

2022
GUIDELINES
FOR HOP BUYING



*Estimate

International Conversion Table

1 metr. ton (mt) → 1.000 kg → 2.204.6 lbs.
 100 lbs. → 45.359 kg

1 hectare (ha) → 2.471 acres
 1 acre → 0.405 hectare (ha)

1 hectolitre (hl) → 100 litres (Ltr.) → 0.8523 bbl. [USA] → 0.6114 bbl. [Brit.]
 1 bbl. [USA] → 117.34 litres (Ltr.) → 1.1734 hectolitres (hl)
 1 bbl. [Brit.] → 163.65 litres (Ltr.) → 1.6365 hectolitres (hl)

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Foreword

” For many years the brewing and hop industries have been diligently working towards improving the sustainability aspects of our entire production chain. One important area of greatly improved sustainability for Hopsteiner is our hop breeding program. Our work in this area has been prescient, given the disappointing results of crop 2022 both in Europe and the United States. The poor crops serve as a stark reminder of the importance of breeding hop varieties with greater drought, heat and disease tolerance. Many traditional hop varieties experienced lower yields and quality damage compared to newer, more technically advanced varieties. This was the case in the main hop growing countries, as heat and drought impacted Germany and the Czech Republic while a late-arriving summer made for a similar yield reduction in USA. In extreme cases in Europe, yields and alphas were down by half.

While a poor harvest brings with it many challenges, it does provide a true opportunity to prove the success of a targeted hop breeding program. However, the success of a variety does not just rely on its agronomic prowess; brewer and grower acceptance are vital in its lifecycle. It is critical that this transition begins so that the cost basis and supply chain of hops can remain intact in the face of many other challenges, for example cost inflation and the reduction in the number of permitted plant protection materials.

We stand ready to collaborate with you to achieve some of these transitions.

Your Hopsteiner Team
November 2022

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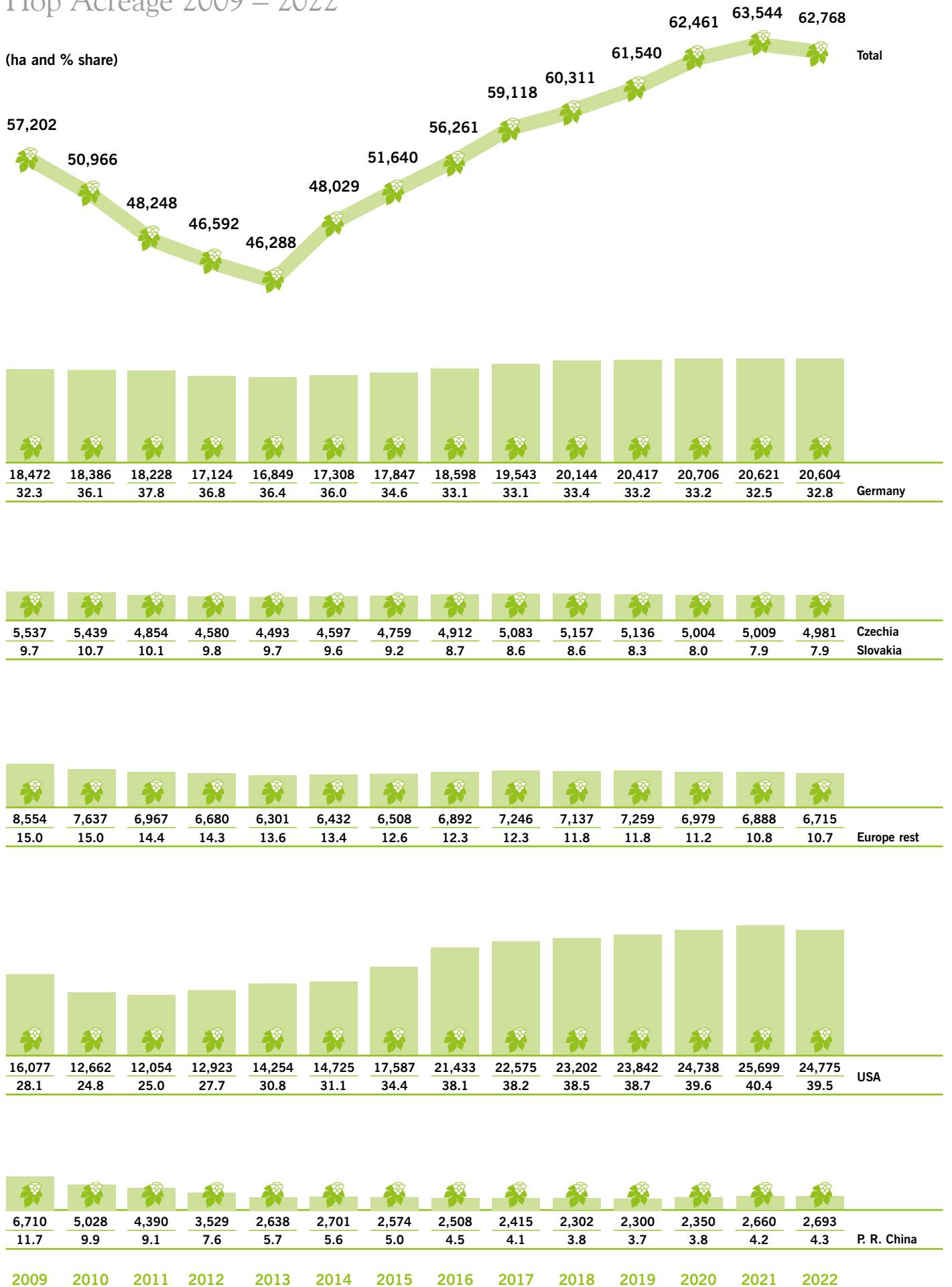


