



 HPA


**VIRTUAL
HARVEST
2021**

Brewing with Green Hops

Owen Johnston: Welcome to Bushy Park Estates, Tasmania, Australia. I'm Owen Johnston, head of Sales and Marketing. Fresh hop, wet hop, harvest ales. We use these terms interchangeably to describe any beer style brewed with un-kilned, freshly picked hops.

Every harvest, we make green hops available. It's a great way for us to connect with innovative brewers who want to know exactly where their hops come from, and to remind drinkers of the link between Australian brewing and Australian agriculture.

G'day, guys.

Alex Grant: G'day, Owen.

OJ: We're teaming up with Scott Overdorf and Alex Grant from Hobart Brewing Co to walk you through our green hop program and the nuances of brewing with green hops.

Scott, it's not your first time on the farm, and you're a great supporter of Australian varieties.

Scott Overdorf: Yes, our core range of Hobart Brewing Company beers all feature Australian hops grown here at Bushy Park Estates, but harvest is a rare opportunity for us to show a different side of hops through green hop beers.

OJ: Pretty obvious that, as farmers, we live for this time of year. Does it resonate with you?

AG: Yeah, as brewers we get just as excited as you guys do. It's really great to come out, meet the team, and collect our green hops in person.

Since you never really know when the hops are going to ripen and be ready for collection, our brewing schedule becomes a little loose around this time of year.

OJ: Picking up the green hops is the easy part, hopefully you've got an empty tank.

AG: The provenance and unpredictability of the green hop program is what allows us to tell a story about the beer and give our drinkers a new sensory experience every year.

OJ: Guys, thanks very much for coming out to collect the green hops today. It's always a pleasure to host you on the farm at this time of year, and I look forward to joining you down at the brewery for the next stage of the process to see if we can create that new sensory experience for the drinker.

We're in your world now, guys, so what's the plan?

AG: We've picked up our hops from the farm and taken them straight back to the brewery. There're a couple of really uniquely challenging factors to brewing with green hops, but that's half the fun.

SO: They're less concentrated than pellets, so you need more of them to achieve the same level of flavour and aroma. Green hops also provide a distinctly fresh, vibrant, and herbaceous flavour profile without the bitterness you get when using pellets. Because they're 80% water, they tend to expire quickly, which is why we need to use them within 24-48 hours after harvest.

OJ: Can you tell me what hops you're using? And what sort of beer style are you trying?

AG: Today we're using fresh Cascade straight from the farm, we're hoping for some really nice bright citrus characters, and chucking them in an American-style pale ale.

SO: And we're going to add the green hops during the whirlpool stage of our brew.

OJ: Fantastic, and does that take any modification to your normal process?

SO: It's a big deviation because what we do is we remove all the grain from our mash tun, we give it a full CIP and basically turn it into a big hop-back. At the end of the boil we chuck all the fresh hops into it and transfer the wort from our kettle on top of the hops in our mash tun.

OJ: When people think about our hops, we want them to think of uniquely Aussie flavours. Green, fresh hop beers are just another way we present choice and diversity. If you see a green hop beer on the menu, try it. They only come around once a year in very limited volumes.

G'day, thanks for tuning in and taking a deep dive into our green hop program. Joining me today, Scott Overdorf, co-founder and head brewer at the Hobart Brewing Company. HBC's been brewing since 2014 and in its current location in the historic Red Shed down on Hobart's working waterfront since 2016.

SO: That's right.

OJ: Thanks very much for taking the time to come and have a chat about green hops.

SO: It's a pleasure, thanks for having me.

OJ: Today we're going to have a wide-ranging chat on the practicalities of brewing with green hops, some of the flavours we see, some of the factors we consider, whether it's conceiving a flavour or executing a brew. Tell me a bit about your brewing background and how do we come to be sitting here today in Hobart, Tasmania?

