

Modern Day IPAS

Mitch Steele

From its craft beer origins as a very special offering in the 1980s, the popularity of the IPA style has continuously grown to the point where it is now the flagship style for many craft brewers. Some breweries even offer several different versions of IPA simultaneously in their everyday lineup. With so many great IPAs available to craft beer fans, most brewers today are finding it's not enough to simply brew a great beer.

Instead, they're continually innovating and investigating the use of new techniques or ingredients. Let's take a look at where IPA is headed.

Old School vs. New School

The American IPA style has evolved tremendously in its more than 30-year history in craft brewing. Successful hop breeding programs have led to many different flavor profiles, and over the last 15 years, IPAs have generally become drier, less malty, and more intensely hop forward.

The IPAs of the 1990s and early 2000s were typically brewed to the following parameters:

- Chinook, Cascade, Centennial, and/or Columbus hops (the 4 Cs)
- 15-16° P / 1.060-1.064 SG
- 6.5-7.5 percent ABV
- Low levels of light crystal malts and/or Munich malts
- Dry hopped at 0.5-1.0 lb/bbl (7-15 grams/gallon)

Modern IPAs by some of the best craft brewers in the world are brewed to these parameters:

- New hop variety (Amarillo, Simcoe, Nelson Sauvin, Mosaic, Equinox, Lemondrop, Vic Secret, etc.)
- Hop bursting: Getting all or most of the bitterness from late kettle and whirlpool additions, therefore retaining more hop flavor and aromatics, and achieving a mellower, smoother bitterness
- 16-18° P / 1.064-1.072 SG
- 7-8 percent ABV—pushing the ceiling with ABV, though above 8 percent is double IPA territory
- No crystal malts
- Dry hop at a rate of 1-2 lb/bbl (15-30 grams/gallon)

Some craft brewers and homebrewers in Southern California have proclaimed that they will never dry-hop with less than 2 lb/bbl (15 to 30 grams/gallon). This is a pretty major shift in hop usage, and is actually causing some concern regarding future hop supplies. When coupled with the industry's amazing growth, it's clear to see that demand for hops is outpacing supply.

Now that some brewers have designated their older IPAs as "classic IPA" or "old school IPA," it clears the slate to brew more innovative IPAs using newer hop varieties. The search for new varieties has taken on a life of its own. Private and public hop breeding programs are putting high levels of focus into developing varieties with unique flavors such as melon, strawberry, bubblegum, vanilla, oak, and lime. Hops sourced from growing regions around the world (such as Australia and New Zealand) present brewers with an incredible array of flavors from which to choose. And regional hop farming in the United States is also resulting in some new flavors from classic varieties—Cascade hops grown in the Midwest or on the East Coast can have intriguing flavor differences compared to Cascades grown in the Pacific Northwest, for example.

Another interesting development is the acceleration of scientific studies on the biochemistry of dry hopping. Much research has been done on flavor stability, biotransformation of hop oils by yeast after dry hopping, flavor extraction, and

important oil compounds involved in dry hop character. Much of this work is being done at Oregon State University, as Dr. Tom Shellhammer and his students are realizing the potential impact of research on how craft brewers will approach dry hopping in the future.

East Coast vs. West Coast

As the evolution of IPA continues, the concept of East Coast vs. West Coast IPA is being reevaluated. In general, East Coast IPAs have been largely regarded as being more malt balanced and more influenced by English beers. They have higher levels of crystal malts, lower bitterness at 45 to 65 IBUs, and are not considered as aggressive as the IPAs brewed on the West Coast. Conversely, West Coast IPAs have been characterized as having very little malt balance, with bitterness at 70 IBUs or higher, and with a drier, more hopforward taste.

This generalization has been questionable at best over the years, as there are several examples of both versions being brewed on either coast. And now, with increasing frequency, brewers on the East Coast are following the lead of beers like The Alchemist's Heady Topper—IPAs that are unfiltered; brewed with no colored malts, but often with some wheat malt; use massive late hopping and dry hopping more associated with West Coast IPAs; and use newer hop varieties. Is this the new East Coast style? Time will tell.

Different Strengths

Following the success of the double/imperial IPA style in the early 2000s, brewers have looked for opportunities to brew IPAs at different alcohol levels. It's important to note that the alcohol content of a beer has a direct influence on the intensity of flavors extracted during the dry-hopping process. With higher alcohol levels, hops tend to provide more intense fruity character, and at lower ABV levels, hops can come across as more herbal or grassy.