Hop Acreage 2019 – 2022

	Acreage in ha				+/- %		
	2019	2020	2021	2022	19/20	20/21	21/22
Hallertauer	506	501	478	459	- 1.0	- 4.6	- 4.0
Hersbrucker	911	898	815	804	- 1.4	- 9.2	- 1.3
Perle	2,778	2,887	2,886	2,896	+ 3.9	+ 0.0	+ 0.3
Akoya	-	24	90	105	+ 0.0	+ 275.0	+ 16.7
Spalter Select	489	491	444	426	+ 0.4	- 9.6	- 4.1
Tradition	2,637	2,718	2,661	2,579	+ 3.1	- 2.1	- 3.1
Saphir	410	369	317	299	- 10.0	- 14.1	- 5.7
Northern Brewer	145	133	127	115	- 8.3	- 4.5	- 9.4
Magnum	1,320	1,290	1,234	1,197	- 2.3	- 4.3	- 3.0
Taurus	213	196	165	157	- 8.0	- 15.8	- 4.8
Herkules	6,122	6,254	6,499	6,659	+ 2.2	+ 3.9	+ 2.5
Polaris	160	216	291	349	35.0	+ 34.7	+ 19.9
Rest	1,304	1,280	1,115	1,065	- 1.8	- 12.9	- 4.5
Hallertau	16,995	17,233	17,122	17,110	+ 1.4	- 0.6	- 0.1
Elbe-Saale	1,547	1,564	1,582	1,575	+ 1.1	+ 1.2	- 0.4
Tettngang	1,438	1,479	1,494	1,497	+ 2.9	+ 1.0	+ 0.2
Spalt	415	408	400	409	- 1.7	- 2.0	+ 2.3
Rest	22	22	23	13	+ 0.0	+ 4.5	- 43.5
Germany total	20,417	20,706	20,621	20,604	+ 1.4	- 0.4	- 0.1
Austria	252	255	255	263	+ 1.2	+ 0.0	+ 3.1
Belgium	182	182	182	181	+ 0.0	+ 0.0	- 0.5
Bulgaria	37	33	33	39	- 10.8	+ 0.0	+ 18.2
Czech Rep.	5,003	4,966	4,971	4,943	- 0.7	+ 0.1	- 0.6
England	958	867	670	652	- 9.5	- 22.7	- 2.7
France	498	500	557	548	+ 0.4	+ 11.4	- 1.6
Poland	1,762	1,758	1,758	1,726	- 0.2	+ 0.0	- 1.8
Romania	260	265	267	272	+ 1.9	+ 0.8	+ 1.9
Russia	254	254	254	400	+ 0.0	+ 0.0	+ 57.5
Slovakia	133	38	38	38	- 71.4	+ 0.0	+ 0.0
Slovenia	1,596	1,480	1,535	1,626	- 7.3	+ 3.7	+ 5.9
Spain	532	556	568	579	+ 4.5	+ 2.2	+ 1.9
Turkey	350	250	230	180	- 28.6	- 8.0	- 21.7
Ukraine	472	472	472	150	+ 0.0	+ 0.0	- 68.2
Rest	106	107	107	100	+ 0.9	+ 0.0	- 6.5
Europe total	32,812	32,689	32,518	32,300	- 0.4	- 0.5	- 0.7
Amarillo	959	870	772	858	- 9.3	- 11.3	+ 11.1
Apollo	344	368	374	390	+ 7.0	+ 1.6	+ 4.3
Bravo	96	85	103	105	- 11.5	+ 21.2	+ 1.9
Cascade	2,212	1,634	1,753	2,055	- 26.1	+ 7.3	+ 17.2
Centennial	1,475	1,187	949	1,036	- 19.5	- 20.1	+ 9.2
Chinook	946	766	719	848	- 19.0	- 6.1	+ 17.9
Citra	3,518	4,450	4,852	4,973	+ 26.5	+ 9.0	+ 2.5
Col. / Tom. / Zeus	2,645	2,544	2,255	1,652	- 3.8	- 11.4	- 26.7
Eureka!	247	264	319	411	+ 6.9	+ 20.8	+ 28.8
Mosaic	1,662	2,224	2,599	2,638	+ 33.8	+ 16.9	+ 1.5
Super Galena	223	253	226	149	+ 13.5	- 10.7	- 34.1
Willamette	429	395	392	432	- 7.9	- 0.8	+ 10.2
Rest	8,126	8,692	9,349	8,711	+ 7.0	+ 7.6	- 6.8
PNW total	22,882	23,732	24,662	24,258	+ 3.7	+ 3.9	- 1.6
Other	960	1,006	1,008	518	+ 4.8	+ 0.2	- 48.6
USA total	23,842	24,738	25,669	24,775	+ 3.8	+ 3.8	- 3.5
Argentina	160	186	178	178	+ 16.3	- 4.3	+ 0.0
Australia	700	743	787	919	+ 6.1	+ 5.9	+ 16.8
Japan	120	106	106	106	- 11.7	+ 0.0	+ 0.0
New Zealand	700	743	743	976	+ 6.1	+ 0.0	31.4
P.R.China	2,300	2,350	2,660	2,693	+ 2.2	+ 13.2	+ 1.2
South Africa	427	427	404	401	+ 0.0	- 5.4	- 0.7
Rest	479	479	479	420	+ 0.0	+ 0.0	- 12.3
World total	61,540	62,461	63,544	62,768	+ 1.5	+ 1.7	- 1.2

Hop Acreage 2009 – 2022

(ha and % share)



Crop Quantities and Average Yields 2019 – 2022

Crop Quantities in mt and availability (current crop A and pre-contracts B)						+/- %			Ø Yields in mt / ha			
	2019	2020	2021	2022*	A B	19/20	20/21	21/22*	2019	2020	2021	2022*
Hallertauer	763.9	757.3	762.6	404.0	● ●	- 0.9	+ 0.7	- 47.0	1.51	1.51	1.60	0.88
Hersbrucker	1,796.4	1,665.0	1,443.1	1,150.0	● ●	- 7.3	- 13.3	- 20.3	1.97	1.85	1.77	1.43
Perle	5,882.4	5,481.0	6,134.4	3,375.0	● ●	- 6.8	+ 11.9	- 45.0	2.12	1.90	2.13	1.17
Akoya	0	8.9	60.5	147.0	● ●	+ 0.0	+ 579.8	+ 143.0	0.00	0.37	0.67	1.40
Spalter Select	971.7	985.2	935.8	585.0	● ●	+ 1.4	- 5.0	- 37.5	1.99	2.01	2.11	1.37
Tradition	5,117.8	5,140.5	5,447.4	3,320.0	● ●	+ 0.4	+ 6.0	- 39.1	1.94	1.89	2.05	1.29
Saphir	868.6	774.6	690.0	430.0	● ●	- 10.8	- 10.9	- 37.7	2.12	2.10	2.18	1.44
Northern Brewer	265.4	244.9	231.9	108.0	● ●	- 7.7	- 5.3	- 53.4	1.83	1.84	1.83	0.94
Magnum	3,169.5	2,726.6	2,909.8	1,770.0	● ●	- 14.0	+ 6.7	- 39.2	2.40	2.11	2.36	1.48
Taurus	441.1	384.0	356.1	215.0	● ●	- 12.9	- 7.3	- 39.6	2.07	1.96	2.16	1.37
Herkules	18,579.6	18,792.8	19,172.6	15,225.0	● ●	+ 1.1	+ 2.0	- 20.6	3.03	3.00	2.95	2.29
Polaris	300.9	369.5	453.9	525.0	● ●	+ 22.8	+ 22.8	+ 15.7	1.88	1.71	1.56	1.50
Others	3,326.9	2,963.5	2,494.9	1,746.0		- 10.9	- 15.6	- 30.0	2.55	2.35	2.24	1.64
Hallertau	41,484.2	40,284.9	41,093.0	29,000.0		- 2.9	+ 2.0	- 29.4	2.44	2.34	2.40	1.69
Elbe-Saale	3,326.8	2,980.6	3,223.3	2,500.0		- 10.4	+ 8.1	- 22.4	2.15	1.91	2.04	1.59
Tettngang	2,909.8	2,850.8	2,716.4	2,080.0		- 2.0	- 4.7	- 23.4	2.02	1.93	1.82	1.39
Spalt	706.9	717.1	807.8	400.0		+ 1.4	+ 12.6	- 50.5	1.70	1.76	2.02	0.98
Rest	44.6	45.2	21.7	20.0		+ 1.3	- 52.0	- 7.8	2.03	2.05	0.94	1.54
Germany total	48,472.3	46,878.6	47,862.2	34,000.0		- 3.3	+ 2.1	- 29.0	2.37	2.26	2.32	1.65
Austria	455.0	525.0	381.0	485.0		+ 15.4	- 27.4	+ 27.3	1.81	2.06	1.49	1.84
Belgium	296.0	274.0	293.0	257.0		- 7.4	+ 6.9	- 12.3	1.63	1.51	1.61	1.42
Bulgaria	51.9	62.5	53.4	55.0		+ 20.4	- 14.6	+ 3.0	1.40	1.89	1.62	1.41
Czech Rep.	7,145.0	5,925.0	8,481.4	4,291.3		- 17.1	+ 43.1	- 49.4	1.43	1.19	1.71	0.87
England	1,430.0	924.0	916.5	550.0		- 35.4	- 0.8	- 40.0	1.49	1.07	1.37	0.84
France	822.0	767.0	937.0	804.0		- 6.7	+ 22.2	- 14.2	1.65	1.53	1.68	1.47
Poland	3,765.5	3,637.0	3,388.0	2,900.0		- 3.4	- 6.8	- 14.4	2.14	2.07	1.93	1.68
Romania	195.0	225.0	240.0	200.0		+ 15.4	+ 6.7	- 16.7	0.75	0.85	0.90	0.74
Russia	350.0	350.0	350.0	500.0		+ 0.0	+ 0.0	+ 42.9	1.38	1.38	1.38	1.25
Slovakia	110.0	26.0	40.2	26.0		- 76.4	+ 54.6	- 35.3	0.83	0.68	1.06	0.68
Slovenia	2,600.0	2,723.0	2,186.0	2,100.0		+ 4.7	- 19.7	- 3.9	1.63	1.84	1.42	1.29
Spain	840.0	908.0	957.0	887.0		+ 8.1	+ 5.4	- 7.3	1.58	1.63	1.68	1.53
Turkey	390.0	340.0	290.0	220.0		- 12.8	- 14.7	- 24.1	1.11	1.36	1.26	1.22
Ukraine	480.0	492.0	500.0	158.0		+ 2.5	+ 1.6	- 68.4	1.02	1.04	1.06	1.05
Rest	112.0	117.7	106.9	94.0		+ 5.1	- 9.2	- 12.1	1.06	1.10	1.00	0.94
Europe total	67,514.6	64,174.8	66,982.6	47,527.3		- 4.9	+ 4.4	- 29.0	2.06	1.96	2.06	1.47
Amarillo	2,029.0	1,659.3	1,507.7	1,540.4	● ●	- 18.2	- 9.1	+ 2.2	2.12	1.91	1.95	1.80
Apollo	1,055.7	948.6	1,205.1	1,083.7	● ●	- 10.1	+ 27.0	- 10.1	3.07	2.58	3.22	2.78
Bravo	344.3	215.5	306.8	273.2	● ●	- 37.4	+ 42.4	- 11.0	3.59	2.54	2.98	2.60
Cascade	4,588.6	2,808.5	3,108.9	3,239.0	● ●	- 38.8	+ 10.7	+ 4.2	2.07	1.72	1.77	1.58
Centennial	2,964.8	2,189.6	1,650.6	1,585.6	● ●	- 26.1	- 24.6	- 3.9	2.01	1.84	1.74	1.53
Chinook	2,145.2	1,408.0	1,547.2	1,524.1	● ●	- 34.4	+ 9.9	- 1.5	2.27	1.84	2.15	1.80
Citra	5,684.8	7,710.7	8,343.6	7,515.9	● ●	+ 35.6	+ 8.2	- 9.9	1.62	1.73	1.72	1.51
Col./Tom./Zeus	7,916.9	6,532.8	6,952.6	5,071.3	● ●	- 17.5	+ 6.4	- 27.1	2.99	2.57	3.08	3.07
Eureka!	802.8	674.3	994.1	994.7	● ●	- 16.0	+ 47.4	+ 0.1	3.25	2.55	3.12	2.42
Mosaic	3,928.1	5,204.5	6,184.5	6,395.2	● ●	+ 32.5	+ 18.8	+ 3.4	2.36	2.34	2.38	2.42
Super Galena	707.2	754.2	701.8	417.7	● ●	+ 6.6	- 6.9	- 40.5	3.17	2.98	3.11	2.80
Willamette	808.3	774.6	598.7	614.6	● ●	- 4.2	- 22.7	+ 2.7	1.88	1.96	1.53	1.42
Rest	17,845.4	16,206.7	19,327.2	15,879.8		- 9.2	19.3	- 17.8	2.20	1.86	2.07	1.82
PNW total	50,821.1	47,087.3	52,428.8	46,135.2		- 7.3	11.3	- 12.0	2.22	1.98	2.13	1.90
Others	815.0	453.6	113.4	113.4		- 44.3	- 75.0	+ 0.0	0.85	0.45	0.11	0.22
USA total	51,636.1	47,540.9	52,542.2	46,248.6		- 7.9	+ 10.5	- 12.0	2.17	1.92	2.05	1.87
Argentina	266.0	331.0	268.0	325.0		+ 24.4	- 19.0	+ 21.3	1.66	1.78	1.51	1.83
Australia	1,645.0	1,714.0	1,704.0	1,824.0		+ 4.2	- 0.6	+ 7.0	2.35	2.31	2.17	1.98
Japan	202.0	202.0	202.0	202.0		+ 0.0	+ 0.0	+ 0.0	1.68	1.91	1.91	1.91
New Zealand	1,019.0	1,250.0	1,250.0	1,250.0		+ 22.7	+ 0.0	+ 0.0	1.46	1.68	1.68	1.28
P.R.China	5,481.1	5,510.0	6,100.0	6,055.0		+ 0.5	+ 10.7	- 0.7	2.38	2.34	2.29	2.25
South Africa	727.0	706.0	739.0	751.0		- 2.9	+ 4.7	+ 1.6	1.70	1.65	1.83	1.87
Rest	669.0	565.0	565.0	550.0		- 15.5	+ 0.0	- 2.7	1.40	1.18	1.18	1.31
World total	129,159.8	121,993.7	130,352.8	104,732.9		- 5.5	+ 6.9	- 19.7	2.10	1.95	2.05	1.67

