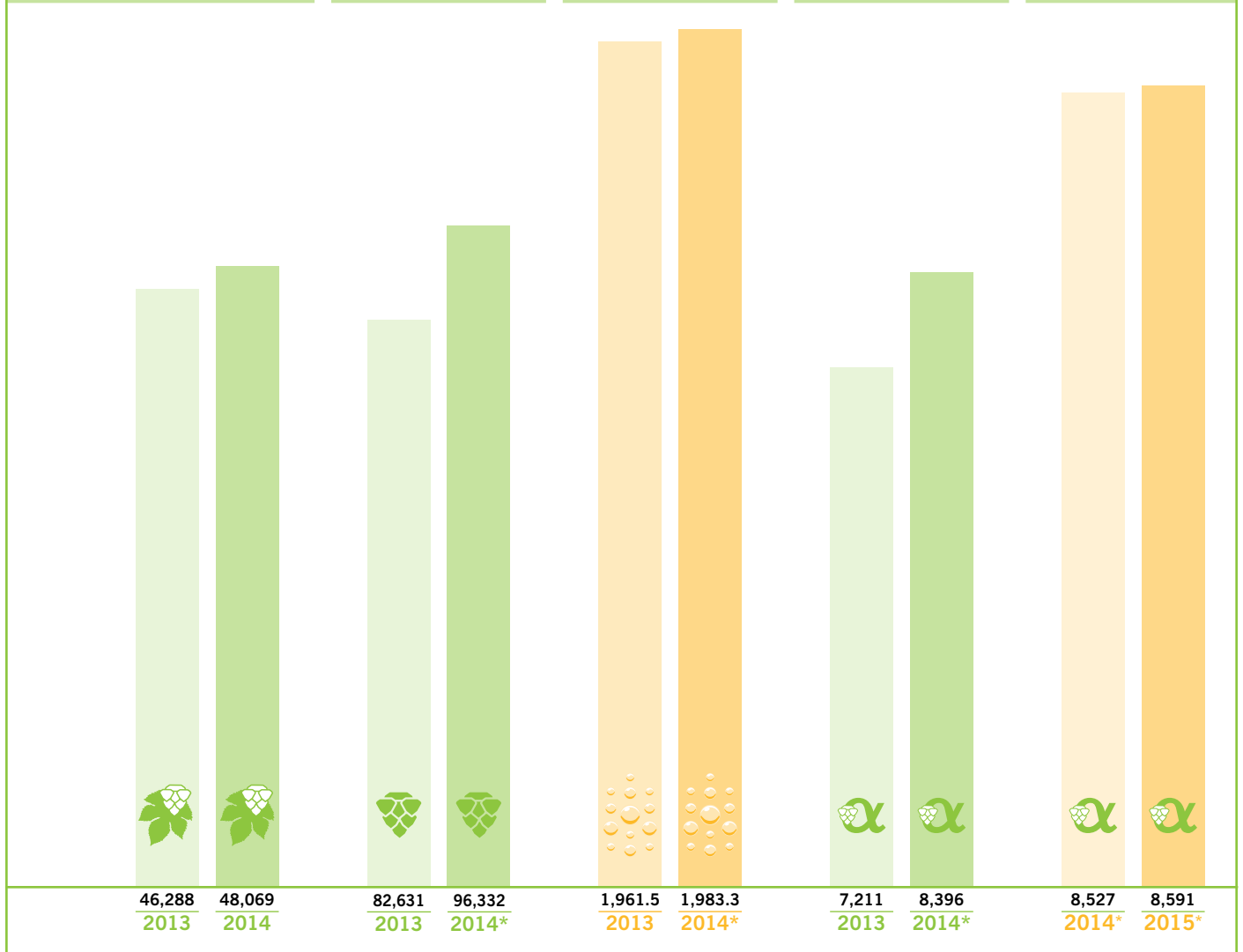


2014
GUIDELINES
FOR HOP BUYING

| | World Hop Acreage | World Hop Crop | World Beer Production | World Alpha Acids Production | World Alpha Acids Demand |
|-------------|-------------------|----------------|-----------------------|------------------------------|--------------------------|
| | (ha) | (mt) | (Mio. hl) | (mt) | (mt) |
| 2012 | 46,592 | 86,696 | 1,941.0 | 7,955 | 8,152 |
| | - 3.4 % | - 11.0 % | + 1.3 % | - 16.8 | + 6.3 % |
| 2013 | 46,288 | 82,631 | 1,961.5 | 7,211 | 8,240 |
| | - 0.6 % | - 4.7 % | + 1.1 % | - 9.4 | + 1.1 % |
| 2014 | 48,069 | 96,332* | 1,983.3* | 8,396* | 8,527* |
| | + 3.8 % | + 16.6 %* | + 1.1 %* | - 16.4* | + 3.5 %* |
| 2015 | - | - | 1,997.9* | - | 8,591* |
| | - | - | + 0.7 %* | - | + 0.8 %* |



*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)

Foreword

” Growth in the craft segment of the brewing industry continues to outpace that of the overall beer market. The effect of this growth upon the hop industry is enormous as it combines the high hopping rate of craft with a move from bitter to aroma hops and a range of new varieties.