Triple IPA would appear to be a natural progression of more extreme IPAs, but the style never really took off and has not been clearly defined to date. That said, most brewers feel that a triple IPA should be brewed to the following parameters:

- 10 percent ABV or higher
- 100+ IBUs
- No crystal malts
- Massive dry-hop: 2-3 lb/bbl (30-45 grams/gallon)

A triple IPA is more like a hop wine than an IPA, and brewers can struggle with making these beers taste substantially different than a hoppy barleywine. Worth noting is the impact of the high ABV on the perception of increased fullness and sweetness in a beer—that's the challenge of making a triple IPA. Brewers who excel at the style have successfully been able to brew a very dry beer at a high alcohol level. This can be accomplished by using very low conversion rest temperatures with a long (two-plus-hour) rest, and using up to 10 percent sugars to increase the original gravity and ABV without increasing the maltiness of the beer.

I'm starting to see some "quadruple" IPAs brewed to 14 to 16 percent ABV. Getting a beer to this high of an alcohol content is a challenge in itself. Brewers must use a very alcohol-tolerant yeast and a fermentation regime that involves constant feeding of nutrients and oxygen. This in turn can result in a very estery beer, with the yeast esters completely overwhelming the dry-hop character. These beers are such a challenge to pull off that I don't see them becoming a big player, but they are fun to taste!

Session IPAs looked like they were going to be the rage a couple of years ago, and certainly they are favored by brewers and other brewery employees faced with tasting beer for many hours at a time as part of their jobs. Brewers who make session IPAs are faced with the challenge of thin body and increased herbaceous hop character coinciding with a low alcohol level. Hop selection is critical for this style—choose varieties that are over-the-top fruity, and use malts that help accentuate body, such as Carapils at 5 to 10 percent. Some brewers increase the amount of crystal malt in their session IPA to provide more body.

Session IPAs have come under scrutiny by those who feel the style is simply a hoppy pale ale, but I don't agree with that assessment. Pale ales by definition have more malt balance, while session IPAs are typically hopped at a higher rate, similar to that of a double IPA. This has created a conundrum: the brewing costs (because of the hopping regime) are similar to IPA and double IPA, so session IPAs are typically priced similarly to regular strength IPA, and consumers have shown they don't want to pay a premium price for a beer less than 5 percent ABV.

Unusual Ingredients

As the IPA style has grown, so has the willingness of IPA brewers to add fruits, herbs, spices, and other ingredients that

complement or contrast the flavor of the hops and add complexity. The key to making a great IPA with these ingredients is to strike a balance between the ingredient and the hops. Any IPA must, by definition, be hop forward, so the added ingredient should be perceived, but should not interfere with the hops. That is not always easy to do. Following are some examples of ingredients and suggestions on how to add them.

Citrus

Citrus fruit is a natural flavor complement to IPAs brewed with citrusy hops such as Centennial, Cascade, and Amarillo. Grapefruit IPA has become very popular, but lemon, orange, and tangerine can also work well in IPA. Be careful with lime, as it can be too intense and may clash with the hop flavors.

The most common technique for adding citrus to IPAs is to use dried peel. This can be added to the whirlpool or secondary at 5 to 10 grams per gallon, depending on the fruit and the desired intensity. If you are using fresh peel, double the addition rate because the water content in fresh peel dilutes the flavor intensity. Some brewers use the whole fruit, macerated or chopped, and others opt for juice or juice concentrate, which is convenient and effective. If using concentrate, use at a rate of about 0.1 to 0.2 percent of the total beer volume. You don't need much. We haven't had much success at Stone Brewing adding juice in the brewhouse—some really strange flavors have developed, so I recommend adding it to the fermenter. If you want a brewhouse addition, use peel. One other caution: adding the acidic concentrate or juice in the brewhouse or during fermentation can result in a pH drop that can impact the ability of some yeast strains to complete fermentation.

Stone Fruits, Tropical Fruits, and Berries

Peaches, berries, mangos, apricots, and other fruits can also pair nicely with hop flavors. Many of the newer hop varieties, particularly Mosaic and the hops from Australia and New Zealand, are loaded with peach and tropical fruit flavors, and there are several varieties grown all over the world that can add berry components to the beer. Hops like Bramling Cross (blueberry), Pacific Gem (blackberry), Belma (strawberry and grape), Nelson Sauvin (gooseberry), and potentially Mosaic would be wonderful in a berry IPA. The easiest and safest way to use these fruits is to add pasteurized puree, juice, or juice concentrate to the fermenter. When adding whole or unpasteurized fruit, you risk wild yeast activity in the beer, which will result in a major flavor change. Add puree or juice at about 5 to 10 grams per gallon, depending on the fruit and the desired flavor intensity. Again, beware of the pH impact of the juice addition on the yeast.