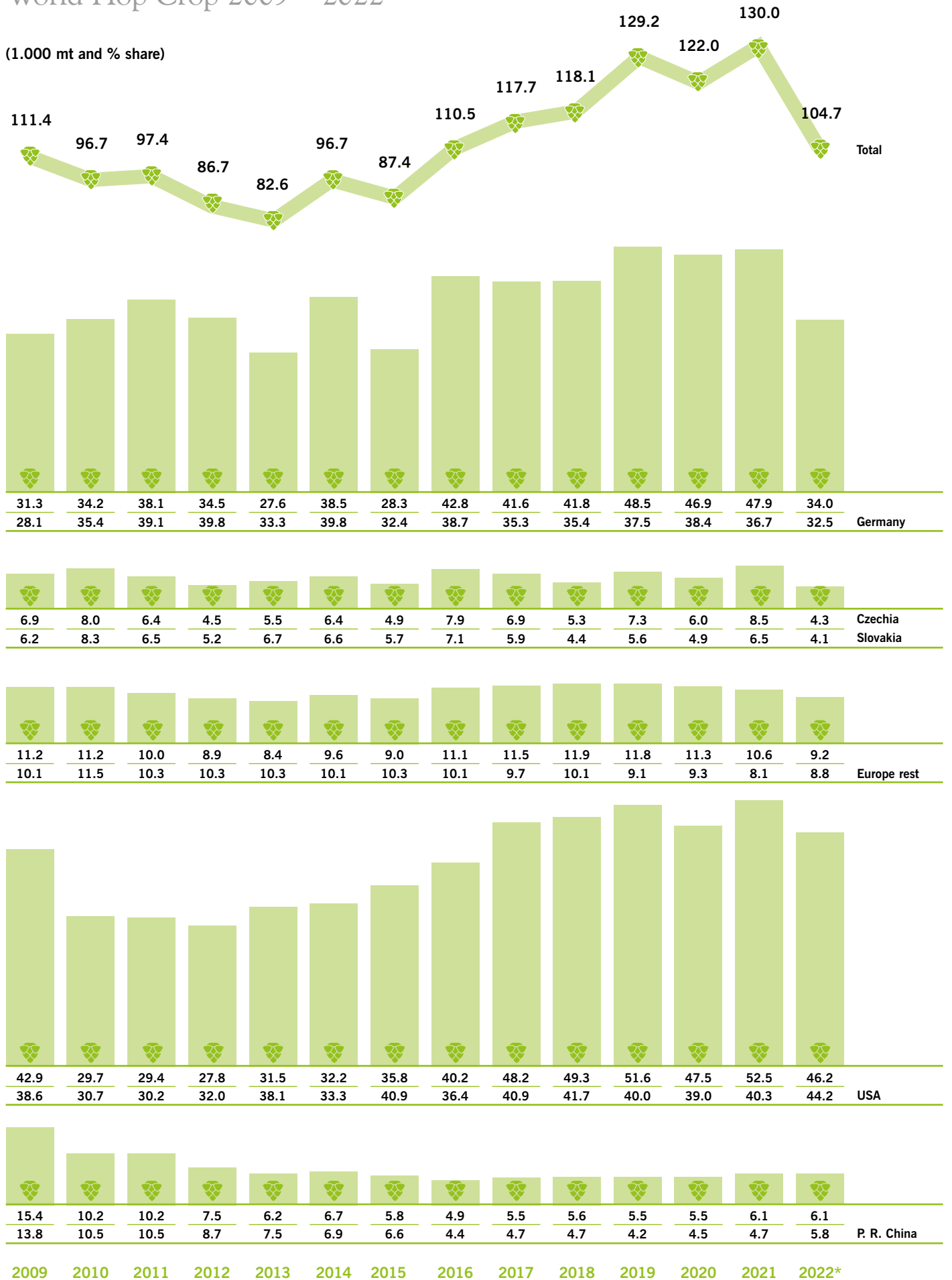
PNW = Pacific Northwest

● available ● still available ● not available

*Estimate

World Hop Crop 2009 – 2022

(1.000 mt and % share)



