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FEATURE

Getting bitter all the time

By Graham Holter, 01-Mar-2011

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Brewers enjoy experimenting with hops – and there are more available to them now than ever before...

Imagine a beer with so much bitterness that, even after four hours and several cups of tea and coffee, that's still all you can taste. That beer exists. It's called The Hop, produced in Oxfordshire by microbrewer Peter Fowler, and was acknowledged last year as the world's bitterest.



The Hop contains 323 International Bittering Units (IBUs), 10 times more than you'd normally expect from a commercial ale and over 100 more than the previous record holder. Somewhat alarmingly, Fowler intends to break his own record again this year at his new brewery at the Royal Oak in Wantage.

Hops are clearly something of an obsession for Fowler, but he's not alone. Brewers are eagerly experimenting with higher hop content in their beers partly because there's a trend towards paler, bitterer styles, which began among the microbrewers of America's west coast, but also due to the wealth of new varieties which have become commercially available.

"It's absolutely fantastic," says Gazza Prescott of Steel City Brewing, a Sheffield micro which produces a range of hop-heavy beers produced from borrowed facilities at other people's sites. "Every year there're new hops. For years all there was were Fuggles and Goldings and stuff I wouldn't touch with a bargepole. Most British hops I'm just not a big fan. Our climate is not hot enough to get the right oils in the hops; you get these more muted flavours that are great for old-fashioned English bitters."

Paul Corbett, md of Worcestershire hop merchant Charles Faram, does not share Prescott's rather brutal assessment of domestic hops but accepts the underlying point. "The terroir is very critical to the flavours," he says. "The American and New Zealand hops seem to be quite popular at the moment because they have cold winters and hot summers: extreme conditions which tend to produce some strong flavours."

"In the UK we've got quite a maritime climate with generally mild winters and generally mild summers. We don't get the intensity of flavour from our hops that you can get from America and New Zealand."

Hop bitterness

Hops get their bitterness from their alpha acid content. Fuggles weighs in at around 5% on the scale, while a newer variety such as Summit comes close to 20%. Knowing this data helps brewers make accurate projections about how bitter their beer will be, but there are other factors to consider, according to Dr Keith Thomas, director of the Brewlab facility in Sunderland.

"The science of hop addition is extensive on bitterness development, as this arises from the alpha acids, which are easily measured in hops and in beer, and so lends itself to formulae," he says. For example, he explains, one bitterness unit equates to a milligram of iso-alpha acid per litre.

But he adds: "There are still some unknowns: such as how bitterness is affected chemically by other components such as polyphenols and proteins, as well as how other components affect the impression of bitterness by providing balance and interactions on the tongue. In addition, there are three types of iso-alpha

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acid which may give subtly different bitterness characters."

Brewers, especially in the UK, like to stress the aromatic nature of what they produce, even with weapons-grade hops. While the Americans are typically gung-ho about the bitterness of their beers, many of their British counterparts say they are looking for some subtlety too. Introducing hops towards the end of the boil (late hopping), and adding hops in the cask (dry hopping), are two ways of achieving this.

Ian Mackey, general manager of Vale Brewery in Buckinghamshire, says: "We do play around with hops a little bit. We try and learn about how the different hops integrate together. You've got various points throughout the brewing process when you can add the hops. The ones at the end give you much more aroma and taste because fewer of the oils boil off."

At Dark Star Brewery in West Sussex, brewer Mark Tranter is excited by varieties like Simcoe and Southern Cross. The company is one of only four UK brewers to get its hands on the new American variety El Dorado. But Tranter is not too fussed about calculations and IBUs. "I have worked them out in the past," he says, "but I usually just go with what feels right."

"I think hops are definitely there to be exploited, particularly as there are so many new varieties. But it's not a case of making beer as hoppy as possible and going for super-high bitterness levels. The bitterness is there, but it's the late hopping that we're more interested in. Late hopping is where you pick up more of the aromas."

Hop aroma

Thomas at Brewlab says: "Hop aroma is more esoteric [than bitterness] and varies greatly by hop type, vintage and boiling system. There are some studies that have attempted to produce an index of hop aroma, but recent work has suggested that linalool a spicy aroma which remains after boiling is one measure of hop aroma and of beer quality. I haven't used this yet, but it will be interesting to see if it is picked up by more analytical breweries."

Corbett at Charles Faram reports that American brewers are known to trek hopefully around hop gardens in search of new varieties. Since anything produced from seed, rather than a cutting, is going to be a crossing of one sort or another, there is always the chance of serendipity. Indeed that's how Amarillo first emerged: a brewer noticed an irregular plant in a field of Liberty hops, sent it for analysis, and suddenly the brewers of the world had a new ingredient to play with.

But do such trendy, high-alpha imports spell the end for traditional English varieties grown in the country's remaining 1,000 hectares of hop garden? Corbett believes not.

"The American and New Zealand varieties are invading our shores but the English varieties are proving very popular among American brewers looking for something new," he says. "There are export markets for English varieties and also very good, loyal customers here. Regional brewers producing excellent bitters and pale ales are still using Fuggles, Goldings and Challenger and producing some excellent beers."

Ultimately, he believes the increased choice available to brewers and beer lovers has helped to make the brewing scene more colourful than ever before.

"It has helped the English beer market because we've got this range of flavours now, we've got a more interesting product, I think, with cask beer: all the beers don't taste the same. We are getting as good a selection as the wine drinkers get on their wines."

Some of the new varieties that have been making a name for themselves over the past decade...

Pilot

A British variety, developed by Dr Peter Darby at Horticulture Research International in Wye and released in 2002. This hedgerow hop contains a fairly high level of alpha acids by UK standards (9% to 11%) and is high-yielding.

Simcoe

An American bittering hybrid released in 2001. Some describe its aromas as citrus and pine-like; others detect traces of peaches. Its alpha acid content is between 12% and 14%. American brewers have used it as an ingredient in their full-on India Pale Ale interpretations.

Nelson Sauvin

Gooseberry notes from this New Zealand variety, released in 2000, have inevitably led to comparisons with Kiwi Sauvignon Blanc. Developed by New Zealand HortResearch, the variety is said to work well as an ingredient in both ales and lagers and has alpha acids of 12% to 13%.

Galaxy

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An Australian invention released on to the market in 2009, Galaxy is prized for its intense bitterness (its alpha acid content is 14.9%) and passion fruit flavours. Developer Hop Products Australia recommends adding the variety late in the boil.

Apollo

Beer lovers are not generally known for demanding flavours of tangerine or garlic in their ales, but those are two of the distinctions associated with this crossed variety, developed in Washington State and patented in 2009. The hop has an alpha acid content of 18% to 21%.

Summit

A very bitter variety (alpha acids of between 17.5% and 19.5%) released in the US in 2003. Many brewers love the tangerine aromas that the variety adds to their beer; others detect unwelcome hints of onion. "Smelled like a dumpster behind a Chinese restaurant in the middle of summer," according to one unhappy brewer.

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