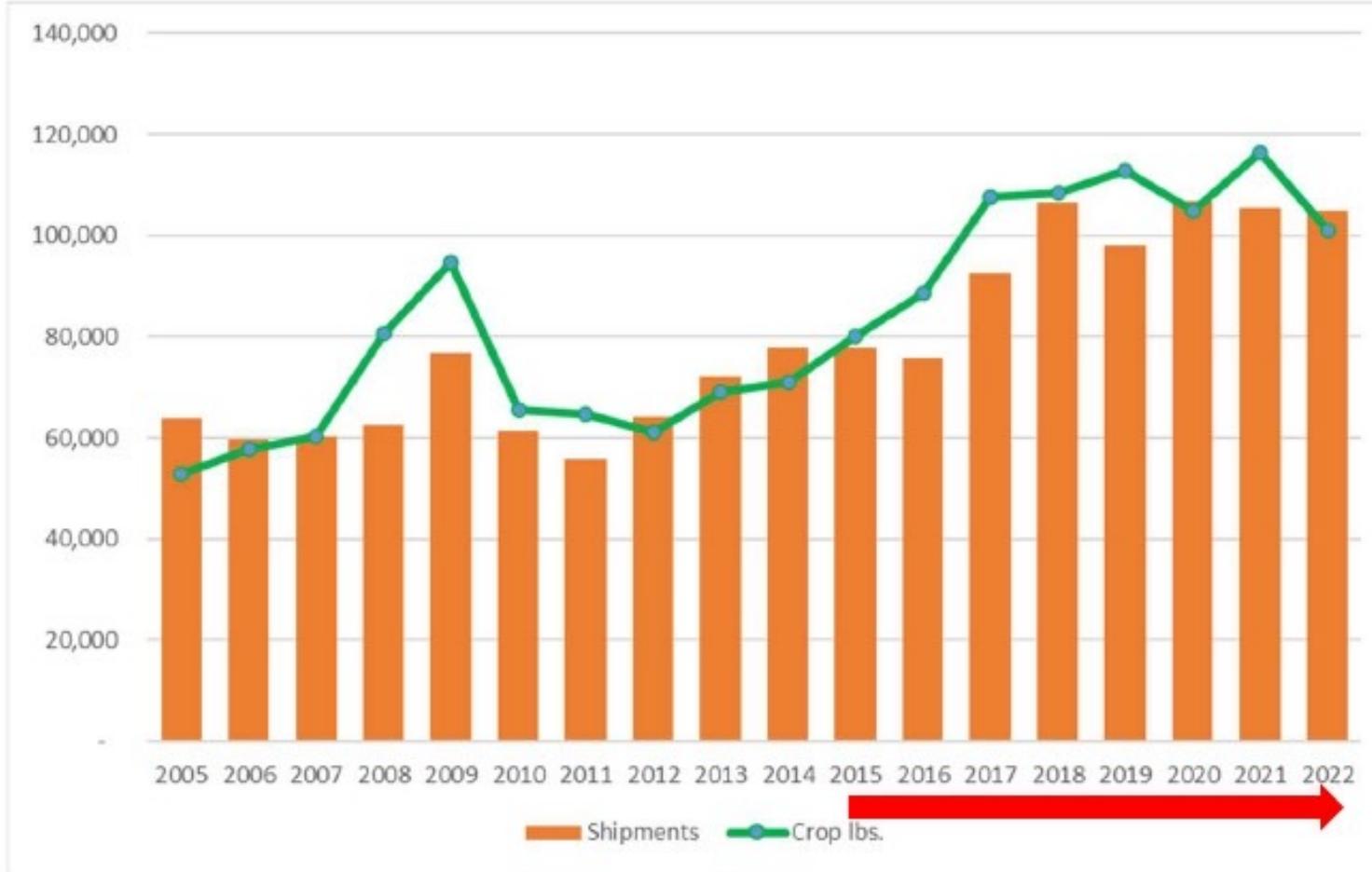




<https://brewingindustryguide.com/rightsizing-the-hop-market/>

US Hop Production & Shipments



- Orange bars represent quantity of hops shipped in the 12 months after the crop
- If production (green line) above orange bars, more hops produced than shipped
- Since 2015, in 6 out of 8 years hop industry produced more hops than shipped