As a result of the impact of craft on the hop industry, we have changed the way we come to a composite analysis of the world demand for alpha acids. This change significantly impacts the overall alpha balance calculation and thus influencing the entire world hop market.

We trust you find our report informative and useful. We will continue to keep you updated with market developments.

“

October 2014
S. S. Steiner, Inc.
Simon H. Steiner, Hopfen, GmbH
Steiner Hops Limited



- *Hallertauer Hopfenveredelungs-
gesellschaft mbH
Au, Hallertau, Pelletwerk*
- *Hallertauer Hopfenveredelungs-
gesellschaft mbH
Mainburg, Hallertau,
Ethanol- und CO₂-Extraktion*
- *Hops Extract Corporation
of America, Yakima, Washington,
CO₂-Extraktion*
- *Golden Gate Hop Ranches Inc.
Yakima, Washington,
Hopfenanbaubetrieb*

Hop Acreage 2011 – 2014

| | Acreage in ha | | | | +/- % | | |
|----------------------|---------------|---------------|---------------|---------------|--------------|---------------|--------------|
| | 2011 | 2012 | 2013 | 2014 | 11/12 | 12/13 | 13/14 |
| Hallertauer | 729 | 716 | 687 | 623 | - 1.8 | - 4.1 | - 9.3 |
| Hersbrucker | 773 | 782 | 843 | 919 | + 1.2 | + 7.8 | + 9.0 |
| Perle | 3,129 | 2,965 | 2,813 | 2,857 | - 5.2 | - 5.1 | + 1.6 |
| Spalter Select | 614 | 448 | 408 | 434 | - 27.0 | - 8.9 | + 6.4 |
| Tradition | 2,634 | 2,624 | 2,537 | 2,696 | - 0.4 | - 3.3 | + 6.3 |
| Saphir | 220 | 237 | 308 | 360 | + 7.7 | + 30.0 | + 16.9 |
| Northern Brewer | 220 | 190 | 184 | 173 | - 13.6 | - 3.2 | - 6.0 |
| Magnum | 3,164 | 2,696 | 2,360 | 1,934 | - 14.8 | - 12.5 | - 18.1 |
| Nugget | 213 | 179 | 156 | 145 | - 16.0 | - 12.8 | - 7.1 |
| Taurus | 925 | 795 | 682 | 564 | - 14.1 | - 14.2 | - 17.3 |
| Herkules | 2,422 | 2,457 | 2,869 | 3,345 | + 1.4 | + 16.8 | + 16.6 |
| Rest | 185 | 170 | 238 | 417 | - 8.1 | + 40.0 | + 75.2 |
| Hallertau | 15,229 | 14,258 | 14,086 | 14,467 | - 6.4 | - 1.2 | + 2.7 |
| Elbe-Saale | 1,392 | 1,284 | 1,186 | 1,265 | - 7.8 | - 7.6 | + 6.7 |
| Tettngang | 1,222 | 1,215 | 1,208 | 1,209 | - 0.6 | - 0.6 | + 0.1 |
| Spalt | 366 | 348 | 350 | 348 | - 4.9 | + 0.6 | - 0.6 |
| Rest | 20 | 20 | 20 | 20 | + 0.0 | + 0.0 | + 0.0 |
| Germany total | 18,228 | 17,124 | 16,849 | 17,309 | - 6.1 | - 1.6 | + 2.7 |
| Austria | 239 | 239 | 246 | 251 | + 0.0 | + 2.9 | + 2.0 |
| Belgium | 189 | 189 | 158 | 148 | + 0.0 | - 16.4 | - 6.3 |
| Bulgaria | 150 | 150 | 105 | 14 | + 0.0 | - 30.0 | - 86.7 |
| Czech Rep. | 4,632 | 4,366 | 4,319 | 4,472 | - 5.7 | - 1.1 | + 3.5 |
| England | 1,113 | 1,051 | 982 | 958 | - 5.6 | - 6.6 | - 2.4 |
| France | 492 | 439 | 381 | 439 | - 10.8 | - 13.2 | + 15.2 |
| Poland | 1,297 | 1,510 | 1,357 | 1,404 | + 16.4 | - 10.1 | + 3.5 |
| Romania | 241 | 245 | 250 | 250 | + 1.7 | + 2.0 | + 0.0 |
| Russia | 158 | 158 | 158 | 158 | + 0.0 | + 0.0 | + 0.0 |
| Slovakia | 222 | 214 | 174 | 138 | - 3.6 | - 18.7 | - 20.7 |
| Slovenia | 1,376 | 1,160 | 1,165 | 1,216 | - 15.7 | + 0.4 | + 4.4 |
| Spain | 533 | 540 | 485 | 536 | + 1.3 | - 10.2 | + 10.5 |
| Turkey | 350 | 350 | 350 | 350 | + 0.0 | + 0.0 | + 0.0 |
| Ukraine | 646 | 465 | 469 | 362 | - 28.0 | + 0.9 | - 22.8 |
| Rest | 184 | 184 | 195 | 195 | + 0.0 | + 6.0 | + 0.0 |
| Europe total | 30,049 | 28,384 | 27,643 | 28,200 | - 5.5 | - 2.6 | + 2.0 |
| Apollo | 358 | 354 | 404 | 399 | - 1.1 | + 14.1 | - 1.2 |
| Bravo | 240 | 214 | 241 | 287 | - 10.8 | + 12.6 | + 19.1 |
| Cascade | 853 | 1,230 | 2,140 | 2,692 | + 44.2 | + 74.0 | + 25.8 |
| Centennial | 259 | 682 | 880 | 1,371 | + 163.3 | + 29.0 | + 55.8 |
| Chinook | 231 | 492 | 704 | 713 | + 113.0 | + 43.1 | + 1.3 |
| Col. / Tom. / Zeus | 2,876 | 2,337 | 2,493 | 2,343 | - 18.7 | + 6.7 | - 6.0 |
| Nugget | 930 | 1,009 | 834 | 671 | + 8.5 | - 17.3 | - 19.5 |
| Summit | 1,002 | 850 | 1,151 | 1,073 | - 15.2 | + 35.4 | - 6.8 |
| Super Galena | 498 | 459 | 491 | 367 | - 7.8 | + 7.0 | - 25.3 |
| Willamette | 677 | 646 | 435 | 470 | - 4.6 | - 32.7 | + 8.0 |
| Rest | 4,130 | 4,650 | 4,481 | 5,150 | + 12.6 | - 3.6 | + 14.9 |
| USA total | 12,054 | 12,923 | 14,254 | 15,536 | + 7.2 | + 10.3 | + 9.0 |
| Argentina | 188 | 188 | 195 | 195 | + 0.0 | + 3.7 | + 0.0 |
| Australia | 455 | 452 | 449 | 408 | - 0.7 | - 0.7 | - 9.1 |
| Japan | 180 | 179 | 179 | 179 | - 0.6 | + 0.0 | + 0.0 |
| New Zealand | 380 | 385 | 378 | 370 | + 1.3 | - 1.8 | - 2.1 |
| P.R.China | 4,390 | 3,529 | 2,638 | 2,701 | - 19.6 | - 25.2 | + 2.4 |
| South Africa | 492 | 492 | 492 | 420 | + 0.0 | + 0.0 | - 14.6 |
| Rest | 60 | 60 | 60 | 60 | + 0.0 | + 0.0 | + 0.0 |
| World total | 48,248 | 46,592 | 46,288 | 48,069 | - 3.4 | - 0.7 | + 3.8 |

