Our roots

The first record of commercial hop production in America dates back to 1648, with the establishment of a 45-acre hop garden in New England to supply the first commercial brewery in the Massachusetts Bay settlement. Massachusetts remained the primary hop region for three centuries, with New York's production rates. The final curtain for hop growing on the East Coast was Prohibition, which halted hop production for these states. Idaho expanded its acreage during World War II. California, with its fertile soils, plentiful irrigation water, and ideal growing conditions, shifted to be more focused on aroma hops thanks to renewed interest. The Pacific coastal states of Washington, Oregon, and California, with the growth in craft sector and an increased demand for local hops, have responded with dedicated multi-generational family farms. These farms are generally smaller in scale than their Pacific Northwest counterparts, but have the ability to respond to specific local hop market requirements.

Roots

The epicenter

The Bic coastal states of Washington, Oregon, and California hosted the majority of United States hop production in the early 20th century. The end of Prohibition in 1933 resulted in a considerable increase in hop acreage for these states. The end of Prohibition also saw the rise of the craft brewer, who sought out unique and flavorful hops to differentiate their beers. With the renewed interest in growing hops, some commercial acreage has returned to the Northeast. The US Hop Industry currently produces over one-third of the world's hop supply. Previously a major contender in high efficiency alpha, acreage has shifted to be more focused on aroma hops thanks to renewed interest. The Bic coastal states of Washington, Oregon, and California, with the growth in craft sector and an increased demand for local hops, have responded with dedicated multi-generational family farms. These farms are generally smaller in scale than their Pacific Northwest counterparts, but have the ability to respond to specific local hop market requirements.

Where we are today

The Bic coastal states of Washington, Oregon, and California are primary hop growing regions throughout the world. These states currently account for the majority of the United States hop crop in the early 20th century. The end of Prohibition in 1933 resulted in a considerable increase in hop acreage for these states. The end of Prohibition also saw the rise of the craft brewer, who sought out unique and flavorful hops to differentiate their beers. With the renewed interest in growing hops, some commercial acreage has returned to the Northeast. The US Hop Industry currently produces over one-third of the world's hop supply. Previously a major contender in high efficiency alpha, acreage has shifted to be more focused on aroma hops thanks to renewed interest. The Bic coastal states of Washington, Oregon, and California, with the growth in craft sector and an increased demand for local hops, have responded with dedicated multi-generational family farms. These farms are generally smaller in scale than their Pacific Northwest counterparts, but have the ability to respond to specific local hop market requirements.

The growing season

Spring pruning removes the vigorous new growth that emerges as soil temperatures increase. These practices also establish consistent vine emergence for ideal training and picking dates. Training begins in April as crews use tractor-drawn strings to tie the time to overhead trellis wires. Once established, the hops will produce 8-9% moisture content. Once established, the hops will produce excellent quality and yield. State of art post-harvest storage and processing facilities in the region ensure crop quality is maintained and supply is directed to the brewing sector.

What's old is new

Expansion of the customer base through growth in the craft sector and an increased desire for local hops has led to a shi in preference for vibrant aromatics in beer. However, as global demand for alpha rise, there is certainly plenty of growth in the mix.

Harvest

The annual harvest begins in late August and progresses through late September. Each variety has its own peak maturity time, and must be monitored closely. After hop cones are stripped from bines, specialized equipment removes leaves and stems which are chopped and spread back onto fields to improve the soil. Cleaned cones are immediately transported by conveyor to kilns, where warm air dries the hops for about nine hours, reducing them to 30% of the green weight and 8-9% moisture content.

After cooling for at least 24 hours, dried hops are compressed into 200 pound bales, wrapped in bale cloth, and subjected to quality inspection. Bales are quickly transported to cold storage warehouses to maintain quality until processing or shipment occurs.
US hop growers are committed to environmental stewardship. Along with hop merchant companies and brewers, the industry has fostered a variety of research programs through state universities and the United States Department of Agriculture, or over 6 years, promoting sustainable practices and achieving integrated pest management.

Sustainable practices are a key focus for hop production. Hop growers manage pest and disease pressure with science-based production practices. Continual improvement in varieties, pest and disease resistance, and crop handling are supported by ongoing research and development programs.

Best practices

Integrated pest management (IPM) promotes a systems-level approach to the management of agricultural production. Successful IPM programs reduce the abundance of pests and diseases and reduce severity of outbreaks. Hop growers focus on whole-farm planning that incorporates fertility, irrigation, cultural practices, variety selection, and other factors that contribute to the overall health of their crop and its ability to tolerate low levels of pests and diseases without economic damage.

Healthy plants begin with successful hop planting. Targeting fertility and water management ensures proper application of those inputs, maximizing yields and plant vigor.

Tell me about contracting and buying hops.