Region	Farms	Avg Acres
Hallertau	860	50
Elbe-Saale	29	55
Tettnang	125	30
Spalt	46	22
Czech Republic	121	100
Poland	655	8
Slovenia	122	32
France	47	26
England	59	37
Australia	3+4	2000 (67)
Northwest	69	880
Washington		1180
Idaho		970
Oregon		335



4-mercaptopentan-2-one (4MMP, same as 4MSP)

Tomato plant, chives, black currant, cat pee

Perceived at 1.5-6 ng/L



3-mercaptopentan-1-ol (3MH/3SH)

Grapefruit, other citrus, passionfruit, muscat, gooseberry

Perceived at 60 ng/L



3-mercaptopentan-1-ol (3MHA/3SHA)

Passionfruit, other citrus, guava, body sweat

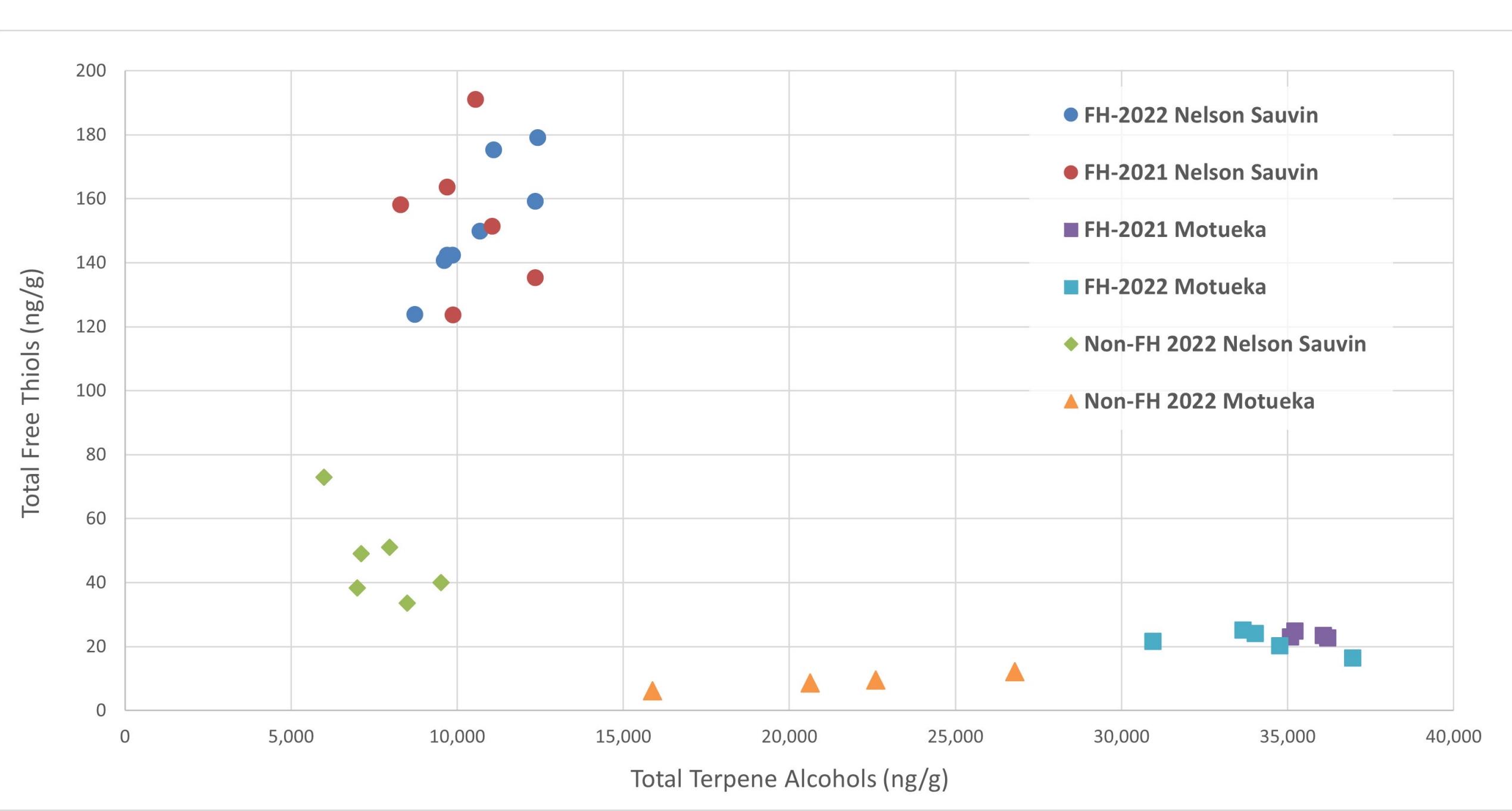
Perceived at .08-4 ng/L



3-mercaptopentan-1-ol (3M4MP/3S4MP)

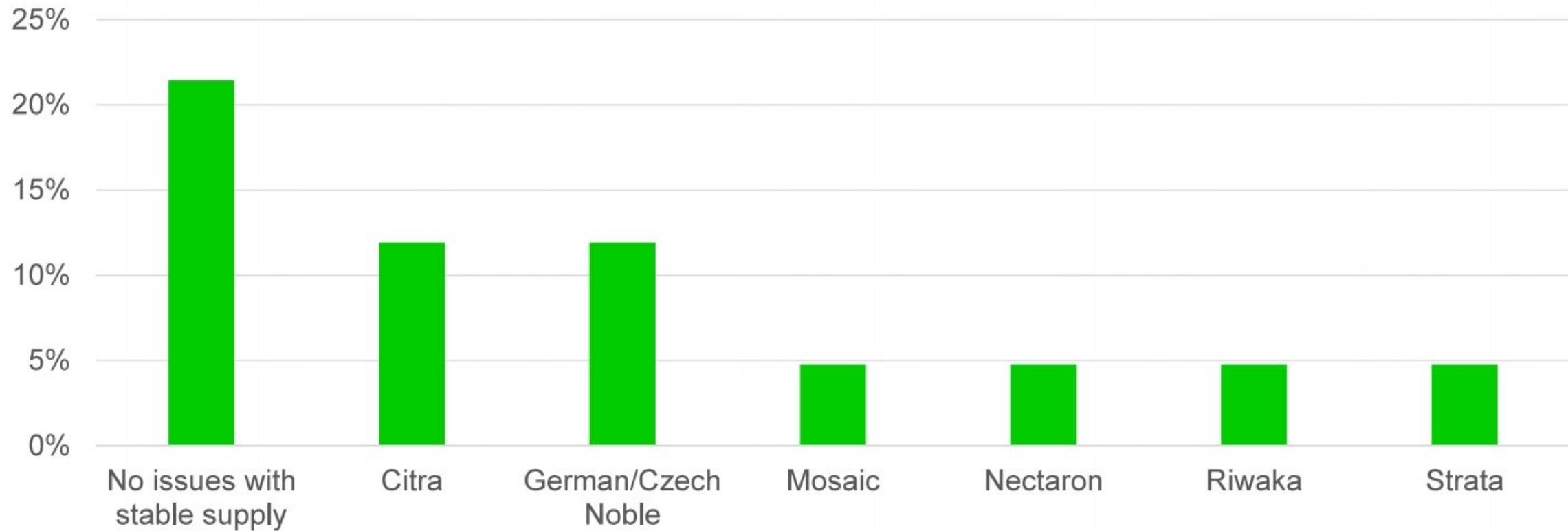
Passion fruit, grapefruit, rhubarb

Perceived at 70 ng/L



What do Brewers Want More Of?