Hop Acreage 2001 – 2014

(ha and % share)



Crop Quantities and Average Yields 2011 – 2014

| | Crop Quantities in mt | | | | +/- % | | | Ø Yields in mt / ha | | | |
|----------------------|-----------------------|-----------------|-----------------|-----------------|---------------|---------------|---------------|---------------------|-------------|-------------|-------------|
| | 2011 | 2012 | 2013 | 2014* | 11/12 | 12/13 | 13/14* | 2011 | 2012 | 2013 | 2014* |
| Hallertauer | 823.9 | 948.2 | 699.9 | 1,030.0 | + 15.1 | - 26.2 | + 47.2 | 1.13 | 1.32 | 1.02 | 1.65 |
| Hersbrucker | 1,470.0 | 1,361.3 | 1,112.8 | 1,880.0 | - 7.4 | - 18.3 | + 68.9 | 1.90 | 1.74 | 1.32 | 2.05 |
| Perle | 6,492.8 | 5,536.0 | 3,901.5 | 6,080.0 | - 14.7 | - 29.5 | + 55.8 | 2.08 | 1.87 | 1.39 | 2.13 |
| Spalter Select | 1,376.9 | 883.0 | 638.5 | 980.0 | - 35.9 | - 27.7 | + 53.5 | 2.24 | 1.97 | 1.56 | 2.26 |
| Tradition | 5,386.6 | 4,868.8 | 3,353.9 | 5,500.0 | - 9.6 | - 31.1 | + 64.0 | 2.05 | 1.86 | 1.32 | 2.04 |
| Saphir | 464.4 | 474.1 | 359.7 | 750.0 | + 2.1 | - 24.1 | + 108.5 | 2.11 | 2.00 | 1.17 | 2.08 |
| Northern Brewer | 362.6 | 346.8 | 208.0 | 355.0 | - 4.4 | - 40.0 | + 70.7 | 1.65 | 1.83 | 1.13 | 2.05 |
| Magnum | 5,991.4 | 5,643.0 | 4,778.3 | 4,050.0 | - 5.8 | - 15.3 | - 15.2 | 1.89 | 2.09 | 2.02 | 2.09 |
| Nugget | 511.8 | 421.2 | 298.8 | 375.0 | - 17.7 | - 29.1 | + 25.5 | 2.40 | 2.35 | 1.92 | 2.59 |
| Taurus | 2,012.1 | 1,587.1 | 1,088.7 | 1,255.0 | - 21.1 | - 31.4 | + 15.3 | 2.18 | 2.00 | 1.60 | 2.23 |
| Herkules | 7,543.9 | 7,442.3 | 6,376.4 | 10,300.0 | - 1.3 | - 14.3 | + 61.5 | 3.11 | 3.03 | 2.22 | 3.08 |
| Others | 321.1 | 282.2 | 261.2 | 605.0 | - 12.1 | - 7.4 | + 131.6 | 1.74 | 1.66 | 1.10 | 1.45 |
| Hallertau | 32,757.3 | 29,794.1 | 23,077.7 | 33,160.0 | - 9.0 | - 22.5 | + 43.7 | 2.15 | 2.09 | 1.64 | 2.29 |
| Elbe-Saale | 2,882.6 | 2,546.1 | 2,508.6 | 2,650.0 | - 11.7 | - 1.5 | + 5.6 | 2.07 | 1.98 | 2.12 | 2.09 |
| Tettngang | 1,783.5 | 1,607.4 | 1,429.7 | 2,010.0 | - 9.9 | - 11.1 | + 40.6 | 1.46 | 1.32 | 1.18 | 1.66 |
| Spalt | 643.7 | 481.2 | 499.7 | 695.0 | - 25.2 | + 3.8 | + 39.1 | 1.76 | 1.38 | 1.43 | 2.00 |
| Rest | 43.4 | 46.4 | 38.5 | 48.0 | + 6.9 | - 17.0 | + 24.7 | 2.17 | 2.32 | 1.93 | 2.40 |
| Germany total | 38,110.6 | 34,475.2 | 27,554.1 | 38,563.0 | - 9.5 | - 20.1 | + 40.0 | 2.09 | 2.01 | 1.64 | 2.23 |
| Austria | 447.0 | 446.0 | 410.0 | 414.0 | - 0.2 | - 8.1 | + 1.0 | 1.87 | 1.87 | 1.67 | 1.65 |
| Belgium | 288.0 | 235.0 | 211.0 | 148.0 | - 18.4 | - 10.2 | - 29.9 | 1.52 | 1.24 | 1.34 | 1.00 |
| Bulgaria | 183.0 | 183.0 | 180.0 | 30.0 | + 0.0 | - 1.6 | - 83.3 | 1.22 | 1.22 | 1.71 | 2.14 |
| Czech Rep. | 6,087.9 | 4,338.1 | 5,329.8 | 5,500.0 | - 28.7 | + 22.9 | + 3.2 | 1.31 | 0.99 | 1.23 | 1.23 |
| England | 1,093.0 | 1,459.0 | 1,235.0 | 1,250.0 | + 33.5 | - 15.4 | + 1.2 | 0.98 | 1.39 | 1.26 | 1.30 |
| France | 644.0 | 752.0 | 612.0 | 690.0 | + 16.8 | - 18.6 | + 12.7 | 1.31 | 1.71 | 1.61 | 1.57 |
| Poland | 2,267.8 | 1,818.2 | 2,079.0 | 2,021.0 | - 19.8 | + 14.3 | - 2.8 | 1.75 | 1.20 | 1.53 | 1.44 |