Contracts are legally binding commitments. Customers who contract are the ones whose needs are satisfied first. Non-contracting farmers may be better to pursue other options. Your contract translates to farms undertaking real costs to deliver you a product. This risk is carried by the farmer and the merchant. If you are unsure of your needs, it may be better to pursue other channels, such as the spot market. Remember, contracts are legally binding commitments.

Do you need it? Contract for it. Don’t want to be stuck with the commitment? See if the spot market could fulfill your needs. Check out our merchant guide for a list of suppliers!
Developing a new hop variety

YEAR 0
CREATE CROSSES AND COLLECT SEEDS. PLANT SEEDS IN GREENHOUSE AND EVALUATE FOR AGRONOMICS AND DISEASE RESISTANCE.

YEAR 3
PLANT SEEDLING IN FIELD. EVALUATE PLANTS ON STRING. EVALUATE DISEASE RESISTANCE, VIGOR, FLOWERING, YIELD POTENTIAL, AND CHEMISTRY.

YEAR 5
ESTABLISH MULTI-HILL PLOTS AND CONTINUE EVALUATIONS. EXPAND TESTING TO ADDITIONAL GROWING AREAS.

YEAR 8
EXPAND TO COMMERCIAL SCALE TEST PLOTS FOR AGRONOMIC, YIELD, AND HARVEST TESTING AND BREWING EVALUATION.

YEAR ?
DECISION TO COMMERCIALIZE AND RELEASE VARIETY TO INDUSTRY.

CASCAD E
Cascade is an aroma hop that came out of the USDA breeding program in Corvallis, Oregon and was released in 1972. It has a medium strength aroma and provides a unique aroma profile with citrus, grapefruit, floral, and spicy notes, along with well-balanced bittering potential. It is the most popular hop with the US craft brewing industry and has long been used by major brewers to provide unique flavor and aroma profiles. Cascade is the most widely grown US hop variety, with new acreage being established each year in numerous states across the country to meet increasing demand.

FLORAL

CRYS TAL
Crystal is a mild aroma hop with spicy and floral characteristics. Half sister of Mt. Hood and Liberty, Crystal is a triploid variety derived from Hallertau Mittelfrüh and other crosses, Cascade being a primary contributor. Released from the USDA in 1993, it has become popular in US craft brewing, particularly in IPAs.

MILD
Public & proprietary

Strategic Matches

Genetically diverse breeding lines are required for a successful variety development program. The maintenance of several acres of hop selections from around the world ensures access to various combinations of traits. Skilled plant breeders evaluate the genetic profile of potential parents when selecting candidates for a "numbers game," requiring 10-20 selections are carried forward to the next level of testing. Varietal development is a "numbers game," requiring 10-20 years from cross to commercialization. The ability to select from the cream of the crop across several programs creates tremendous opportunities for brewers to find the perfect hop.

Centennial is an aroma variety that was released by Washington State University in 1990. It was derived from three-quarters Brewer's Gold with minor contributors from Fuggle, East Kent Golding, and others. It is among the most popular varieties for US craft brewers and is sometimes referred to as a super Cascade.

Comet was released by the USDA in 1974 to meet the need for a higher alpha-acid producing hop. It is a cross between English Sunshine and a native American variety. Comet’s storage stability is very good and has a vibrant and fresh American aroma with citrus flavors.

Cashmere was released by Washington State University in 2013. A daughter of Cascade, it includes Northern Brewer germplasm through the male parent. Cashmere contains no farnesene and twice as much humulene as Cascade. It is unique, pleasant, complex and powerful.

Chinook was developed by the USDA breeding program in Washington State and released in 1985 as a high alpha variety. It has a highly acceptable beer aroma profile with smooth bitterness and full flavor.

Public & proprietary

Columbus, Tomahawk® and Zeus are often grouped together and labeled as CTZ. They are referred to as Super High Alpha varieties, having alpha acid content of between 14.5-16.5%.

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### Popular American Varieties

Below is a guide only, listing popular varieties available from the US and some basic stats about the hop. For more comprehensive variety analyses, please visit usahops.org. For a listing of merchants, visit usahops.org/hop-finder/merchant-contacts.html