If there were one hop you would use more of if you could get a stable supply,
what would it be?



TOP 10 PACIFIC NORTHWEST HOP VARIETIES (WITH ACREAGE)

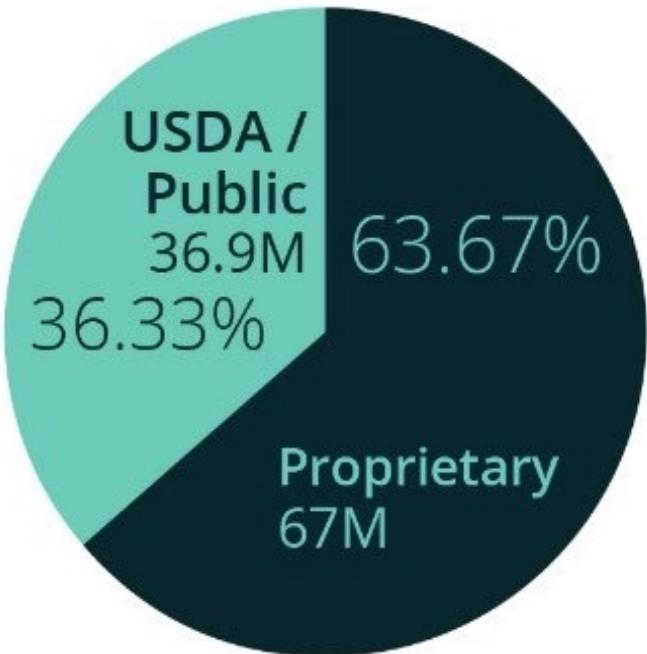
Rank	2017	2018	2019	2020	2021	2022
1	Cascade (7,175)	Citra®, HBC 394 (6,652)	Citra®, HBC 394 (9,035)	Citra®, HBC 394 (10,997)	Citra®, HBC 394 (11,981)	Citra®, HBC 394 (12,044)
2	Centennial (5,534)	CTZ (6,102)	CTZ (6,539)	CTZ (6,286)	Mosaic®, HBC 369 (6,417)	Mosaic®, HBC 369 (6,501)
3	Citra®, HBC 394 (5,284)	Cascade (6,009)	Cascade (5,280)	Mosaic®, HBC 369 (5,496)	CTZ (5,569)	Cascade (5,107)
4	CTZ (4,952)	Centennial (4,864)	Simcoe®, YCR 14 (4,365)	Simcoe®, YCR 14 (4,113)	Cascade (4,328)	CTZ (4,518)
5	Simcoe®, YCR 14 (4,598)	Simcoe®, YCR 14 (3,916)	Mosaic®, HBC 369 (4,225)	Cascade (4,038)	Simcoe®, YCR 14 (4,007)	Simcoe®, YCR 14 (4,462)
6	Mosaic®, HBC 369 (2,773)	Chinook (2,839)	Centennial (3,680)	Centennial (2,933)	Centennial (2,342)	Centennial (2,424)
7	Chinook (2,429)	Mosaic®, HBC 369 (2,768)	Amarillo®, VGXP01 (2,369)	Pahto®, HBC 682 (2,208)	Pahto®, HBC 682 (2,114)	Chinook (2,075)
8	Willamette (1,657)	Amarillo®, VGXP01 (2,734)	Chinook (2,368)	Amarillo®, VGXP01 (2,149)	Amarillo®, VGXP01 (1,907)	Amarillo®, VGXP01 (1,913)
9	Summit (1,616)	Pahto®, HBC 682 (1,659)	Pahto®, HBC 682 (2,150)	Chinook (1,893)	Chinook (1,774)	Pahto™, HBC 682 (1,709)
10	Apollo™ (912)	Summit (1,574)	Summit (1,072)	El Dorado® (1,584)	El Dorado® (1,734)	El Dorado® (1,165)
	Top Ten 36,930	Top Ten 39,117	Top Ten 41,083	Top Ten 41,697	Top Ten 42,173	Top Ten 41,918
	Other 18,670	Other 15,918	Other 15,461	Other 16,944	Other 18,699	Other 17,867
	Total 55,600	Total 55,035	Total 56,544	Total 58,641	Total 60,872	Total 59,785
	Top Ten 66.4%	Top Ten 71%	Top Ten 72.65%	Top Ten 71.1%	Top Ten 69.3%	Top Ten 70.1%