| Romania | 166.0 | 106.0 | 181.0 | 185.0 | - 36.1 | + 70.8 | + 2.2 | 0.69 | 0.43 | 0.72 | 0.74 |
| Russia | 162.0 | 162.0 | 162.0 | 162.0 | + 0.0 | + 0.0 | + 0.0 | 1.03 | 1.03 | 1.03 | 1.03 |
| Slovakia | 272.0 | 203.0 | 193.0 | 150.0 | - 25.4 | - 4.9 | - 22.3 | 1.23 | 0.95 | 1.11 | 1.09 |
| Slovenia | 2,470.0 | 1,560.0 | 1,297.0 | 2,300.0 | - 36.8 | - 16.9 | + 77.3 | 1.80 | 1.34 | 1.11 | 1.89 |
| Spain | 936.0 | 1,028.0 | 854.0 | 960.0 | + 9.8 | - 16.9 | + 12.4 | 1.76 | 1.90 | 1.76 | 1.79 |
| Turkey | 390.0 | 390.0 | 390.0 | 390.0 | + 0.0 | + 0.0 | + 0.0 | 1.11 | 1.11 | 1.11 | 1.11 |
| Ukraine | 681.0 | 454.0 | 520.0 | 436.0 | - 33.3 | + 14.5 | - 16.2 | 1.05 | 0.98 | 1.11 | 1.20 |
| Rest | 302.0 | 302.0 | 302.0 | 302.0 | + 0.0 | + 0.0 | + 0.0 | 1.64 | 1.64 | 1.55 | 1.55 |
| Europe total | 54,500.3 | 47,911.5 | 41,509.9 | 53,501.0 | - 12.1 | - 13.4 | + 28.9 | 1.81 | 1.69 | 1.50 | 1.90 |
| Apollo | 1,106.9 | 1,052.6 | 1,222.0 | 1,225.0 | - 4.9 | + 16.1 | + 0.2 | 3.09 | 2.97 | 3.02 | 3.07 |
| Bravo | 701.8 | 633.9 | 806.0 | 907.0 | - 9.7 | + 27.1 | + 12.5 | 2.92 | 2.96 | 3.34 | 3.16 |
| Cascade | 2,062.2 | 2,547.6 | 3,944.0 | 4,944.0 | + 23.5 | + 54.8 | + 25.4 | 2.42 | 2.07 | 1.84 | 1.84 |
| Centennial | 408.0 | 1,075.5 | 1,497.0 | 1,996.0 | + 163.6 | + 39.2 | + 33.3 | 1.58 | 1.58 | 1.70 | 1.46 |
| Chinook | 445.8 | 936.6 | 1,540.0 | 1,451.0 | + 110.1 | + 64.4 | - 5.8 | 1.93 | 1.90 | 2.19 | 2.04 |
| Col./Tom./Zeus | 8,218.3 | 6,136.0 | 7,853.0 | 7,257.0 | - 25.3 | + 28.0 | - 7.6 | 2.86 | 2.63 | 3.15 | 3.10 |
| Nugget | 2,280.3 | 2,187.3 | 1,898.0 | 1,542.0 | - 4.1 | - 13.2 | - 18.8 | 2.45 | 2.17 | 2.28 | 2.30 |
| Summit | 3,040.2 | 3,175.2 | 2,416.0 | 2,722.0 | + 4.4 | - 23.9 | + 12.7 | 3.03 | 3.74 | 2.10 | 2.54 |
| Super Galena | 1,613.0 | 1,369.9 | 1,461.0 | 1,134.0 | - 15.1 | + 6.7 | - 22.4 | 3.24 | 2.98 | 2.98 | 3.09 |
| Willamette | 1,218.8 | 1,109.1 | 668.0 | 726.0 | - 9.0 | - 39.8 | + 8.7 | 1.80 | 1.72 | 1.54 | 1.54 |
| Rest | 8,289.2 | 7,558.5 | 8,149.0 | 8,868.0 | - 8.8 | + 7.8 | + 8.8 | 2.01 | 1.63 | 1.82 | 1.72 |
| USA total | 29,384.5 | 27,782.2 | 31,454.0 | 32,772.0 | - 5.5 | + 13.2 | + 4.2 | 2.44 | 2.15 | 2.21 | 2.11 |
| Argentina | 226.1 | 280.5 | 300.0 | 300.0 | + 24.1 | + 7.0 | + 0.0 | 1.20 | 1.49 | 1.54 | 1.54 |
| Australia | 1,044.0 | 1,092.6 | 1,146.0 | 1,079.0 | + 4.7 | + 4.9 | - 5.8 | 2.29 | 2.42 | 2.55 | 2.64 |
| Japan | 420.0 | 345.0 | 335.0 | 335.0 | - 17.9 | - 2.9 | + 0.0 | 2.33 | 1.93 | 1.87 | 1.87 |
| New Zealand | 575.0 | 694.0 | 703.0 | 765.0 | + 20.7 | + 1.3 | + 8.8 | 1.51 | 1.80 | 1.86 | 2.07 |
| P.R.China | 10,230.0 | 7,548.0 | 6,230.0 | 6,720.0 | - 26.2 | - 17.5 | + 7.9 | 2.33 | 2.14 | 2.36 | 2.49 |
| South Africa | 956.0 | 1,002.7 | 913.0 | 820.0 | + 4.9 | - 8.9 | - 10.2 | 1.94 | 2.04 | 1.86 | 1.95 |
| Rest | 40.0 | 40.0 | 40.0 | 40.0 | + 0.0 | + 0.0 | + 0.0 | 0.67 | 0.67 | 0.67 | 0.67 |
| World total | 97,375.8 | 86,696.4 | 82,630.9 | 96,332.0 | - 11.0 | - 4.7 | + 16.6 | 2.02 | 1.86 | 1.79 | 2.00 |