SO: Well, several decades ago I found myself living in a small German ski town, Garmisch-Partenkirchen, where I had my beer epiphany. You know, the Budweiser-drinking American who's all of a sudden surrounded by all these beer styles they'd never heard of.

OJ: That's you? The Budweiser-drinking American?

SO: Yep, and went back home, started home brewing, hobby became a passion, became an obsession. Later in life I found myself unemployed by choice and always thought of becoming a pro brewer so one day I decided to walk around to different breweries around Boulder, Colorado, knocked on the doors of eight different breweries, got seven no's, Oskar Blues said, "yep, come back tomorrow morning 8:00."

I started with Oskar Blues on their canning line, spent time doing that before moving over to Mountain Sun where I joined a team of six other brewers, but I'd also travelled to Tassie a number of years before and a day didn't go by in Colorado where I wasn't thinking of Tassie, so finally I convinced my Australian partner that it was time to move over here. And here we are.

OJ: You've had a few different roles since you've been here in Tassie?

SO: Yes, literally got off the Spirit of Tassie, drove to Dover, Tasmania, near the end of the road where an ex-rugby player from Queensland had purchased the Dover Pub and had an idea of building a brewery, which I got hired to

start. At the same time, I met you along with your team at Moo Brew and would come up to town on Friday to keep in touch. Ironically, and literally the day I got the call from this rugby player/pub owner that he'd run out of money and the project was finished, you contacted me that afternoon and said, "would you like to come up to Moo Brew?"

OJ: And the rest is history. From Moo Brew to Hobart Brewing Co.

SO: Yeah, that's right. One day at Moo Brew, Dave Magill, then head brewer and General Manager, asked me to come up to the office. I was scratching my head wondering what I had done in the previous 24 hours that may not have been the right thing, and he said, "listen, a guy came in yesterday with a business plan to start a brewery and I wouldn't be a mate if I didn't let you know, because there might be an opportunity here for you."

Next day Brendan Parnell, a lawyer here in town, showed me his plan. I tried to talk him out of it and failed, and here we are a number of years later.

OJ: Running a successful brew pub down on the busy Hobart waterfront. It's good, it's worked.

SO: It's been a great five years.

OJ: You've done a lot of green hop brewing at this point. You've done some out of Moo and you've done one every year at HBC.

SO: That's right, every year except for last year.

OJ: Every year except for last year, yep. Do you have a highlight? Do you have a favourite green hop beer that you've made in the past?

SO: I think there're two that stand out. There was a dark ale that we brewed at Moo Brew and that beer particularly stands out for a reason that everybody thinks of fresh hop beers, we have to drink them fresh because the hops, the flavour profile and aroma's going to drop off, where I think the Moo dark that year, the Harvest beer, actually got better after a couple of months. The malt and the hops came together and really was good complexity.

My favourite at Hobart Brewing was the first beer that we brewed, which was a hoppy Saison which we used Galaxy.

OJ: I think there was Galaxy in that brown as well. Do you remember the other hop?

SO: I thought it was Galaxy and, at the time, they were still growing Willamette.

OJ: Out at HPA?

SO: Out at Bushy.

OJ: Out at Bushy, great.

SO: And the last year they were...

OJ: It is an interesting comment about the development of the flavour profile. I certainly recall, in my experience, seeing the Cascade first harvests, some of the very first wet hop beers in the modern times here in Australia, and I thought their flavour profile integrated and came together a bit more over time. I think it makes sense, in some ways that a beer will level out once it's in pack product. Those darker malt bills do tend to work a bit longer in the pack, as well.

When you're considering approaching a harvest beer, approaching recipe design, are you coming at it from that sort of hop impact and thinking about hops? Or are you thinking about longevity? You thinking about the final beer? How do you approach writing a green hop recipe?

SO: I think for us it's a once-a-year opportunity to brew something really unique, it's going to be different every year. We're going for a focus on the hop, so we want an impact from the hop and we're also, is there a beer style out there that we haven't had an opportunity to brew yet that would be a good choice, that would showcase a hop? And then we pair the two.