Peppers

Jalapeño and habanero have found a home in many IPAs, but determining an addition rate can be a challenge. Peppers vary significantly in heat and fruit flavor intensity, so some trial and error is required. Start with 0.25 to 0.75 ounce per gallon and adjust as needed. Dried peppers may provide a very different character and intensity compared to fresh peppers. Tread lightly to start. It's easier to add more if needed, but impossible to take it out after it has been added.

Coffee

I admit, I was skeptical about how coffee would work in an IPA, but after I tasted the Dayman IPA collaboration we did with Two Brothers and Aleman in 2013, I was sold. The citrus character from the Citra hop paired wonderfully with the roasted coffee flavors. Coffee can be added in the brewhouse or post fermentation; often a combination of both additions is used.

When added in the brewhouse, whole coffee beans at about 30 to 40 grams per gallon can be added to the mash for a subtle flavor, or ground coffee can be hung in mesh bags during the whirlpool step at about 15 grams per gallon for a more intense flavor. Some brewers prefer adding the coffee cold after fermentation, and this can provide a smoother, mellower coffee flavor. Fifteen grams per gallon is a good place to start. My preference is to go light with the brewhouse addition, then add a little more post fermentation if needed. That helps avoid any of the acidity and harshness that can come from hot brewed coffee.

Tea

Tea also pairs well with hops. I recommend adding tea post fermentation (as for dry hopping) at about 20 to 30 grams per gallon, since hot tea additions can result in too much astringency. Teas can provide a wide range of flavors. Teas we have used successfully include Earl Grey with its Bergamot orange character, and Japanese Sencha green tea, which pairs wonderfully with herbal hop flavors.

Cacao/Cocoa

Chocolate works in a similar manner to coffee in IPAs. I find it best to add cocoa at the end of the boil so it melts and is evenly dispersed in the wort. Steeping nibs in beer post-fermentation is also effective. Anywhere from 20 to 60 grams per gallon can be used, depending on the cocoa and the desired intensity.

Coconut

Coconut requires fairly heavy addition rates, 50 to 100 grams per gallon. It's best to add it both in the whirlpool and post fermentation to get the flavor dialed in. I've found it effective to use a lightly toasted, dried coconut, as this really intensifies the flavor. If you toast the coconut yourself, be careful, as it goes from lightly toasted to completely burned in a matter of seconds! I've heard of brewers adding coconut milk to hot wort to enhance the coconut flavor, but I have no experience with that method.

Spices and Flowers

Dried jasmine flowers add a nice floral complement to the hop profile. Lemon verbena pairs nicely with citrusy hops. Anise could pair well with El Dorado, since this hop has, in addition to its intense lemon flavor, a spicy anise component. Hibiscus, ginger, sage, juniper, mint, and coriander can all blend with, and add an intriguing layer of flavor complexity to, hops in an IPA.

The concern with adding any spice to a hop-forward beer is striking the proper balance of the special ingredient with the hops. The spice should be noticeable but shouldn't overpower the hop flavor. It's easiest to add these ingredients in the whirlpool at about 5 to 10 grams per gallon to start with. Go light, because more can be added post fermentation. When adding the spices post fermentation, be mindful of contact time to avoid too much herbal character.

Emerging Trends

It will be interesting to see where IPA is headed in the next few years. Certainly new hop varieties will impact many recipes, and creative brewers will find new and interesting ingredients to complement the hop load. Some trends we can expect to see include:

- Barrel- and wood-aging IPAs. This can result in some interesting flavor combinations— vanilla and wood can be quite pleasant in combination with a citrusy hop. It is important to not overwhelm the hops with wood character, and spirit remnants in the barrel can make this even more difficult.
- Estate IPAs brewed with hops grown on the brewery site. An increasing number of brewers are growing hops on their property and using them in special beers, most often in the form of wet hops.
- Increased use of hop oils. Sierra Nevada's Hop Hunter IPA is an indication of how distilled hop oils can be used to make a great IPA. Craft brewers have largely avoided hop oils in the past, considering them the realm of large brewers, but now several brewers are using hop oils to either augment or even replace their dry-hop additions.
- Complementary styles such as hoppy lagers. India pale lagers, a variation on the imperial Pils style, are already becoming popular, but it will be interesting to see how hoppy lagers in general will be revived by more craft brewers.
- IPA treatment akin to other beer styles. We've seen this already with wit IPA, but how about basing an IPA off of an Oktoberfest or altbier? Or a smoked IPA?
- IPA with marijuana. The flavors are complementary (or so I've heard). The legalities of this might be a challenge, though!

Who knows? Maybe regional differences in IPA will reemerge as more craft brewers around the world formulate their own take on the style.

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