World Hop Crop 2001 – 2014

(1.000 mt and % share)



*Estimate

Hopsteiner Laboratory Values 2011 – 2014

| Alpha Content in % | | | | | Alpha Content in % | | | | |
|---------------------|-------------|-------------|-------------|-------------|--------------------|------|------|------|------|
| Aroma Varieties | 2011 | 2012 | 2013 | 2014 | Bitter Varieties | 2011 | 2012 | 2013 | 2014 |
| Hersbrucker | 4.5 | 3.0 | 1.9 | 2.1 | Northern Brewer | 10.9 | 9.9 | 6.6 | 9.7 |
| Perle | 9.6 | 8.1 | 5.4 | 8.0 | Herkules | 17.2 | 17.1 | 16.5 | 17.5 |
| Tradition | 7.1 | 6.7 | 5.0 | 5.8 | Magnum | 14.9 | 14.3 | 12.6 | 13.0 |
| Select | 6.4 | 5.1 | 3.3 | 4.7 | Taurus | 17.4 | 17.0 | 15.9 | 17.4 |
| Tettnang | 5.1 | 4.3 | 2.6 | 4.1 | US Super Galena | 15.3 | 15.5 | 15.3 | 15.4 |
| Spalt | 4.8 | 4.1 | 2.8 | 3.4 | US Bravo | 16.0 | 16.1 | 15.8 | 14.8 |
| Saaz | 4.0 | 3.8 | 2.9 | 2.9 | US Nugget | 13.5 | 13.5 | 14.0 | 13.8 |
| Steirer Aurora | 9.1 | 8.0 | 6.1 | 10.2 | US Summit | 16.5 | 16.5 | 17.0 | 16.8 |
| Steirer Golding | 4.1 | 3.2 | 2.2 | 5.1 | US CTZ | 15.5 | 15.5 | 15.8 | 15.9 |
| US Willamette | 5.5 | 4.6 | 5.0 | 5.0 | Pride of Ringwood | 9.3 | 8.8 | 9.1 | 8.9 |
| Dual Purpose | 2011 | 2012 | 2013 | 2014 | | | | | |
| US Centennial | 11.5 | 10.5 | 10.3 | 9.8 | | | | | |