*Estimate

Hopsteiner Laboratory Values 2019 – 2022

Alpha Content in %					Alpha Content in %				
Aroma Varieties	2019	2020	2021	2022	Bitter Varieties	2019	2020	2021	2022
Hersbrucker	2.5	3.3	4.6	1.9	Herkules	16.2	16.6	18.7	15.4
Perle	6.7	7.4	9.0	4.9	Magnum	12.3	14.2	16.0	12.2
Tradition	5.4	6.3	6.1	5.2	Taurus	16.1	15.5	17.8	14.6
Select	4.4	5.2	6.4	3.3	US Super Galena	14.8	15.0	14.5	15.5
Tettnang	3.8	4.3	4.7	2.6	US Bravo	15.1	14.5	15.5	14.8
Spalt	3.9	4.7	5.2	2.8	US Nugget	13.3	13.6	12.5	14.0
Saaz	3.4	3.6	4.0	2.8	US Eureka!	18.3	18.2	18.0	17.0
Steirer Aurora	7.8	11.4	6.8	7.0	CTZ	14.5	14.9	15.2	14.5
Steirer Golding (Celeia)	3.4	4.1	3.3	2.6	Pride of Ringwood	9.4	9.5	9.1	10.1
US Cascade	6.2	6.4	6.5	6.0					
US Willamette	5.0	4.9	5.0	4.0	Dual Purpose	2019	2020	2021	2022
Northern Brewer	8.1	9.1	10.5	6.4	US Centennial	10.3	10.3	10.5	10.0
					Sultana	14.5	14.7	14.0	15.0

Worldwide use of Hops and Hop Products 2009 – 2022

	Hops total		Pellets total		Extract total	
	(mt)		(mt)	(% total)	(mt)	(% total)
2009	111,386		65,161	58.5	43,997	39.5
2010	96,680		55,108	57.0	39,639	41.0
2011	97,376		54,531	56.0	41,482	42.6
2012	86,696		47,683	55.0	37,886	43.7
2013	82,631		50,653	61.3	31,069	37.6
2014	96,670		63,319	65.5	30,934	32.0
2015	85,911		63,160	73.5	22,189	25.8
2016	110,496		84,972	76.9	23,757	21.5
2017	117,718		88,312	75.0	28,017	23.8
2018	118,105		81,053	68.6	35,573	30.1
2019	129,160		86,279	66.8	41,331	32.0
2020	121,994		85,640	70.2	35,012	28.7
2021	130,353		94,376	72.4	34,413	26.4
2022*	104,733		71,742	68.5	31,577	30.2

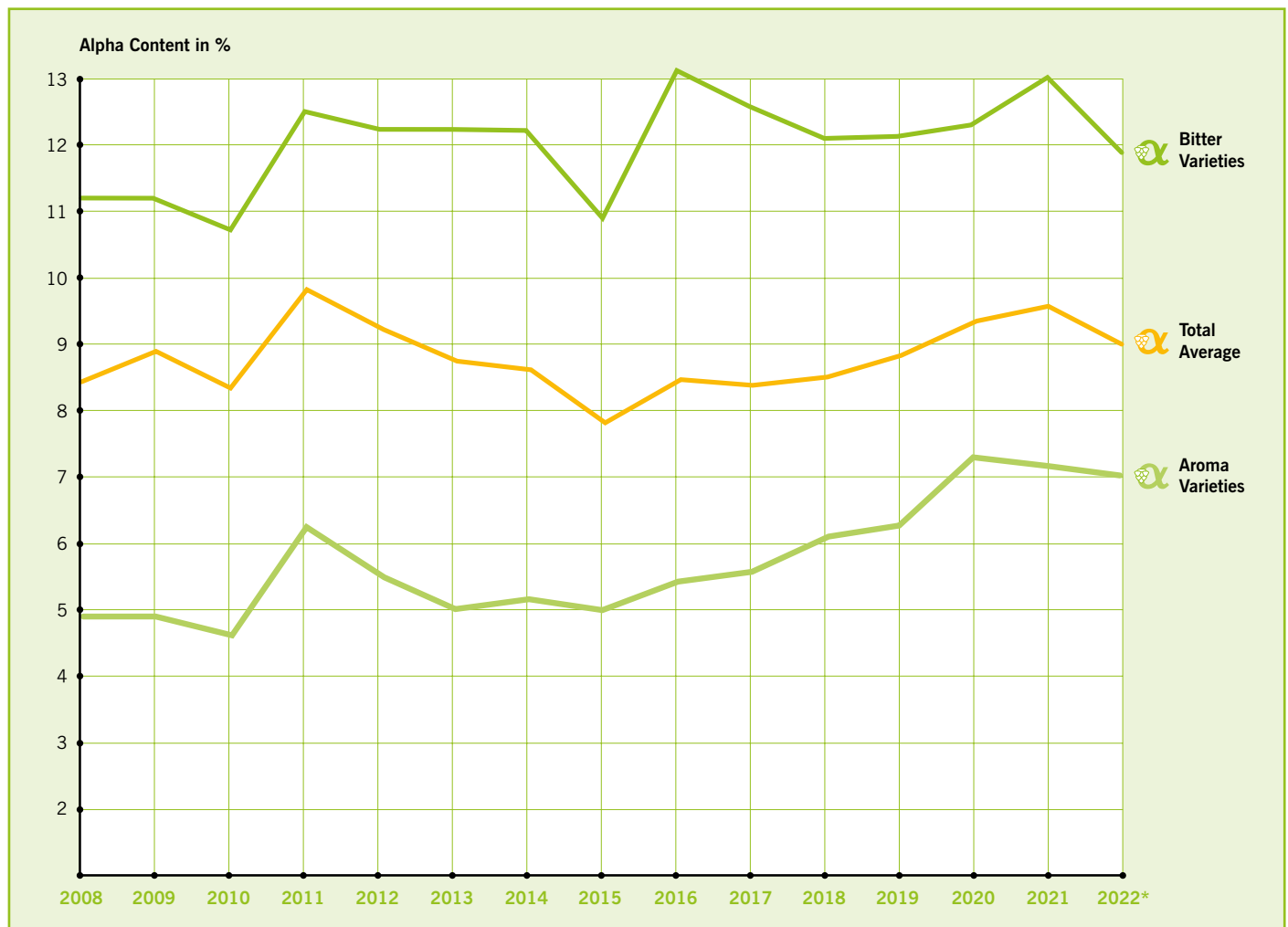
*Estimate

World Alpha Acids Production 2019 – 2022

Total Crop Quantities in mt					% share			
	2019	2020	2021	2022*	2019	2020	2021	2022*
Aroma Varieties	74,384	71,265	75,906	62,549	57.6	58.4	58.2	59.7
Bitter Varieties	55,776	50,729	54,446	42,184	43.2	41.6	41.8	40.3
Total	129,160	121,994	130,353	104,733	100.0	100.0	100.0	100.0

Alpha Amount in kg					Alpha Content in %			
	2019	2020	2021	2022*	2019	2020	2021	2022*
Aroma Varieties	4,610,200	5,167,700	5,501,500	4,387,400	6.2	7.3	7.2	7.0
Bitter Varieties	6,705,800	6,256,100	7,065,800	5,000,400	12.2	12.3	13.0	11.9
Total	11,316,000	11,423,800	12,567,300	9,387,800	8.8	9.4	9.6	9.0

