

Hops

Without this vigorous climbing herbaceous perennial, our ale would taste sickly and cloying. Hops were first used as far back as the eleventh century as a bittering agent. Prior to this, all manner of plants were used. Do you fancy this: heather in your ale! Well heather is not so bad but ingredients such as marigold, burdock root and dandelion were also often used until the discovery of our hop.

 *“A hard job - Dogfish Head brewery 60 minute IPA uses 60 additions of hops in their brew”*

What's in a hop?

There are 3 main components to this humble herb: alpha acid, beta acid and aromatic oils.

Alpha acid gives the beer bitterness- unfortunately alpha acid cannot add itself to our ale, so to make the alpha acid work it needs to be boiled so it becomes isomerised. *“Isomerised”*, I hear you ask, well here goes, the acid molecules break down then rejoin when being vigorously boiled, now they call themselves iso alpha acids. The iso alpha acids become soluble and bitter in our wort.

Beta acid, friend or foe- in a fresh state this acid does not add any bitterness to our wort. However, during long storage times a chemical change makes the acid more bitter and this can contribute some 5% towards bitterness.



Aromatic oils- gives you that hoppy “nose” or aroma. Unfortunately these oils are driven off in the boil and these hops are generally best added towards the end of the boil.

The hop oil increases as the hop matures so a selective harvest period is calculated. Composition of the oil depends on the variety of hop, and whether the hop is grown with or without seeds.



*Challenger growth along with the snow.
11 Jan 2010*

Growing hops

Hops are a versatile plant for both ornamental and practical purposes. They look good growing over pergolas or even draped over garden sheds and of course making beer. Home grown hops have a freshness and quality unlike commercial hops which are often treated with copper sulphate and the like, to preserve their freshness.

Well rotted manure at the start of the season, plenty of sunlight and moisture, and a sturdy climbing frame is required.

The vines can be prone to fungal attacks such as mildews and wilts but a strong healthy vine will laugh off any of these pesky conditions.

Organic pest control- easy organic control is to use 5ml of washing up liquid to 1 litre of water over the foliage at sunset.



“I rely on the lady birds from my allotment to sort out hop pests”

Organic fungal control- 1 table spoon of baking soda to 3.8 litres of water for a systemic effect on fungal diseases.

Rhizomes- these are soft fleshy roots usually planted early spring. Its important to make sure its a female root, planted while dormant, 3 inches deep in well drained fertile soil.



“Male or female variety hop plants - we are not sexist but.....beer needs a woman' s touch”

Propagating hops- the hop plant is a fairly hardy beast. Take a 6 inch green leaved cutting from your 4 to 5 old month vine and place it in clear glass jar then position it in you window of good day light. After a week the cutting will remarkably sprout young fleshy roots. With a bit of TLC place the cutting in a pot with some good quality potting compost to forward it on to become an healthy cloned hop plant.

“Blooming Eck- My Challenger hop can grow up to 10 inches on a warm sunny day, did someone say vigorous?”



Hops for brewing

Bittering hop— is usually a high alpha acid hop placed in the boiler at the start of the boil. This hop gives the beer bitterness which in turn preserves the beer as it ages. Best quality beers use more low alpha hops for bittering such as Golding and Fuggles.

 *“ When it comes to flavour, alpha acid is not normally necessary, but some high alpha bittering hops can be used for flavour and aroma for example Pacific Gem, a high alpha acid hop has a nice gentle fruit berry like finish. You can use large quantities of this particular hop at the end, but this can't be done with all bittering hops ”*

Aroma hops— these are normally low alpha acid but high in fine aromatic oils that are responsible for most of the “hop character” of a beer . These hops are best added towards the end of the boil to preserve the oils and stop the oil evaporating. Can be solely used as a bittering hop in high quantities for a quality beer.

 *“Good late addition hops in large quantities– Golding..Amarillo..Cascade”*

aroma hops of the world



cascade



saaz



golding



hallertau

Dual purpose hops— can be used as a bittering and aroma hop. These hops are usually favoured for dry hopping a finished beer in a cask. Good examples include Northdown and Northern Brewer.

First Wort hopping (FWH)- an old process recently rediscovered. The reported benefits include a smooth bitterness and improved hop flavour. Through experimenting, your hop bill can be reduced by using this method. FWH involves adding a large portion of aroma hops (finishing hops) to the boiler as the wort is leaving the mash tun. The hops steep in the hot wort releasing their oils and resins. Normally these oils will evaporate in the boiling wort, however due to the lower wort primary temperature the oils have more time to oxidise to more soluble compounds which are retained in the boil to the end. Another advantage of FWH is that the hops float on the top acting as a thermal lid making the wort come to the boil a lot quicker.



Challenger - Sept 2009

Hop Combinations

 *“ Two hops at the start of the boil, two hops of the same to finish are a good combination”*

 *“How about a single variety hopped beer? Commercial brewers mainly use 2-3 varieties of hops so if a particular hop changes dramatically between seasons the blend will ensure that the final product remains consistent”*

Favoured hops that go together— a few classic examples, Golding and Fuggles, Target and Styrian Golding, Bramling Cross and Northern Brewer, Cascade and Fuggles, Cascade, Centennial and Amarillo.

Hop Harvesting and Storage

The hop will want to deteriorate naturally over time starting with the alpha acid. The rate of deterioration is dependant upon several factors.

 *“ The hops are ready for harvesting when two changes take place. The young hop has a damp soft feel and stays compressed when squeezed. However, when mature and ready for picking the hop feels more springy and has the consistency of paper and feels lighter. The second test is to cut the hop in half length ways down the centre with a sharp knife to expose the yellow powder “lupulin”, the yellowness should be a dark yellow and not a light shade of yellow”*





Hop variety- Liberty, Cascade and Target deteriorate rapidly whereas at the other end of the scale Fuggle, Northern Brewer and Galena will deteriorate at a lower rate.



Storage Temperature- temperature range from 20c room temperature to -15c freezer temperature.



Packaging- most hops are supplied in silver heat shrunk packaging, compressing the hops into blocks. Exposing hops to light of certain wavelengths will cause the hop to degrade more rapidly.



“My hops are picked fresh, weighed into 150g freezer bags and deep frozen all within a couple of hours ready for brewing. I must admit they do break up into smaller particles when placed into the boiler, but a good hop character is evident from this method”



Hops in refrigerated storage .