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>ALPHA/BETA</th>
<th>COHUM</th>
<th>OILS*</th>
<th>AROMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALPHA 5</td>
<td>5.7 - 6.2</td>
<td>5.0 - 6.5</td>
<td>30% - 35%</td>
<td>FLORAL, EARTH, APRICOT, GRAPEFRUIT</td>
</tr>
<tr>
<td>AMARILLO</td>
<td>8.0 - 11.0</td>
<td>6.0 - 7.0</td>
<td>27% - 30%</td>
<td>BLACK TEA, EARTH, LEMON</td>
</tr>
<tr>
<td>APOLLO</td>
<td>15.0 - 19.0</td>
<td>5.5 - 8.0</td>
<td>24% - 27%</td>
<td>AROMATIC, PEA, GRAPE</td>
</tr>
<tr>
<td>AZACCA</td>
<td>14.0 - 16.0</td>
<td>4.0 - 5.5</td>
<td>35% - 40%</td>
<td>LEMON, GRAPE, PINEAPPLE, TROPIC, FRUIT, CITRUS</td>
</tr>
<tr>
<td>BITTER GOLD</td>
<td>12.0 - 15.0</td>
<td>5.0 - 6.0</td>
<td>30% - 40%</td>
<td>FRUITY, ORANGE, GRAPEFRUIT, LIME, PEACH, PINE</td>
</tr>
<tr>
<td>BRAVO</td>
<td>14.0 - 17.0</td>
<td>5.0 - 7.0</td>
<td>27% - 30%</td>
<td>PLEASANT, FRUIT, LEMON, ORANGE</td>
</tr>
<tr>
<td>BREWER'S GOLD (US)</td>
<td>13.0 - 16.0</td>
<td>4.5 - 5.5</td>
<td>40% - 45%</td>
<td>MILDLY PUNGENT, SPICY</td>
</tr>
<tr>
<td>CALYPSO</td>
<td>12.0 - 14.0</td>
<td>5.0 - 6.0</td>
<td>35% - 40%</td>
<td>LEMON, PEAR, PEACH, APRICOT</td>
</tr>
<tr>
<td>CASCADE</td>
<td>4.5 - 7.0</td>
<td>7.0 - 8.0</td>
<td>30% - 35%</td>
<td>FLORAL, CITRUS, TROPIC, SPICY, CITRUS, GRAPEFruit, LEMON</td>
</tr>
<tr>
<td>CASHMERE</td>
<td>7.7 - 9.1</td>
<td>4.5 - 7.2</td>
<td>24% - 27%</td>
<td>MELON, FRUIT, LEMON, RASPBERRY, MINT, COCONUT, SPIC</td>
</tr>
<tr>
<td>CENTENNIAL</td>
<td>9.5 - 11.5</td>
<td>4.5 - 5.5</td>
<td>30% - 35%</td>
<td>MEDIUM, INTENSE, LEMON, CITRUS, GRAPE</td>
</tr>
<tr>
<td>CHELAN</td>
<td>12.0 - 14.0</td>
<td>8.5 - 9.8</td>
<td>35% - 40%</td>
<td>PLEASANT, CITRUS, MINT, LEMON</td>
</tr>
<tr>
<td>CHINOOK</td>
<td>12.0 - 16.0</td>
<td>3.0 - 4.0</td>
<td>30% - 35%</td>
<td>17% - 21%</td>
</tr>
<tr>
<td>CITRA</td>
<td>13.0 - 13.0</td>
<td>3.5 - 4.5</td>
<td>24% - 27%</td>
<td>22% - 24%</td>
</tr>
<tr>
<td>CLUSTER</td>
<td>5.9 - 5.9</td>
<td>5.5 - 5.5</td>
<td>36% - 42%</td>
<td>0.41 FLORAL, CITRUS, FRUIT, CITRUS</td>
</tr>
<tr>
<td>COHUM</td>
<td>5.0 - 6.0</td>
<td>4.0 - 4.0</td>
<td>40% - 40%</td>
<td>1.01 FFF, LEMON, RASPBERRY, MINT, COCONUT, SPIC</td>
</tr>
<tr>
<td>COHUM</td>
<td>5.0 - 6.0</td>
<td>4.0 - 4.0</td>
<td>40% - 40%</td>
<td>1.01 FFFY, TROPIC, STRONG, CITRUS, GRAPEFruit, LEMON</td>
</tr>
<tr>
<td>CRYSTAL</td>
<td>5.5 - 5.5</td>
<td>4.5 - 5.5</td>
<td>36% - 42%</td>
<td>0.41 FLORAL, CITRUS, FRUIT, CITRUS</td>
</tr>
<tr>
<td>CTZ</td>
<td>16.5 - 17.0</td>
<td>4.0 - 4.0</td>
<td>24% - 27%</td>
<td>3.43 FFFY, TROPIC, STRONG, CITRUS, GRAPEFruit, LEMON</td>
</tr>
</tbody>
</table>

### Alpha... aroma... a sprinkling of both.

The US hop industry has long been synonymous with high alpha production. Certain varieties of hops are chomps in the production of high levels of alpha acid, and the resulting hop extract provides brewers worldwide with this important bit ercing component. US growers also produce an array of fine aroma hops that allow brewers to customize the profile of each unique beer. Many of these hops also contain respectable amounts of alpha acid and can serve as dual-purpose superstars in the brewing process.
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