at 12% (7,457 acres). The top five hop varieties strung for 2020 include Citra®, CTZ, Mosaic®, Simcoe®, and Cascade. Notable variety changes with greater than 50% strung acreage differences from 2019 to 2020 are as follows: Cashmere 93% (597 acres), El Dorado® 57% (1,563 acres), Idaho 7® 91% (904 acres), Pekkoto™ 189% (807 acres), Saaz 113% (299 acres), and Sabro™ 53% (1,110 acres). Varieties that increased by greater than 25% are as follows: Citra® 29% (11,201 acres), Comet 40% (450 acres), Loral™ 30% (163 acres), and Mosaic® 35% (5,559 acres). *All figures above represent total acreage per variety, not net increases or decreases.*

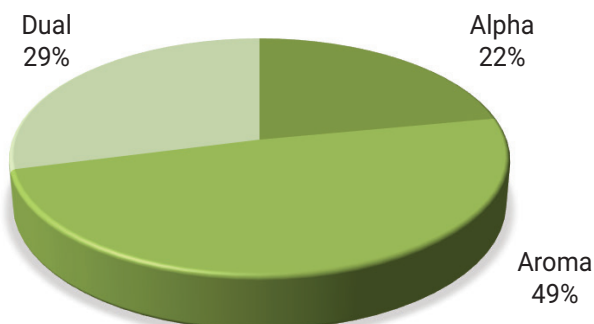
Notable variety decreases also reshaped strung acreage for 2020 with differences of 20% and greater: Bravo™ -29% (211 acres), Cascade -27% (3,998 acres) Centennial -21% (2,882 acres), Crystal -35% (285 acres), Fuggle -44% (35 acres), Galena -27% (298 acres), Mt. Hood -47% (183 acres), Nugget -20% (926 acres), Palisade® -39% (290 acres), Summit™ -41% (641 acres), and Sterling -40% (86 acres).

It is important to note that proprietary variety acreage has surpassed public variety acreage at an almost 2 to 1 ratio. Proprietary acreage planted for 2020 make up for 66% (38,642 acres) of the total acreage, giving the US a 66% proprietary/34% public acreage split. Of the top ten most strung varieties in 2020, six of those ten now make up proprietary varieties.

International markets continue to play an important role in the US hop market. Unlike the US, craft beer abroad is still maturing, but trends show favoritism toward alluring US craft beer styles. Domestically grown proprietary varieties are well received, paving way to healthy demand for US aroma/flavor hops and further influencing acreage expansion. Although, the US hosts the most acreage of any nation, Germany follows close by with 50,452 acres strung for 2020 and now tilts the scales for having predominantly more bittering hop acreage than the US. These two countries will produce 80% of the world's hop supply for 2020.

DATA SOURCE: HOP GROWERS OF AMERICA; U.S.D.A.; BREWERS ASSOCIATION; S.S. STEINER, INC.
* INCLUDED IN THE CATEGORY "OTHER VARIETIES" TO AVOID DISCLOSURE OF INDIVIDUAL OPERATIONS

2020 US Hop Distribution



The US public breeding program was infused with funding in 2018, however; results from this funding will likely not be seen for 6-8 years, as hop breeding and development requires time for sufficient observation and testing. An approved public variety for commercial production is still approximately 11-14 years away.