Alpha Values over time 2008 – 2022



*Estimate

World Beer Production 2019 – 2022

	Beer Production in Mio hl				+/- %		
	2019	2020	2021	2022*	19/20	20/21	21/22*
Germany	91.6	87.0	85.4	86.5	- 5.0	- 1.8	+ 1.3
Russia	73.0	79.5	81.6	82.0	+ 8.9	+ 2.6	+ 0.5
England	39.5	45.0	40.6	43.0	+ 13.9	- 9.8	+ 5.9
Poland	41.0	38.4	38.2	39.0	- 6.3	- 0.5	+ 2.1
Spain	39.9	34.7	38.1	40.0	- 13.0	+ 9.8	+ 5.0
Belgium	22.5	23.5	25.1	26.0	+ 4.4	+ 6.8	+ 3.6
Netherlands	24.9	22.1	22.1	23.5	- 11.2	+ 0.0	+ 6.3
France	22.4	20.7	22.1	23.5	- 7.6	+ 6.8	+ 6.3
Czechia	21.0	18.5	19.3	19.6	- 11.9	+ 4.3	+ 1.6
Ukraine	18.2	18.0	17.0	10.0	- 1.1	- 5.6	- 41.2
Romania	19.2	16.8	16.6	17.0	- 12.5	- 1.2	+ 2.4
Italy	16.0	16.2	16.6	17.5	+ 1.3	+ 2.5	+ 5.4
Austria	9.9	9.6	9.9	10.7	- 3.0	+ 3.1	+ 8.1
Turkey	9.3	8.7	9.3	9.3	- 6.5	+ 6.9	+ 0.0
Ireland	8.1	6.7	7.5	8.5	- 17.3	+ 11.9	+ 13.3
Portugal	7.1	6.6	6.8	7.1	- 7.0	+ 3.0	+ 4.4
Denmark	5.9	5.7	5.9	6.1	- 3.4	+ 3.5	+ 3.4
Hungary	6.7	5.4	5.6	6.0	- 19.4	+ 3.7	+ 7.1
Bulgaria	5.2	4.6	4.9	5.2	- 11.5	+ 6.5	+ 6.1
Sweden	4.6	4.6	4.4	4.7	+ 0.0	- 4.3	+ 6.8
Finland	3.6	3.4	3.5	3.7	- 5.6	+ 2.9	+ 5.7
Greece	4.0	3.0	3.4	3.5	- 25.0	+ 13.3	+ 2.9
Slovakia	2.7	2.1	3.4	3.6	- 22.2	+ 61.9	+ 5.9
Croatia	3.4	3.0	3.3	3.5	- 11.8	+ 10.0	+ 6.1
Latvia	2.6	3.2	3.3	3.5	23.1	+ 3.1	+ 6.1
Norway	2.7	2.5	2.8	3.1	- 7.4	+ 12.0	+ 10.7
Switzerland	3.7	3.4	2.3	2.8	- 8.1	- 32.4	+ 21.7
Slovenia	2.0	1.9	2.0	2.0	- 5.0	+ 5.3	+ 0.0
Estonia	1.3	1.3	1.4	1.4	+ 0.0	+ 7.7	+ 0.0
Lithuania	0.8	0.7	1.0	1.0	- 12.5	+ 42.9	+ 0.0
Albania	0.7	0.6	0.6	0.7	- 14.3	+ 0.0	+ 16.7
Cyprus	0.4	0.4	0.3	0.3	+ 0.0	- 25.0	+ 0.0
Luxembourg	0.3	0.3	0.2	0.3	+ 0.0	- 33.3	+ 50.0
Malta	0.2	0.2	0.2	0.2	+ 0.0	+ 0.0	+ 0.0
Europe rest	15.5	12.5	13.8	14.0	- 19.4	+ 10.4	+ 1.4
Europe total	529.9	510.8	518.5	528.8	- 3.6	+ 1.5	+ 2.0
USA	214.0	210.0	219.5	220.0	- 1.9	+ 4.5	+ 0.2
Brazil	140.0	135.0	139.0	140.0	- 3.6	+ 3.0	+ 0.7
Mexico	116.0	112.0	120.0	120.5	- 3.4	+ 7.1	+ 0.4
Colombia	22.9	22.0	22.0	22.2	- 3.9	+ 0.0	+ 0.9
Canada	22.1	21.8	21.8	22.0	- 1.4	+ 0.0	+ 0.9
Argentina	19.2	19.0	20.0	19.8	- 1.0	+ 5.3	- 1.0
Peru	14.5	14.0	14.8	14.8	- 3.4	+ 5.7	+ 0.0
Chile	8.7	8.6	8.7	8.5	- 1.1	+ 1.2	- 2.3
Equador	5.6	5.3	5.5	5.5	- 5.4	+ 3.8	+ 0.0
Dominican Rep.	5.0	4.9	5.0	5.0	- 2.0	+ 2.0	+ 0.0
Bolivia	3.9	3.8	3.8	3.8	- 2.6	+ 0.0	+ 0.0
Panama	3.4	3.3	3.3	3.3	- 2.9	+ 0.0	+ 0.0
Paraguay	3.3	3.1	3.3	3.3	- 6.1	+ 6.5	+ 0.0
Cuba	3.1	3.1	3.1	3.1	+ 0.0	+ 0.0	+ 0.0
Guatemala	2.0	2.0	2.4	2.5	+ 0.0	+ 20.0	+ 4.2
Venezuela	4.0	1.8	2.0	2.2	- 55.0	+ 11.1	+ 10.0
Honduras	2.3	2.1	2.1	2.1	- 8.7	+ 1.0	- 0.9
Costa Rica	1.9	1.7	1.9	1.9	- 10.5	+ 11.8	+ 0.0
El Salvador	1.6	1.5	1.6	1.6	- 6.3	+ 6.7	+ 0.0
Nicaragua	1.5	1.4	1.4	1.5	- 6.7	+ 0.0	+ 7.1
Uruguay	1.1	1.1	1.1	1.1	+ 0.0	+ 0.0	+ 0.0



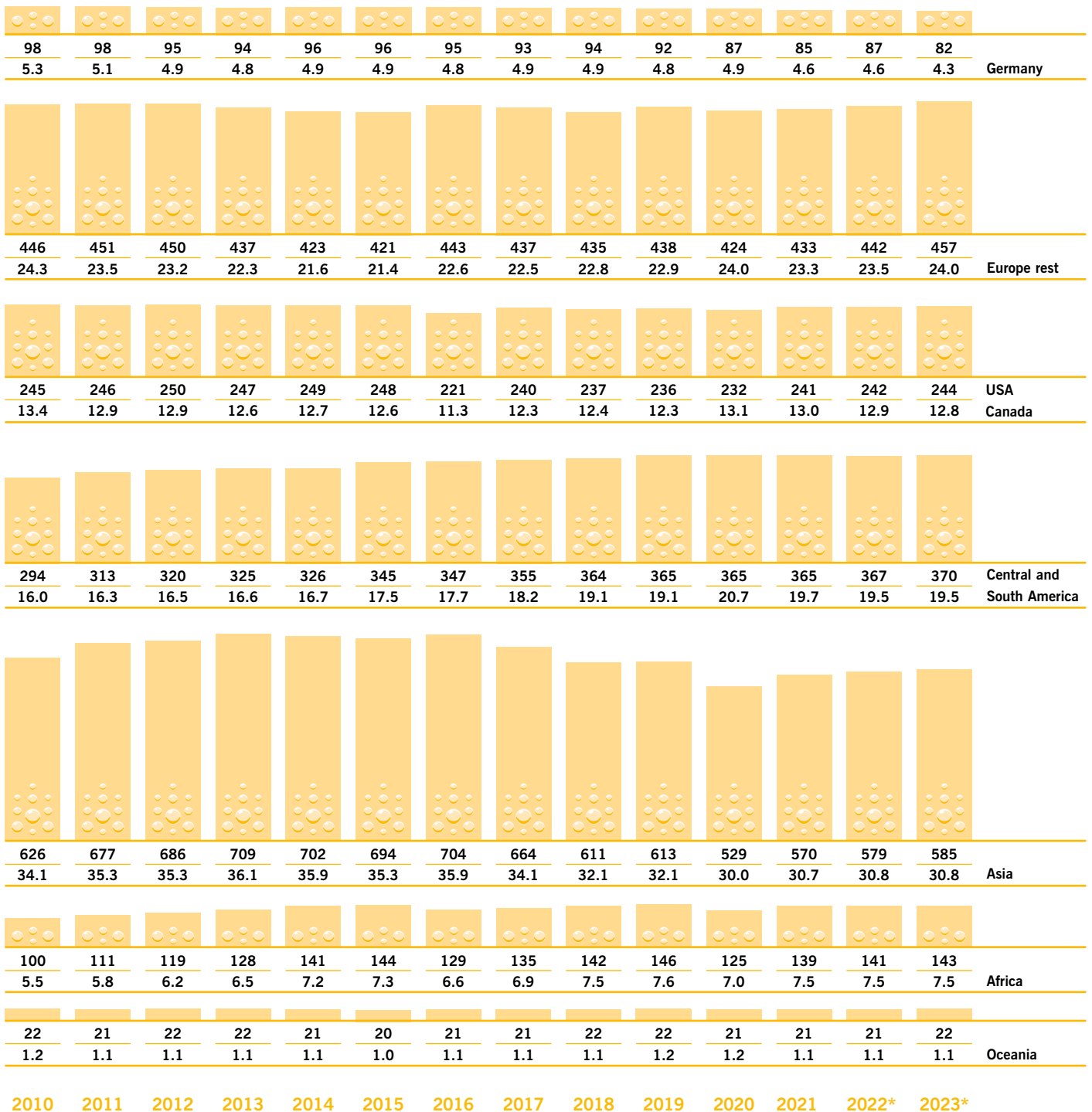
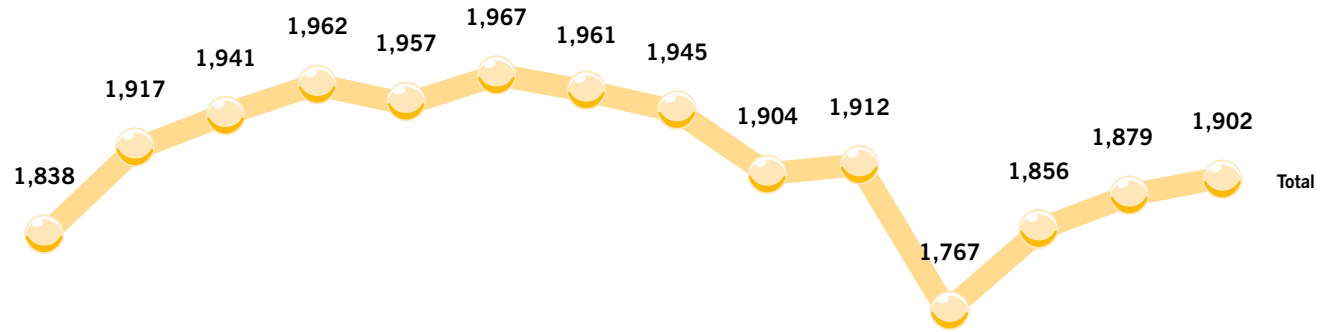
*Estimate