Worldwide use of Hops and Hop Products 2001 – 2014

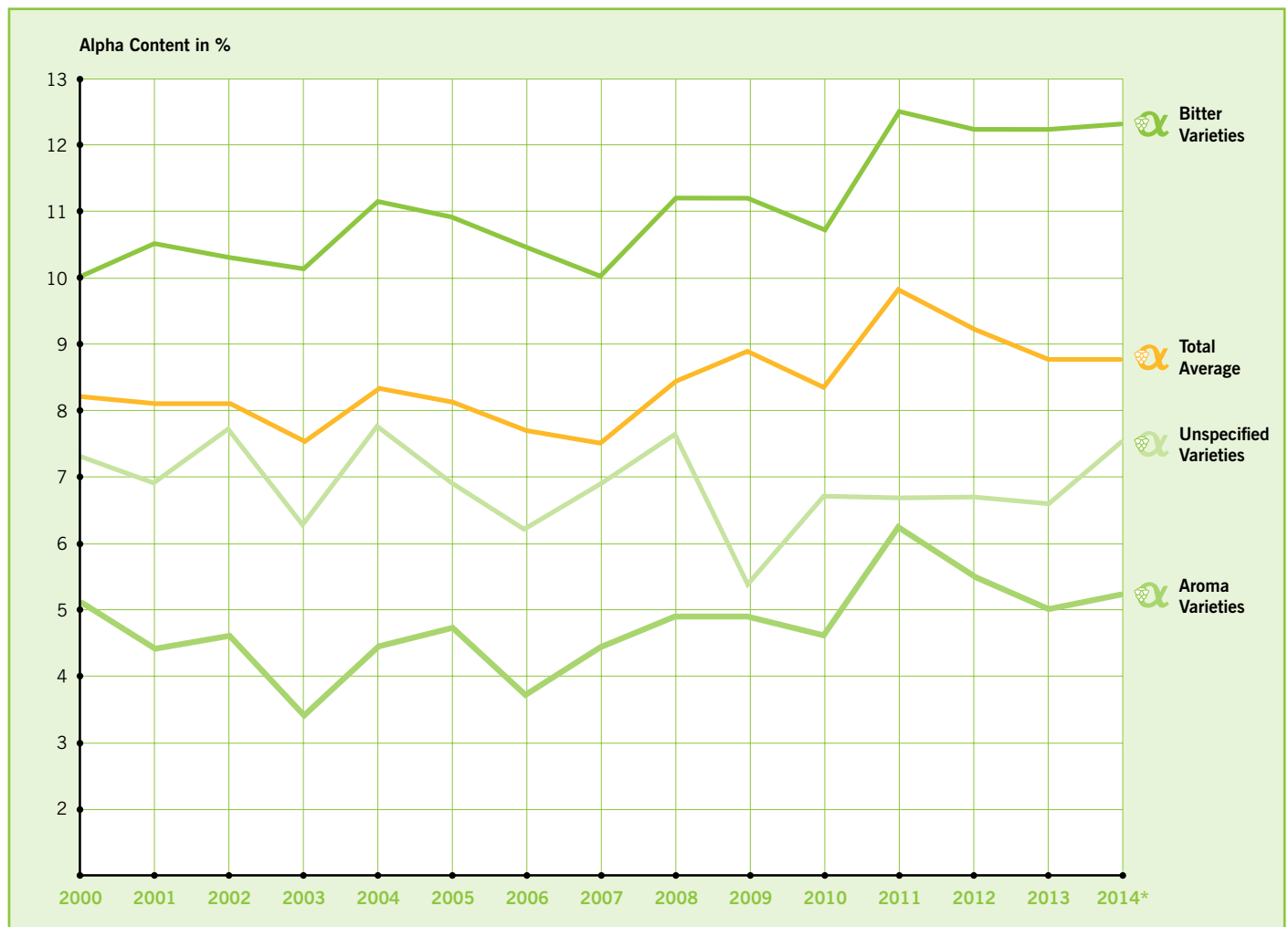
| | Hops total | | Pellets total | | Extract total | |
|-------|------------|---|---------------|-----------|---------------|-----------|
| | (mt) |  | (mt) | (% total) | (mt) | (% total) |
| 2001 | 96,959 | | 52,900 | 54.6 | 28,800 | 29.7 |
| 2002 | 97,130 | | 53,400 | 55.0 | 28,500 | 29.3 |
| 2003 | 85,520 | | 49,600 | 58.0 | 28,000 | 32.7 |
| 2004 | 91,132 | | 56,800 | 62.3 | 28,600 | 31.4 |
| 2005 | 93,448 | | 61,582 | 65.9 | 28,595 | 30.6 |
| 2006 | 85,266 | | 56,361 | 66.1 | 26,177 | 30.7 |
| 2007 | 91,418 | | 59,513 | 65.1 | 29,345 | 32.1 |
| 2008 | 113,125 | | 69,119 | 61.1 | 40,951 | 36.2 |
| 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* | 96,332 | | 60,882 | 63.2 | 34,487 | 35.8 |