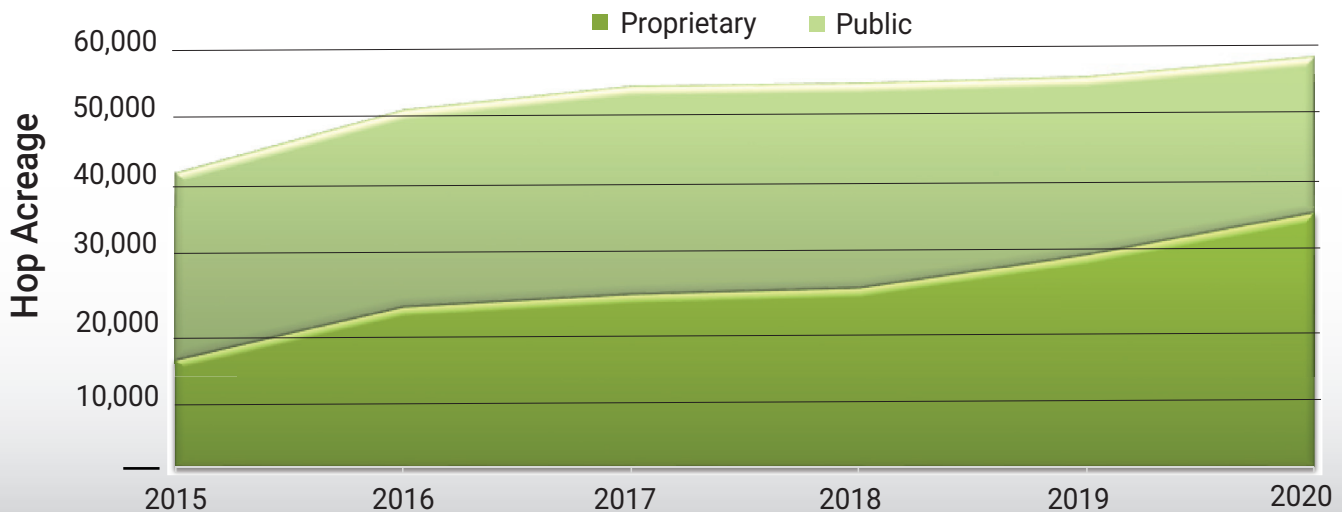
On the other hand, private breeding programs currently in place are reaching peak efficiency. Hopsteiner has successfully mapped the hop genome, enabling us to identify and eradicate less desirable traits and breed for stronger disease resistance. Molecular marker assisted technology has also enabled us to select preferred breeding traits such as - high alpha stability, greater yields, unique aroma/bittering properties and even better cone to leaf ratios. All of the Hopsteiner hop varieties are products of this technology. For example, X09326 is a purposefully bred aroma variety that boasts attractive chemical components and brewing attributes, pairing particularly well in lagers, pale ales, and IPAs (see page 13).

With a greater portion of the acreage being devoted to aroma varieties, the narrow window for harvesting at peak maturity has necessitated additional capacity. Growers across the US continue to update production and harvesting infrastructures to meet the demand, but additional facilities and equipment require capital investment. Contracting adds repayment certainty, allowing growers to make these investments and amortize over years of production.



Collecting seeds of a popular variety marked for its unique aroma and growing agronomics.