	Beer Production in Mio hl				+/- %		
	2019	2020	2021	2022*	19/20	20/21	21/22*
→ Trinidad	1.1	1.0	1.0	1.0	- 9.1	+ 0.0	+ 0.0
Puerto Rico	0.7	0.7	0.7	0.7	+ 0.0	+ 0.0	+ 0.0
Jamaica	1.1	1.0	0.6	0.6	- 9.1	- 40.0	+ 0.0
America rest	2.3	1.4	2.0	2.0	- 39.1	+ 42.9	+ 0.0
America total	601.3	581.6	606.6	609.0	- 3.3	+ 4.3	+ 0.4
P.R.China	375.0	329.9	365.3	355.0	- 12.0	+ 10.7	- 2.8
Japan	52.5	44.1	45.1	49.6	- 16.0	+ 2.3	+ 10.0
Vietnam	44.8	38.0	42.3	46.1	- 15.2	+ 11.3	+ 9.0
Philippines	25.2	18.5	18.3	19.5	- 26.6	- 1.1	+ 6.6
Thailand	19.5	17.0	18.9	19.4	- 12.8	+ 11.2	+ 2.6
India	24.0	19.0	16.2	18.7	- 20.8	- 14.7	+ 15.4
Cambodscha	12.0	11.6	13.8	16.2	- 3.3	+ 19.0	+ 17.4
South Korea	18.2	16.4	13.2	16.0	- 9.9	- 19.5	+ 21.2
Taiwan	5.6	4.7	5.1	5.2	- 16.1	+ 8.5	+ 2.0
Laos	5.1	4.0	4.6	4.7	- 21.6	+ 15.0	+ 2.2
Myanmar	6.0	4.1	3.1	3.0	- 31.7	- 24.4	- 3.2
Malaysia	3.1	2.7	2.7	2.9	- 12.9	+ 0.0	+ 7.4
Nepal	1.4	1.1	1.5	2.0	- 21.4	+ 36.4	+ 33.3
Singapur	1.8	1.4	1.8	1.9	- 22.2	+ 28.6	+ 5.6
Indonesia	2.2	1.6	1.8	1.9	- 27.3	+ 12.5	+ 5.6
Sri Lanka	1.5	1.2	1.3	1.5	- 20.0	+ 8.3	+ 15.4
Israel	1.3	1.2	1.3	1.3	- 7.7	+ 8.3	+ 0.0
Mongolia	1.2	0.6	0.7	0.8	- 50.0	+ 16.7	+ 14.3
Lebanon	0.2	0.2	0.2	0.2	+ 0.0	+ 0.0	+ 0.0
Jordan	0.1	0.1	0.1	0.1	+ 0.0	+ 0.0	+ 0.0
Pakistan	0.1	0.1	0.1	0.1	+ 0.0	+ 0.0	+ 0.0
Asia rest	12.2	11.9	13.0	12.9	- 2.5	+ 9.2	- 0.8
Asia total	613.0	529.4	570.4	579.0	- 13.6	+ 7.7	+ 1.5
South Africa	33.1	26.0	31.0	31.5	- 21.5	+ 19.2	+ 1.6
Nigeria	17.5	16.5	19.4	20.0	- 5.7	+ 17.6	+ 3.1
Angola	10.8	9.0	11.0	10.8	- 16.7	+ 22.2	- 1.8
Ethiopia	13.5	10.6	9.0	10.1	- 21.5	- 15.1	+ 12.2
Cameroon	6.5	6.5	7.2	7.0	+ 0.0	+ 10.8	- 2.8
Zaire	4.5	4.3	4.7	4.6	- 4.4	+ 9.3	- 2.1
Kenya	6.3	4.5	4.3	4.5	- 28.6	- 4.4	+ 4.7
Tanzania	4.4	3.9	4.5	4.5	- 11.4	+ 15.4	+ 0.0
Uganda	3.8	3.0	3.6	3.8	- 21.1	+ 20.0	+ 5.6
Mosambique	3.4	3.0	3.6	3.6	- 11.8	+ 20.0	+ 0.0
Ivory Coast	3.1	2.8	3.3	3.4	- 9.7	+ 17.9	+ 3.0
Ghana	2.0	1.5	3.0	3.3	- 25.0	100.0	+ 10.0
Zambia	2.5	3.3	2.8	2.8	32.0	- 15.2	+ 0.0
Zimbabwe	2.2	2.2	2.2	2.0	+ 0.0	+ 0.0	- 9.1
Tunisia	2.0	1.9	1.9	1.9	- 5.0	+ 0.0	+ 0.0
Algeria	1.6	1.4	1.4	1.6	- 12.5	+ 0.0	+ 14.3
Madagascar	1.6	1.6	1.1	1.2	+ 0.0	- 31.3	+ 9.1
Egypt	1.2	0.9	0.9	1.0	- 25.0	+ 0.0	+ 11.1
Marocco	0.8	0.8	0.8	0.8	+ 0.0	+ 0.0	+ 0.0
Mauritius	0.4	0.4	0.4	0.5	+ 0.0	+ 0.0	+ 25.0
Africa rest	24.3	20.4	22.8	22.1	- 16.0	+ 11.8	- 3.1
Africa total	145.5	124.5	138.9	141.0	- 14.4	+ 11.6	+ 1.5
Australia	17.5	16.6	16.8	17.0	- 5.1	+ 1.2	+ 1.2
New Zealand	3.0	2.7	2.9	2.9	- 10.0	+ 7.4	+ 0.0
Oceania rest	1.6	1.5	1.4	1.5	- 6.3	- 6.7	+ 7.1
Oceania total	22.1	20.8	21.1	21.4	- 5.9	+ 1.4	+ 1.4
World total	1,911.8	1,767.1	1,855.5	1,879.2	- 7.6	+ 5.0	+ 1.3