World Alpha Acids Productions 2011 – 2014

| Total Crop Quantities in mt | | | | | % share | | | | |
|-----------------------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|--|
| | 2011 | 2012 | 2013 | 2014* | 2011 | 2012 | 2013 | 2014* | |
| Aroma Varieties | 41,424 | 39,143 | 39,327 | 49,346 | 42.5 | 45.1 | 47.6 | 51.2 | |
| Bitter Varieties | 55,886 | 47,483 | 43,228 | 46,925 | 57.4 | 54.8 | 52.3 | 48.7 | |
| Rest | 66 | 70 | 76 | 61 | 0.1 | 0.1 | 0.1 | 0.1 | |
| Total | 97,376 | 86,696 | 82,631 | 96,332 | 100.0 | 100.0 | 100.0 | 100.0 | |

| Alpha Amount in kg | | | | | Alpha Content in % | | | | |
|--------------------|------------------|------------------|------------------|------------------|--------------------|------------|------------|------------|--|
| | 2011 | 2012 | 2013 | 2014* | 2011 | 2012 | 2013 | 2014* | |
| Aroma Varieties | 2,569,000 | 2,166,400 | 1,950,100 | 2,625,800 | 6.2 | 5.5 | 5.0 | 5.3 | |
| Bitter Varieties | 6,986,400 | 5,784,300 | 5,255,400 | 5,766,200 | 12.5 | 12.2 | 12.2 | 12.3 | |
| Rest | 4,500 | 4,700 | 5,000 | 4,400 | 6.7 | 6.7 | 6.6 | 7.4 | |
| Total | 9,559,900 | 7,955,400 | 7,210,600 | 8,396,400 | 9.8 | 9.2 | 8.7 | 8.7 | |