US Hop Acreage 2015 - 2020



Projected Acreage

Hop Variety	US HOP ACREAGE						% Change
	2015	2016	2017	2018	2019	2020 est.	
Amarillo®, VGXP01	0	0	2,967	2,720	2,427	2,112	-13.0%
Apollo™	994	970	912	1,027	1,042	923	-11.4%
Azacca™, ADHA-483	175	506	578	546	589	723	22.8%
Bravo™	735	724	635	367	298	211	-29.2%
Cascade	6,790	7,581	7,095	6,174	5,467	3,998	-26.9%
Centennial	4,401	5,082	5,164	4,573	3,645	2,882	-20.9%
Chinook	1,787	1,940	2,455	2,825	2,337	1,916	-18.0%
Citra®, HBC 394	2,993	4,494	5,240	6,382	8,691	11,201	28.9%
Cluster	666	623	621	673	470	411	-12.6%
Cashmere	0	0	255	450	310	597	92.6%
Comet	108	163	205	218	322	450	39.8%
Crystal	508	737	711	618	444	285	-35.8%
El Dorado®	448	623	682	538	993	1,563	57.4%
Ekuanot™, HBC 366	0	0	890	865	632	520	-17.7%
Eureka™	0	0	362	542	610	705	15.6%
Experimental	388	576	447	374	360	506	40.6%
Fuggle	85	141	86	59	63	35	-44.4%
Galena	295	262	378	499	410	298	-27.4%
Glacier	155	145	0	0	0	0	---
Golding	291	0	215	121	92	78	-15.2%
Hallertau	0	0	0	0	0	159	---
Idaho 7	0	0	0	0	473	904	91.1%
Jarrylo™, ADHA-881	122	131	0	0	0	18	---
Liberty	210	0	0	0	0	86	---
Loral™, HBC 291	0	0	186	172	125	163	30.4%
Magnum	199	151	47	105	0	0	---
Mosaic®, HBC 369	1,800	2,525	2,714	2,438	4,108	5,559	35.3%
Mt. Hood	418	412	405	415	348	183	-47.4%
Mt. Rainier	0	0	0	306	239	238	-0.4%
Northern Brewer	0	0	0	0	0	58	---
Nugget	1,686	1,646	1,592	1,433	1,163	926	-20.4%
Pahto™, HBC 682	0	0	0	1,721	2,109	2,118	0.4%
Palisade®, YCR-4	454	580	571	515	477	290	-39.2%
Pekko™, ADHA-871	0	0	0	92	279	807	189.2%
Perle	0	0	76	77	0	0	---
Saaz	0	0	0	0	140	299	113.6%
Sabro, HBC438	0	0	0	0	724	1,110	53.3%
Super Galena™	525	379	502	668	614	626	2.0%
Simcoe®, YCR 14	3,306	4,331	4,608	3,988	4,276	4,176	-2.3%
Sorachi Ace	0	0	0	146	0	0	---
Sterling	209	228	227	191	147	86	-41.5%
Summit™	1,620	1,769	1,617	1,574	1,072	641	-40.2%
Tahoma	0	0	217	209	230	287	24.8%
Tettnanger	133	122	110	72	0	0	---
Willamette	1,359	1,561	1,591	1,417	1,059	971	-8.3%
CTZ	5,323	4,985	5,709	6,519	6,537	6,290	-3.8%
Other	4,909	7,721	4,242	3,467	2,273	1,944	-14.5%
TOTAL PNW	43,633	50,857	53,989	55,035	56,544	59,174	4.7%
TOTAL NON-PNW US	1,277	2,106	2,504	2,433	2,386	2,251	-5.7%
TOTAL US	44,910	52,963	56,493	57,468	58,930	61,425	1.7%

Note: "0" indicated throughout the table are UNREPORTED acres.



Strung Acres by State

■ Idaho ■ Oregon ■ Washington ■ Total



Production in Pounds (LBS)