*Estimate

World Beer Production 2010– 2023

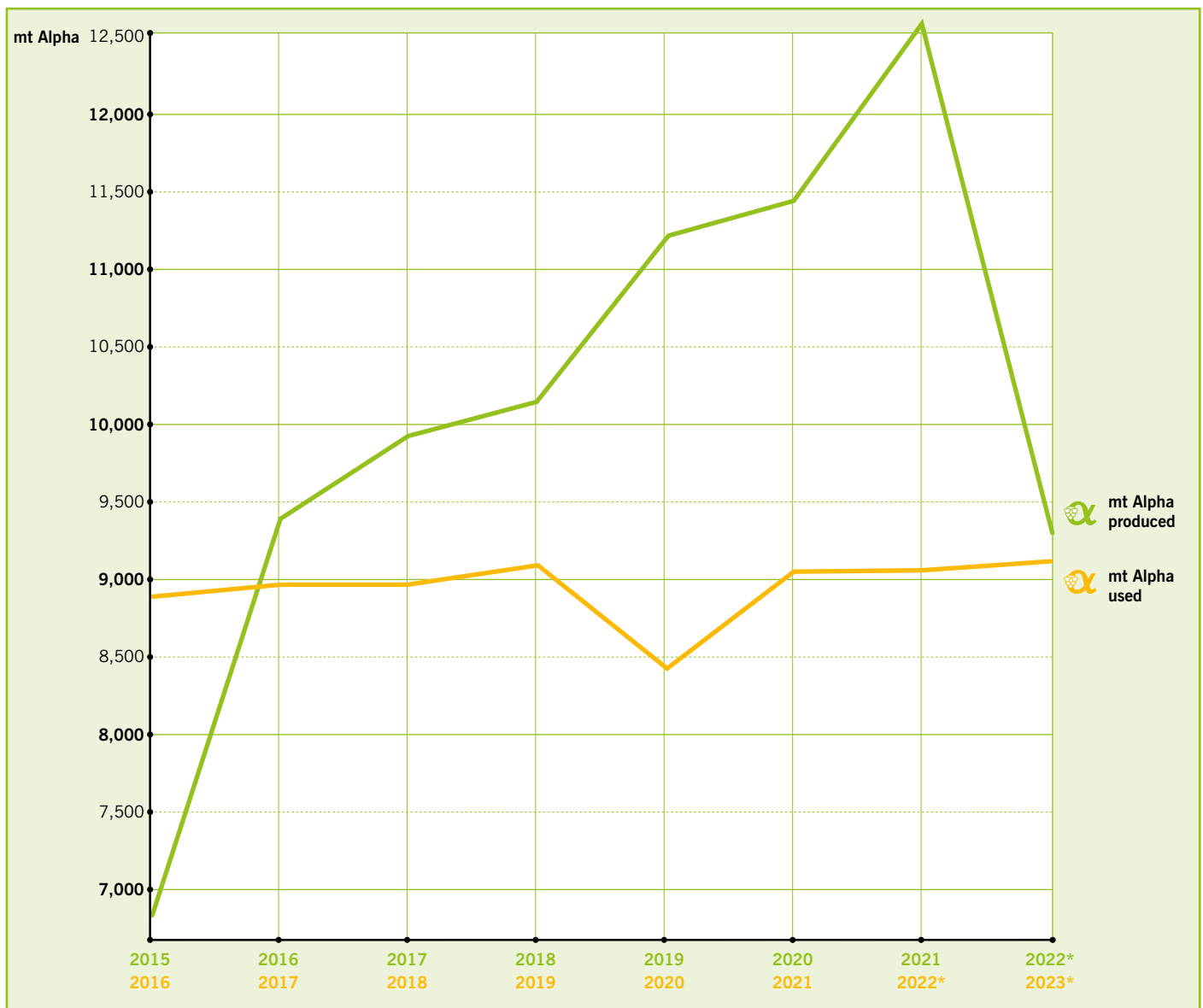
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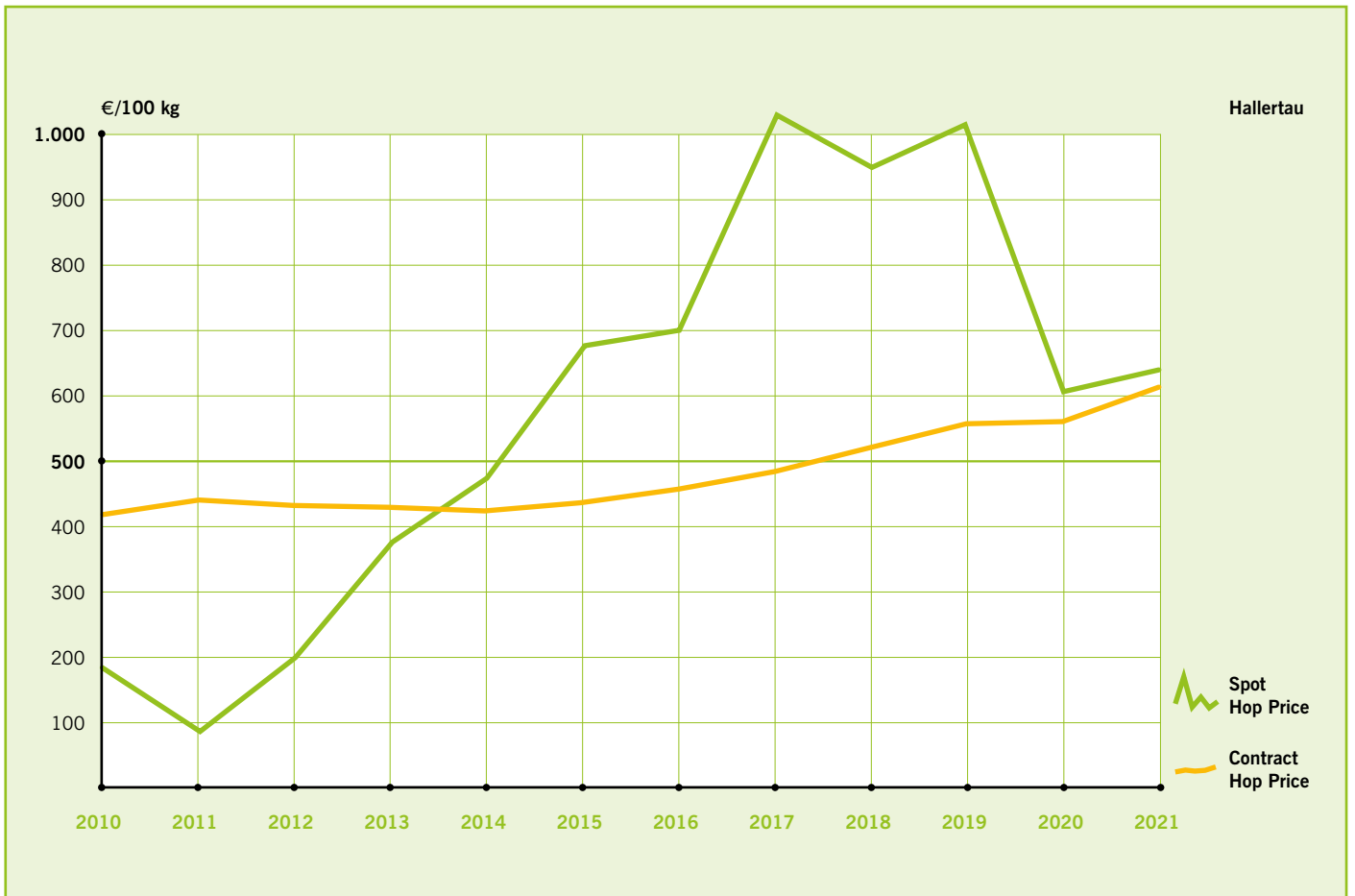
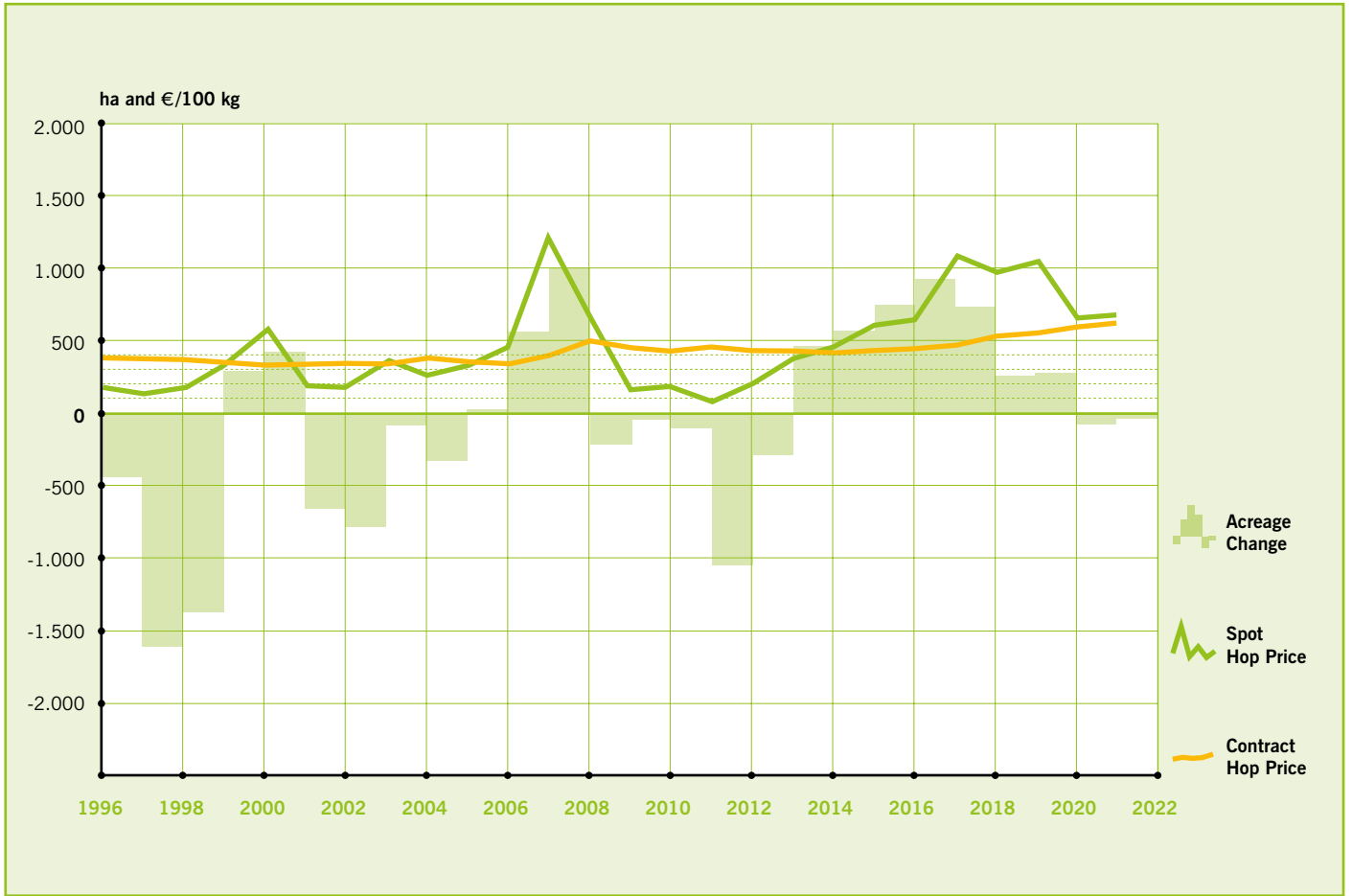
*Estimate