Having said that, we've probably used Galaxy more often than not in our fresh hop beers because of that impact that Galaxy has.

OJ: For sure. We've talked a bit in the rest of the virtual program with other brewers about how they approach hop trials and whatnot. Some have this diverse recipe approach and others have a very repeatable recipe that they put the hops on top to see the difference. Am I right in saying that you throw different beer styles in there for this harvest in consideration, what hops are available? What are we going to make that will taste great?

SO: That's exactly right. We mix it up every year. We use the same process with the way that we use the green hops, but the beer itself and the recipe we write is a different style and not something we've brewed before.

OJ: Let's get into some process considerations on the day. I've been looking forward to this conversation for the whole harvest. This is when we actually get to talk about making porridge. This is one of the most interesting sessions I think we're going to do.

When considering the actual brew day for a green hop beer, we've seen a few difference scenarios, both at the Moo Brew times. Can you describe what you do at HBC currently?

SO: What we do is, at the end of the boil, we are going to transfer the wort into our mash tun. We're going to take our mash tun, turn it into a hop back, and that process actually starts a few days before because we don't get under our plates in our mash tun except for once a year, so we use the hop harvest as that reminder, "hey, let's take the mash tun completely apart, give it a scrub, put it back together."

Then after brew day after the lauter is complete and we're in boil, we'll get the grain out and we'll do a full CIP on that mash tun including an acid cycle to prep it for using it as a hop back. Then we try to remember how we – because we have stainless, it's not hard-piped to send wort back to the mash tun – we spend a bit of time scratching our heads, "where do we break it down?"

OJ: Breaking a few tri-clovers here and there.

SO: Putting a t on some valves and soft hoses.

OJ: So the wort's in the boil, lauter tun, mash tun's ready to go. Door's closed, hops go in, there's no wort in there at this point. Do you see the hops sitting 4 inches, 6 inches, a foot deep?

SO: Yeah, it's at least 6-8 inches because what we developed as a process over the years is we take 10 kilos of fresh hops, no matter what beer we're brewing, no matter what the bitterness level is, we take 10 kilos, put them into the kettle at flame out. We use brew-in-a-bags, we can get 5 kilos of wet hops into a brew-in-a-bag, so we put two bags, 10 kilos total, at flame out and then the rest of the hops that we're using go into the mash tun, usually 6-8. In the case of this year's beer, it was 50 kilos of hops in a 20-hectolitre brew.

OJ: Pretty aromatic at that point?

SO: It's amazing, you just want to dive in and roll around in them.

OJ: You're throwing in 10 kilos at flame out, is that trying to address some layering in of capturing different compounds to survive through into the product? Is there any pellets in the boil for bitterness?

SO: We don't use any pellets in our green hops, 100% green hop beer. That 10 kilos at flame out, we're more confident of the bitterness we're going to get from that addition than the bitterness we're going to get from our mash tun. It's a bit of a hedge there, but it's also a layering of flavour and aromatics.

OJ: It makes sense, because one of the common failing in green hop is that sometimes they don't address the basics, which is this bitter/sweet balance. Some are too bitter, and others, of course, finish on higher Platons based on the recipe or whatever, but they don't have the backbone of bitterness to make them enjoyable in that way.

I think it's pretty sensible to try and hedge your position there and layer some in, simply to make sure that there's enough backbone. Even at 2 ½ Plato finishing or something like that you're still going to need some bitterness in there.

SO: Have that drinkability.

OJ: That's right. So you're about to knock over, do you come in underneath the plates and soak in and start steeping, or do you come in through a side port on top of the hops?

SO: We're essentially undulating, so coming up from the bottom. As soon as we have the wort not necessarily all the way through the hops, we'll turn the rakes on and slowly stir.

OJ: Agitate it gently.

SO: Yep, to make sure the hops are breaking up and we're getting saturation.

OJ: Not for any other purpose, not trying to really really mix them.