Hop Variety	US HOP PRODUCTION (lbs)					
	2015	2016	2017	2018	2019	2020 est.
Amarillo®, VGXP01	0	0	4,889,300	5,197,300	4,615,382	3,739,438
Ahtanum	225,800	156,900	390,300	696,200	736,000	574,367
Apollo™	2,528,200	2,080,500	2,276,500	2,716,800	2,801,212	2,450,531
Azacca™, ADHA-483	327,600	946,400	1,423,600	1,360,100	1,437,700	1,735,340
Bravo™	2,042,400	1,886,700	1,862,000	1,105,900	898,225	652,246
Cascade	12,974,100	12,822,200	13,886,800	11,589,800	10,116,100	8,683,998
Centennial	5,170,600	6,801,800	8,455,000	6,176,800	6,536,300	4,870,394
Chinook	3,233,300	2,903,600	4,282,000	5,269,000	4,729,300	3,637,688
Citra® HBC 394	4,361,900	6,418,200	8,881,400	10,125,900	12,532,900	15,944,280
Cluster	1,135,700	1,058,800	1,202,900	1,239,800	853,100	871,867
Cashmere	0	0	517,100	296,200	526,700	579,246
Comet	192,200	154,700	380,300	381,500	495,900	640,529
Crystal	913,100	1,425,300	1,352,200	1,201,700	869,400	668,221
El Dorado®	754,100	1,130,300	1,374,700	961,400	1,778,400	3,150,000
Ekuanot™ HBC 366	0	0	2,438,600	2,234,300	1,569,300	1,644,479
Eureka!™	0	0	812,300	1,514,000	1,769,900	1,917,302
Experimental	579,800	911,700	816,200	706,500	810,400	675,000
Fuggle	90,600	143,900	107,600	61,000	78,300	74,085
Glacier	154,400	169,300	0	0	0	0
Golding	244,600	0	253,900	140,400	124,300	113,224
Hallertau	0	0	0	0	0	256,000
Idaho 7	0	0	0	0	1,125,300	2,427,556
Liberty	285,600	0	0	0	0	0
Loral™ HBC 291	0	0	426,900	404,000	314,400	298,300
Magnum	312,900	225,500	80,600	134,800	0	0
Millennium	0	0	0	0	0	0
Mosaic® HBC 369	3,731,300	5,813,800	6,500,400	5,722,600	8,659,900	10,397,748
Mt. Hood	506,600	568,500	548,300	590,000	508,700	450,051
Mt. Rainier	0	0	0	581,100	513,600	686,128
Northern Brewer	0	0	0	0	0	0
Nugget	3,191,300	3,140,900	2,913,700	2,732,100	2,496,300	1,899,731
Other Varieties	7,541,300	11,896,500	7,422,600	7,431,000	3,856,182	4,197,148
Palisade®, YCR-4	885,200	1,292,500	1,261,300	1,257,100	1,202,000	1,140,017
Pahto™ HBC 682	0	0	0	3,591,700	5,057,400	5,850,694
Pekko™ ADHA-871	0	0	0	173,800	337,452	742,092
Perle	0	0	88,500	84,200	0	0
Sabro HBC 438	0	0	0	0	1,167,100	1,408,902
Super Galena™	1,351,100	904,500	1,291,800	1,962,000	1,731,627	1,679,057
Simcoe® YCR 14	5,123,600	7,264,800	7,969,100	6,346,500	7,377,900	7,030,713
Sorachi Ace	0	0	0	152,100	0	0
Sterling	280,800	370,800	319,400	336,200	241,500	235,683
Summit™	3,189,600	2,914,500	3,342,300	2,874,100	1,946,800	1,659,429
Tahoma	0	0	380,200	448,700	450,300	644,251
Tettnanger	165,200	145,600	118,600	73,900	0	0
Magnum	0	0	0	0	0	0
Vanguard	102,700	0	0	0	0	0
Warrior® YCR-5	0	0	0	0	0	0
Willamette	1,513,400	2,239,300	2,222,900	1,866,300	1,781,900	2,125,532
CTZ	14,572,500	10,567,500	14,150,600	15,971,700	17,453,600	17,300,000
TOTAL PNW	78,846,000	87,139,600	105,621,500	106,906,700	112,041,200	115,963,168
OTHER STATES EST.	1,249,000	1,500,000	1,875,000	1,500,000	1,000,000	1,000,000
TOTAL US EST.	80,095,000	88,639,600	107,496,500	108,406,700	113,041,200	116,963,168

Note: "0" indicated throughout the table are UNREPORTED production pounds.