HOP PRODUCTION PUBLIC & PROPRIETARY

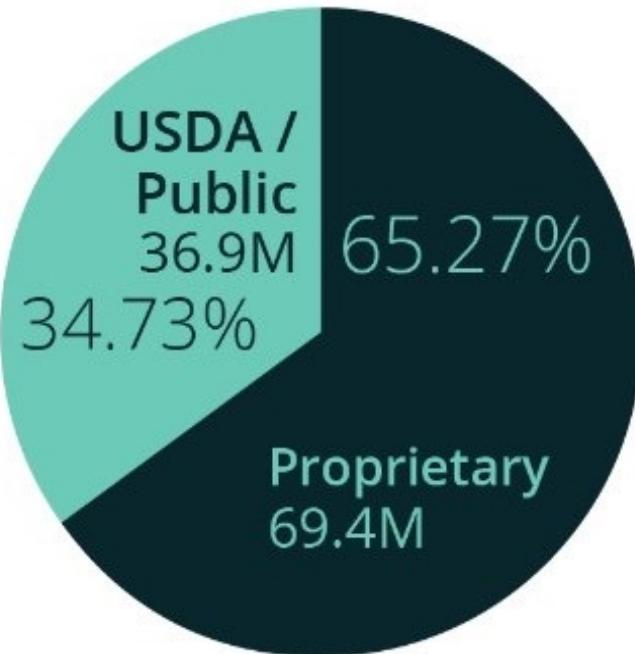
U.S. 2020-2022



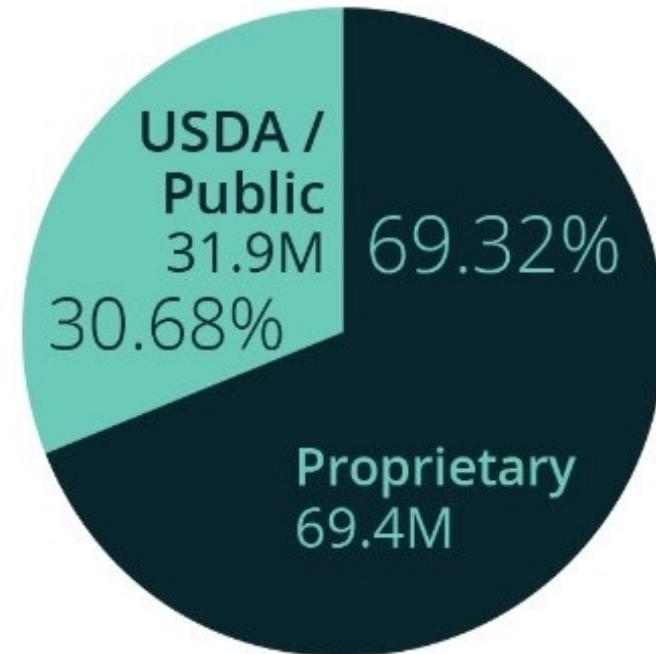
CROSBY HOPS™



2020



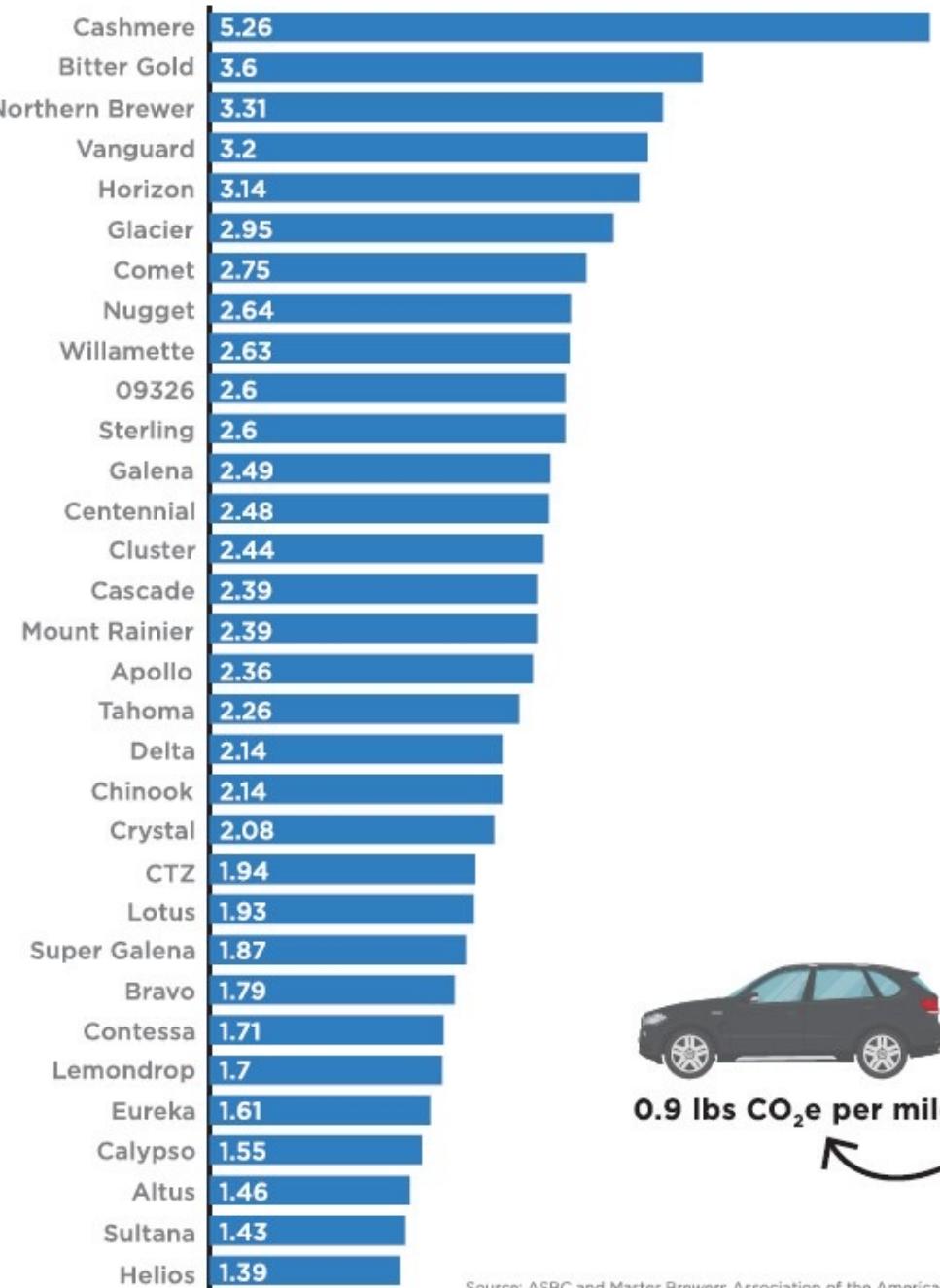
2021



2022

(pounds) (% of total)

HOP VARIETY CHEMICAL CARBON FOOTPRINT COMPARISON
CHEMICAL CO₂ EQUIVALENT LBS EMITTED PER HARVESTED HOP LB



0.9 lbs CO₂e per mile

Questions?

stan@appellationbeer.com

Hop Queries

www.appellationbeer.com/blog/hopqueries