SO: No, just going a really slow rake.

OJ: Through this process, two questions: are you aiming for some residence time on the wort? Knock the wort in, sit it in steep for 10, 20 minutes?

SO: No. Our process has partly been influenced by Brian Watson of Good George. Our kit is a DME and at the time he was involved in setting up DMEs. He wasn't present when we commissioned, but he happened to be in Tassie for the hop harvest and, actually, our first harvest brew was probably our tenth brew on that kit, so he was really keen to come by and see how the setup was working. He joined us on the brew day of our first fresh hop, and we talked at length about that. I was looking for some residence time, he was like, "no, you have too much residence time, you run the risk of a little too much of that green, fresh lawn cutting, chlorophyll flavour."

We ummed and ahned, and finally said okay, from that 10 kilos that's in the kettle, it's going to take us 20 minutes to move it over to the lauter tun so those hops have 20 minutes residence, and then the hops in the mash tun already have 20 minutes, and so we just start knocking out.

OJ: 20 minutes in, another 20 minutes out?

SO: 30-40 minutes, so they're still getting 60 minutes of residence without any kind of stand.

OJ: So there's really no need for standing, that's right. And do you do any sensory to see what's going on? Do you taste the wort that's in pump-out?

SO: What we get's what we get.

OJ: It's kind of a moot point, isn't it? You can't undo it, and you're still going to have to pump out, aren't you?

SO: It would just make me more nervous. I'd have less hair.

OJ: Maybe I'm a nervous guy, I don't know.

That's excellent. Really no steeping time, just the pump in and pump out. A little turn on the rakes just to make sure that there's adequate saturation.

SO: Yeah, because over the years we've done two fresh hop collaborations with Modus Operandi when Dennis de Boer was head brewer there. He'd be like, "do you have any more we can chuck in?" and tasting the wort from the kettle. The mash tun, like we said, it was, we already have what we have. But going from the kettle, you just wanted to have an idea of the bitterness level and it's like, "oh, it's plenty bitter, maybe we have too many." And he's like, "no, let's chuck in more."

That's where you just have to throw caution to the wind and go for it. That's part of the fresh hop experience is you're building your own knowledge base based on experiential learning once a year learning curve. It takes a long time.

OJ: Yeah that's right, once a year.

I guess in that sense, that experiential learning, do you think you're in a better position now to get consistent results?

SO: Yes, because we get consistent results.

OJ: Yes, but...

SO: There's still so many variables that you can't predict the end result. The biggest variable of all, you sit down, you write the recipe, you're brewing this style, you're using that hop, but you still don't know what you're going to have in the glass. Where we do have confidence is in that level of bitterness, because to me that's what really impacts the level of drinkability. Nobody wants a beer that's overly bitter, and then if it's cloyingly sweet, that's...

OJ: Even worse.

SO: Over the years, I think at Moo Brew we were starting with a ratio of 4:1 wet to pellets. When we did our first brew at Hobart Brewing we went up to five, the next year went up to six, now we're on 8:1.

OJ: More hops.

SO: We're pretty comfortable with that 8:1 ratio, and that's regardless of the style.

OJ: That guarantees you impact, right? That 8:1, that's going to definitely get some impact.

Do you think it increases your chance, especially in this lauter tun as a hop back model, do you think it increases your chances of vegetal, chlorophyllic extraction, those grippy phenolic off flavours?

SO: I don't know. The science says that with a higher gravity, more dense wort, and even more massive hops, you're actually losing, your utilisation is decreasing. I like to think that you have that same effect with your –

OJ: Your problem compounds.

It seems like the beneficial compounds are on a diminishing returns basis. Your problem compounds just go like this, right? That's a brewer's challenge, isn't it?

SO: That's something that you, at our scale, you can only pick up sensory at the end of the project.

OJ: For sure, for sure.

Let's fast forward. We're knocked out of the brew house, we're in tank. Have you considered wet dry-hopping?