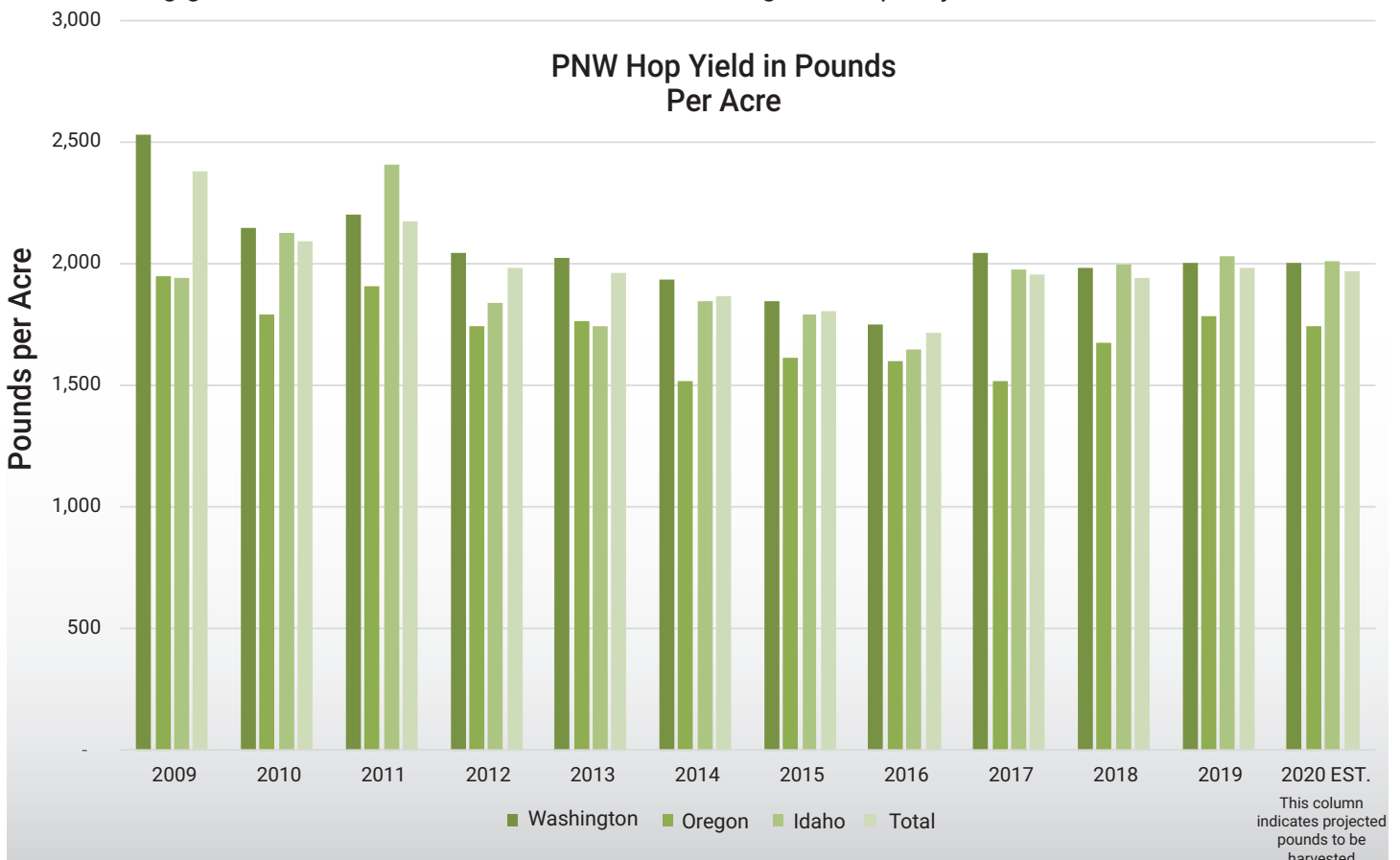
PNW Weather Conditions

Weather conditions leading up to the 2020 growing season kept consistent in mild temperature and disease pressure across the Pacific Northwest. Mountains above the Yakima Valley in Washington State received average precipitation with a favorable snowpack. Reservoirs that run into the Yakima River reached capacity in June, but continued to supply the Valley with adequate irrigation overall.

Growers in Washington State started picking aroma varieties at peak maturity, but were forced to pick several others out of their usual picking windows due to adverse weather conditions. Strong winds and hazardous smoke from local wildfires impacted farms in a big way this year, forcing some to harvest early and not letting some harvest at all. The cooler than normal spring lead to some early concerns for baby yards, but warmer temperatures picked up and prevented less impact than anticipated. The hot, dry weather in July helped our farmers get the seasonal mildew under control fairly quickly. There have been a few mite sprays since late July, but in general sprays are achieving good control.

The mountains that feed the Willamette Valley reservoirs had a below average year in terms of snowpack but because of wet conditions this spring, there have been little to no issues with reservoir storage on the west side of the state. This is in stark contrast with the east side of the state which has seen record lows in reservoir storage. The story in Oregon, as well as Washington this harvest has been dealing with wildfire smoke. Many growers have had to pause harvest and restart because of air quality concerns. It is unclear how these conditions will affect hop quality but early signs have shown little impact on aromas.

Snowpack in Idaho trended around average this year with most of the snowpack accumulating in January. This, along with a mild spring temperatures led to full reservoirs around the month of June. Reservoirs have been depleting since, but this is to be expected. Mites have become the primary focus of concern, ID farmers are having to adjust their harvest plans based on mite pressures but all in all things stand pretty clean.



New at Hopsteiner

We are always working on something new – for our customers, our employees, and for the very grounds we grow our hops on. Hopsteiner regularly invests in hop growing and harvesting equipment for better overall efficiency. Some of our latest sustainable ventures focus on hop combine efficiency, drip irrigation, soil analytic software, and our breeding program. Other additions for 2020 include facility equipment updates, conditioning room modules, packaging equipment, variety offerings, and new hop products.