World Hop Acid Supply and Demand 2015 – 2022

	Production (mt Alpha)	Beer Production (Mio hl)	Alpha Dosage (g Alpha/hl)	Alpha Usage (mt Alpha)	Annual Balance (mt Alpha)	
2015	6,838	2016	1,961	4.5	8,825	- 1,987
2016	9,373	2017	1,945	4.6	8,947	426
2017	9,901	2018	1,904	4.7	8,949	952
2018	10,123	2019	1,912	4.9	9,369	754
2019	11,316	2020	1,767	4.8	8,482	2,834
2020	11,424	2021	1,856	4.9	9,094	2,330
2021	12,567	2022*	1,879	4.8	9,019	3,548
2022*	9,388	2023*	1,902	4.8	9,130	258



*Estimate



Hop Market Review and Outlook

Retrospective

In Europe crop 2021 was very good, with above-average yields and alpha values. The acreage was slightly less than in 2020 but produced approximately 2,800 more mt hops. The total crop size was 66,983 mt. The Czech Republic's crop was a record.

In USA the crop of 52,542 mt was solid. The larger crop, combined with a reduction of craft beer sold, meant an increase in the inventory of standard craft beer hop varieties, along with a few specialty varieties whose acreage and production exceeded demand.

The sold-ahead percentage of crop 2021 was very high, but the size of the crop exceeded even those levels, which led to the first meaningful European spot market in quite some time. The excellent quality of the overall crop was a big help in selling the excess volumes. Some volumes were used in advance for crop 2022, which was an important move given what we now know about the small 2022 crop.

The average alpha value of crop 2021 was 9.6%, an increase from the 9.4% of crop 2020. With an expected 2022 world beer production of 1.879 mhl and a calculated demand of 9,019 mt alpha, the crop produced an assumed surplus of approximately 3,550 mt alpha acids.

Look Ahead

Hop acreage was reduced in 2022 due to the generally well-supplied market. There were slight reductions in the UK, Poland, Czech, Slovenia and Germany. In USA the reduction was approximately 3.5%.

In Europe, Crop 2022 was adversely affected by both multiple hailstorms and hot, dry weather. In USA a wet and cold spring hampered plant development and also caused an unusually strong outbreak of downy mildew. The crop was not able to recover from these setbacks. Overall the estimated volume of 46,250 MT represents a decline of 12% from 2021. The corresponding yield of 1.87 tons/hectare is a drop from 2.05 the prior year.

The crop in Germany of 34,000 mt is extremely disappointing. In addition to a loss of approximately 2,000 mt to hailstorms, high temperatures and scant precipitation during the prime growing months severely curtailed the crop's development. Some varieties, for example Perle, had their yields drop 45%. It goes without saying the challenge that result presents for the market. Further to the yield problems are alpha levels that put several German aroma varieties into the alpha clause price/volume adjustment zone. All customers are informed of this and we are working to arrive at solutions for each.

Most other European growing countries experienced similar problems with their crops, whether from hot dry weather, storms or disease infestation. This also means that aroma hops from these areas will also be affected by the alpha clause. The only exception was Poland, where better rainfall allowed for a decent crop to develop. The total European crop of approximately 47,527 mt represents a drop of 29% from 2021.

Hop growing areas in Argentina, Australia, Japan, New Zealand, South Africa and China had average to good harvests in 2022. The worldwide crop of 104,733 mt is therefore approximately 20% less than in 2021. The average alpha level is 9.0% compared with 9.6% in 2021.



According to current 2022 and estimated 2023 volumes, beer production is growing slightly. Nevertheless, the craft beer segment has not regained its pre-pandemic growth trajectory. A review of various analyses shows a drop of approximately 2%. We are basing our 2023 hop supply-demand calculation on a worldwide alpha dosage of 4.8 grams of alpha per hectoliter. If we project 2023's world beer production to be 1,902 mhl, the global demand for hops is approximately 9,130 mt alpha. This results in a slight surplus of 258 mt based on 2022's estimated alpha production of 9,388 mt. Clearly each variety has its own market, but with the crop being so much below normal, this general analysis does apply across many of the individual varieties, several of which will not meet contracts. Discussions with customers are well underway.

Crop 2022 illustrates the great value of holding reasonable inventory of hops. This will remain critical into the future, as non-weather factors such as longer transit times, changing plant protection rules and cost inflation take on greater negative roles for the hop supply chain. Breweries also need to institute best practices for approving newer and alternative varieties to mitigate supply risks. Hop varieties bred with greater sustainability should be actively considered and approved for use. Improved yields and greater disease resistance mean stabilized costs, fewer acres, less water consumption and greater production efficiency. We have a fine range of sustainable varieties and continue to work on breeding challenges. We look forward to working with breweries towards these goals.


Hopsteiner®

COMMITTED TO THE BREWER.



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