SO: Over the years I've been of two minds. At Moo we used to wet dry-hop, and I think we had good results. That process evolved from the early days to the way they do it now in a way that we couldn't duplicate at ours. The beers that we've brewed to-date we've used enough hops in the hop back in the mash tun at that 8:1 ratio that, what's it? Two years we've brewed IPAs they definitely had plenty of hop character without a dry wet-hop.

But this year we brewed a pale ale, American style pale ale with Cascade hops. We wanted to poke the bear on top of the hill with our first harvest, partly because Cascade's first harvest was one of the first wet hop beers I remember drinking nearly 20 years ago. We just happened to get our hands on some hops post-fermentation that we hadn't been planning on, and it was like, "we can make use of those hops. Let's chuck them in."

One of the things that we've always been concerned about was, because of the water content of the fresh hops – they're incredibly buoyant – so how do you put them in your fermenter as a wet dry-hop and actually get them submerged?

OJ: To actually get liquid through?

SO: Exactly, to actually extract the compounds. I was a bit dubious, but we got brew-in-a-bags, filled the bags up, put a butterfly valve in each bag just because we could. We were going to tie them up, the string from the bag I was going to put a tri-clover above the spray ball in the fermenter and then clamp off the rope from each bag. The level of the beer in the tank was too low and it wouldn't reach, so I'm like, "they're going to float anyway", so I just chucked the bags in with the idea that I'd come back 48 hours later and pull them out before we started cold conditioning. I came back, opened up the tank, and the hops were gone. That dispelled that myth of –

OJ: The buoyancy issue.

SO: That was a Friday afternoon special, so then I had to stress all weekend, because we were scheduled to transfer the beer the following week, as to whether the bags of the wet hops were wrapped around my racking port and submerged deep enough that they blocked –

OJ: Blocked the dump valve and everything.

No question of saturation at this point, though, so that's a win. We'll get the flavour, but can we get the beer?

SO: That made me stress out, we talked about the residency time in the mash tun extracting all that, so I had it in my mind 48 hours wet dry-hop out because of the bad compounds we don't want in there, now they're going to be in there at least five days, so more than double that time. I had a bit of a stress about that, as well.

OJ: There's a few technical challenges in dry hopping, we've spoken about those in other sessions. Did you get the opportunity to consider how wet hop and hop creep might interact?

SO: It's funny you say that because, no, I didn't. We haven't had an issue with hop creep in the past because we haven't done a post-fermentation addition with a green hop beer, but this time I guess I got a little excited with the availability of these hops. To be honest, the timing that we got them was not the right time to be adding them. The beer had already completely fermented, the ambient temperature in the tank had already dropped down to around 17 degrees, it was ready to start cold conditioning. But the idea of adding 30 more kilos of green hops to this pale ale was just too enticing, so we went ahead with it anyway.

OJ: You've been brought unstuck by your own "more hops".

SO: That's right. The beer was kegged last week, it's on tap, it's drinking well. There are no signs of a secondary diacetyl spike at this point, so no evidence of hop creep.

OJ: Excellent. So American pale made with wet Cascade from Bushy Park. And the secret addition. How's the flavour profile? How's the actual beer come out?

SO: It's come out, as we talked about early up at the farm, that the fresh hops – no matter what you're using – it's going to have that fresh and vibrant character. Bit herbaceous. It's not the characters you would expect if you're using Cascade pellets, but there's an interesting tropical fruit character that's almost like an exotic-style fruit you'd get from Thailand or somewhere else in Asia, like a lychee or something else. Almost like a candied fruitiness as well, but there's also a touch of woodiness.

We were chatting earlier about the higher in myrcene and couple of comments we've had is, "this pale ale drinks like a lager", and whether some of the green hop flavours are influencing that.

OJ: We know, of the compounds that make up the total oil, myrcene is highest fraction. It doesn't have great survivability, but in the wet hop setting it's such a preponderance of myrcene there that I feel like they've all got a woody, myrcene note to them, and it's almost a familiar style to find in green hop character. You can tell if there's been a nice blend of pellet and green hop, or if it's just green hops in there.