Our Roza Ranch and Mabton Ranch facilities received new burner blower fans as well as upgraded power sources for the kilns. These upgrades are essential to the harvesting process. After being picked, kilns further dehydrate picked cones ensuring stable condition prior to being baled. Further research into kiln covers and increasing air velocity all play key roles in efficiency and quality of product.



New burner blower fans (Mabton Ranch)

Our innovations team is constantly cooking up new hop products. Our latest is Lupulin Pellets™. Lupulin Pellets™ are concentrated hop pellets made by separating lupulin from the vegetal matter (bract). Through proprietary processing, we are able to separate these glands from the bract to provide a higher concentrate hop pellet containing less vegetal matter and more of the precious resins that boost flavor and aroma.



Auger mixing up variety specific high concentration Lupulin pellets.

Contessa™ and Altus™ are two of our latest varieties (found on pages 12-13) released from our breeding program this past year for commercial availability. Contessa™ and Altus™ both offer unique aroma attributes and flavor characteristics while honoring resistance against disease.

Much of our focus on technological investments comes from our long-term sustainability goals. We emphasize efficiency and have developed systems with the preservation of Earth's natural resources in mind. Hopsteiner has been at the forefront of sustainable practices for many years and is continuously seeking alternative renewable resources. Our latest expansion on this front was preparing new lands for organic hop yards. We are proud to widen our portfolio offerings this year with even more certified organic hop varieties - Sultana™, Eureka™, Contessa™, Altus™, Calypso™, and Centennial.





APOLLO™

Lime, grapefruit, pine
α-acids %: 15-19
β-acids %: 5.5-8
Total oils: 0.8-2.5



BRAVO™

Orange, fruity,
vanilla, floral
α-acids %: 14-17
β-acids %: 3-5
Total oils: 1.6-2.4



CALYPSO™

Tropical fruit, pear,
apple, melon
α-acids %: 12-14
β-acids %: 5-6
Total oils: 1.6-2.5



DELTA™

Earthy, ginger, citrus
α-acids %: 5.5-7
β-acids %: 5.5-7
Total oils: 0.5-1.1



EUREKA!™

Black currant, dark fruits,
strong herbal notes, pine
α-acids %: 17-20
β-acids %: 4.6-6
Total oils: 2.5-4.4



LEMONDROP™

Lemon, lemon, lemon,
tangerine, green tea, melon
α-acids %: 5-7
β-acids %: 4-6
Total oils: 1.5-2



LOTUS™

Orange, vanilla, berry,
tropical fruit
α-acids %: 13-17
β-acids %: 5.5-6
Total oils: 2-2.5



SULTANA™

Pineapple, pine,
bright citrus
α-acids %: 13-15
β-acids %: 4-5
Total oils: 2.5-4



CONTESSA™

Light pear, green tea,
light floral notes
 α -acids %: 3-5
 β -acids %: 5-7.4
Total oils: 0.8-1.9



ALTUS™

Spicy, resinous,
tangerine
 α -acids %: 15-19
 β -acids %: 4-5.2
Total oils: 3-4.4



X09326

Berry, tropical fruit,
grapefruit, herbal
 α -acids %: 3.9-7
 β -acids %: 4.5-7
Total oils: 2-2.6



Fruity, Citrus,
Tropical, Passion fruit
 α -acids: 11-14%
 β -acids: 4-5%
Total oils: 1.6-3%
Hop Blend

Advancements under investigation



X12448

Lemon, peach, rose,
pine, berry
 α -acids %: 10-12
 β -acids %: 7-8.2
Total oils: 2-3
DNA: Cascade +
Darby



X13459

Floral, tropical, citrus
 α -acids %: 3-4.5
 β -acids %: 4-5
Total oils: 0.8-2
DNA: Cascade +
English Wye target



X13464

Watermelon, honey,
orange, grapefruit
 α -acids %: 7-9
 β -acids %: 7.5-9
Total oils: 3.5-4.5
DNA: Super G +
USDA 98004



X15619

Super High Alpha
 α -acids %: 18-23
 β -acids %: 4-5.2
Total oils: 3-4.4
DNA: Apollo +
Merkur + Zenith



Hopsteiner

Premium Quality Hops Since 1845



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