I think it's almost like truth in advertising, you need a bit of that cut grass, a bit of the myrcene-driven woodiness. But then, like in this whole visionary exercise of trying to deliver a flavour, you're making an APA with Cascade, everyone – probably our audience, being professional brewers – is going to think, "Oh yes, I know what that's going to taste like." And it's actually quite different, it really is.

SO: It's almost like a different beer. And again, that's part of the, it's the challenge, it's the excitement because you set out on this path of brewing a new beer. Through experience, you can get predictable results on most other brews you do, but with a green hop beer, that's out the window.

OJ: Start with a vision and see how you go.

We've talked through the process and the final beer, how do you value this harvest beer concept? You're very committed to it you do it almost every year, why is it important to you? And why is it something you think your beer drinker values, or needs to know about?

SO: I think because of the connection brewing has with agriculture, and for us being in Hobart and the majority of the commercially grown hops in Australia being grown just up the road from us, that's something that's really special for us. We built our core beers around Australian hops, so for us to be able to come up to the farm once a year – as I said in the beginning – it marks a passage of time.

I like that connection, being able to come up to the farm, see the harvest in action, see some people we see once a year. But also, I think with the punters, it's giving them a once-a-year, really unique opportunity to drink a beer that they're not going to get from anybody else, they won't be able to get it from us a second time, it's a one-time opportunity to try something really different and fresh and vibrant.

It may not always hit expectation, but you're learning about... as a brewer, hops are my favourite ingredient in beer, because they're so expressive. And the way green hops are expressed versus pellets are completely different. For me, it's sharing that with the punter and to say, "this is what's grown up the road, this is what we can do with it. This was fresh, it was picked, we brewed with it within 24 hours, here you go."

OJ: Do you get feedback from your bar staff that customers are looking at the menu boards, "oh yeah, harvest ale..."

SO: They go straight to it. At our taproom at the brewery, we've made a thing of, "we have a core range of beers, but we also brew seasonal beers", and the harvest beer is one of those beers.

OJ: In the calendar.

SO: So people have that expectation.

OJ: You've been brewing here in Tassie for a long time, has the conversation from the drinkers – the word "punter" might not be too familiar with some of our audience in the US and over in Europe; it's just a colloquialism for "drinker" – do you think the conversation with the punters has changed over the bar? Do you think they're coming from a higher knowledge base about hops now? So when they see a harvest beer they ask a better question?

SO: Yes and no. For the average punter, drinker, they're interested in the variety of the hop. The next question may be, "what other beers do you brew that has that same hop?" and "what are the differences in the characters between that beer and this one that I'm drinking as a harvest beer?"

But I think locally, we're mentioning Cascade First Harvest, they were brewing that a long time ago. I think for local drinkers, it's something they're familiar with.

OJ: You're right. 2002 maybe, for Cascade First Harvest in this setting? At Bushy Park Estates, we've been growing hops in Tasmania since 1803. Since joining the hop company, it's amazing that the history and the general knowledge of hops permeates through the local area.

I know that it's the same in other hop growing regions around the world. You go another 100 kms out of the hop growing region, nothing. Zero. But for the communities around our regions, the base level of knowledge, "my grandmother used to catch the train up to Bushy Park and pick hops," the connection with the hop growing industry is really strong. I think we benefit from it here in Hobart, for sure.

Thanks very much for taking the time to come down and join us, and I hope our audience has got something out of a bit of a deep dive into the processes you have down at Hobart Brewing Co. I'm sorry to say for everyone watching this, and especially playing back the recordings, I'm going to be able to go down there on Friday afternoon and have one of the Harvest beers, I'm so sorry you can't join me.

Scotto, thank you. I look forward to having you on the farm again next year.

SO: I'm looking forward to it, too. Thank you.