Alpha Values over time 2000 – 2014



*Estimate

World Beer Production 2011 – 2014

| | Beer Production in Mio hl | | | | +/- % | | |
|---------------------|---------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 2011 | 2012 | 2013 | 2014* | 11/12 | 12/13 | 13/14* |
| Germany | 98.2 | 94.6 | 94.4 | 95.3 | - 3.7 | - 0.2 | + 1.0 |
| Russia | 99.4 | 97.2 | 88.9 | 82.0 | - 2.2 | - 8.5 | - 7.8 |
| England | 42.5 | 42.0 | 42.4 | 42.0 | - 1.2 | + 1.0 | - 0.9 |
| Poland | 37.9 | 37.8 | 39.6 | 39.8 | - 0.3 | + 4.8 | + 0.5 |
| Spain | 33.6 | 33.0 | 33.1 | 34.5 | - 1.8 | + 0.3 | + 4.2 |
| Ukraine | 30.5 | 30.0 | 27.6 | 26.0 | - 1.6 | - 8.0 | - 5.8 |
| Netherlands | 23.6 | 24.3 | 23.7 | 23.1 | + 3.0 | - 2.5 | - 2.5 |
| Czech Rep. | 18.3 | 18.3 | 18.6 | 18.6 | + 0.0 | + 1.6 | + 0.0 |
| France | 16.0 | 18.9 | 18.7 | 18.5 | + 18.1 | - 1.1 | - 1.1 |
| Belgium | 18.0 | 18.5 | 18.1 | 18.0 | + 2.8 | - 2.2 | - 0.6 |
| Romania | 17.0 | 17.9 | 16.6 | 16.5 | + 5.3 | - 7.3 | - 0.6 |
| Italy | 13.4 | 12.7 | 12.7 | 12.8 | - 5.2 | + 0.0 | + 0.8 |
| Austria | 8.9 | 8.9 | 9.2 | 9.2 | + 0.0 | + 3.4 | + 0.0 |
| Ireland | 8.6 | 8.3 | 8.0 | 8.0 | - 3.5 | - 3.6 | + 0.0 |
| Portugal | 8.3 | 7.6 | 7.9 | 8.0 | - 8.4 | + 3.9 | + 1.3 |
| Turkey | 9.8 | 10.0 | 8.0 | 7.5 | + 2.0 | - 20.0 | - 6.3 |
| Denmark | 6.3 | 6.3 | 6.1 | 6.1 | + 0.0 | - 3.2 | + 0.0 |
| Hungary | 6.1 | 6.2 | 6.0 | 6.1 | + 1.6 | - 3.2 | + 1.7 |
| Bulgaria | 4.9 | 5.0 | 5.1 | 5.1 | + 2.0 | + 2.0 | + 0.0 |
| Finland | 4.2 | 4.2 | 4.0 | 4.1 | + 0.0 | - 4.8 | + 2.5 |
| Sweden | 3.8 | 3.8 | 3.8 | 4.0 | + 0.0 | + 0.0 | + 5.3 |
| Greece | 3.7 | 3.4 | 3.7 | 3.7 | - 8.1 | + 8.8 | + 0.0 |
| Croatia | 3.5 | 3.5 | 3.4 | 3.5 | + 0.0 | - 2.9 | + 2.9 |
| Switzerland | 3.6 | 3.5 | 3.4 | 3.4 | - 2.8 | - 2.9 | + 0.0 |
| Slovakia | 3.2 | 3.3 | 3.2 | 3.2 | + 3.1 | - 3.0 | + 0.0 |
| Lithuania | 3.0 | 3.0 | 2.9 | 3.0 | + 0.0 | - 3.3 | + 3.4 |
| Norway | 2.4 | 2.4 | 2.4 | 2.5 | + 0.0 | + 0.0 | + 4.2 |
| Slovenia | 1.9 | 1.9 | 1.9 | 1.9 | + 0.0 | + 0.0 | + 0.0 |
| Latvia | 1.5 | 1.6 | 1.5 | 1.6 | + 6.7 | - 6.3 | + 6.7 |
| Estonia | 1.4 | 1.2 | 1.5 | 1.5 | - 14.3 | + 25.0 | + 0.0 |
| Albania | 0.6 | 0.5 | 0.6 | 0.6 | - 16.7 | + 20.0 | + 0.0 |
| Luxembourg | 0.3 | 0.3 | 0.3 | 0.3 | + 0.0 | + 0.0 | + 0.0 |
| Cyprus | 0.3 | 0.3 | 0.3 | 0.2 | + 0.0 | + 0.0 | - 33.3 |
| Malta | 0.1 | 0.1 | 0.1 | 0.1 | + 0.0 | + 0.0 | + 0.0 |
| Europe rest | 14.0 | 14.1 | 13.4 | 13.2 | + 0.7 | - 5.0 | - 1.5 |
| Europe total | 548.8 | 544.6 | 531.1 | 523.9 | - 0.8 | - 2.5 | - 1.4 |
| USA | 226.5 | 230.1 | 224.6 | 225.7 | 1.6 | - 2.4 | + 0.5 |
| Brazil | 127.2 | 132.0 | 134.2 | 136.0 | 3.8 | + 1.7 | + 1.3 |
| Mexico | 81.2 | 81.5 | 82.0 | 82.0 | 0.4 | + 0.6 | + 0.0 |
| Venezuela | 23.2 | 21.7 | 22.2 | 24.0 | - 6.5 | + 2.3 | + 8.1 |
| Canada | 19.8 | 19.5 | 22.6 | 22.7 | - 1.5 | + 15.9 | + 0.4 |
| Colombia | 20.8 | 22.3 | 22.3 | 22.3 | 7.2 | + 0.0 | + 0.0 |
| Argentina | 17.3 | 16.8 | 16.8 | 16.5 | - 2.9 | + 0.0 | - 1.8 |
| Peru | 11.5 | 13.0 | 13.5 | 13.5 | 13.0 | + 3.8 | + 0.0 |
| Equador | 5.2 | 5.8 | 6.0 | 6.0 | 11.5 | + 3.4 | + 0.0 |
| Chile | 5.0 | 5.7 | 6.0 | 6.0 | 14.0 | + 5.3 | + 0.0 |
| Dominican Rep. | 3.4 | 3.5 | 3.6 | 3.6 | 2.9 | + 2.9 | + 0.0 |
| Cuba | 2.6 | 2.7 | 2.8 | 2.8 | 3.8 | + 3.7 | + 0.0 |
| Panama | 1.9 | 1.9 | 1.9 | 2.0 | 0.0 | + 0.0 | + 5.3 |
| Costa Rica | 1.6 | 1.6 | 1.7 | 1.7 | 0.0 | + 6.3 | + 0.0 |
| Guatemala | 1.6 | 1.6 | 1.5 | 1.5 | 0.0 | - 6.3 | + 0.0 |
| Paraguay | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | + 0.0 | + 0.0 |
| Bolivia | 1.3 | 1.3 | 1.4 | 1.4 | 0.0 | + 7.7 | + 0.0 |
| Uruguay | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | + 0.0 | + 0.0 |
| Jamaica | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | + 0.0 | + 0.0 |
| Nicaragua | 0.9 | 0.8 | 1.0 | 1.0 | - 11.1 | + 25.0 | + 0.0 |
| El Salvador | 0.8 | 0.8 | 1.0 | 1.0 | 0.0 | + 25.0 | + 0.0 |

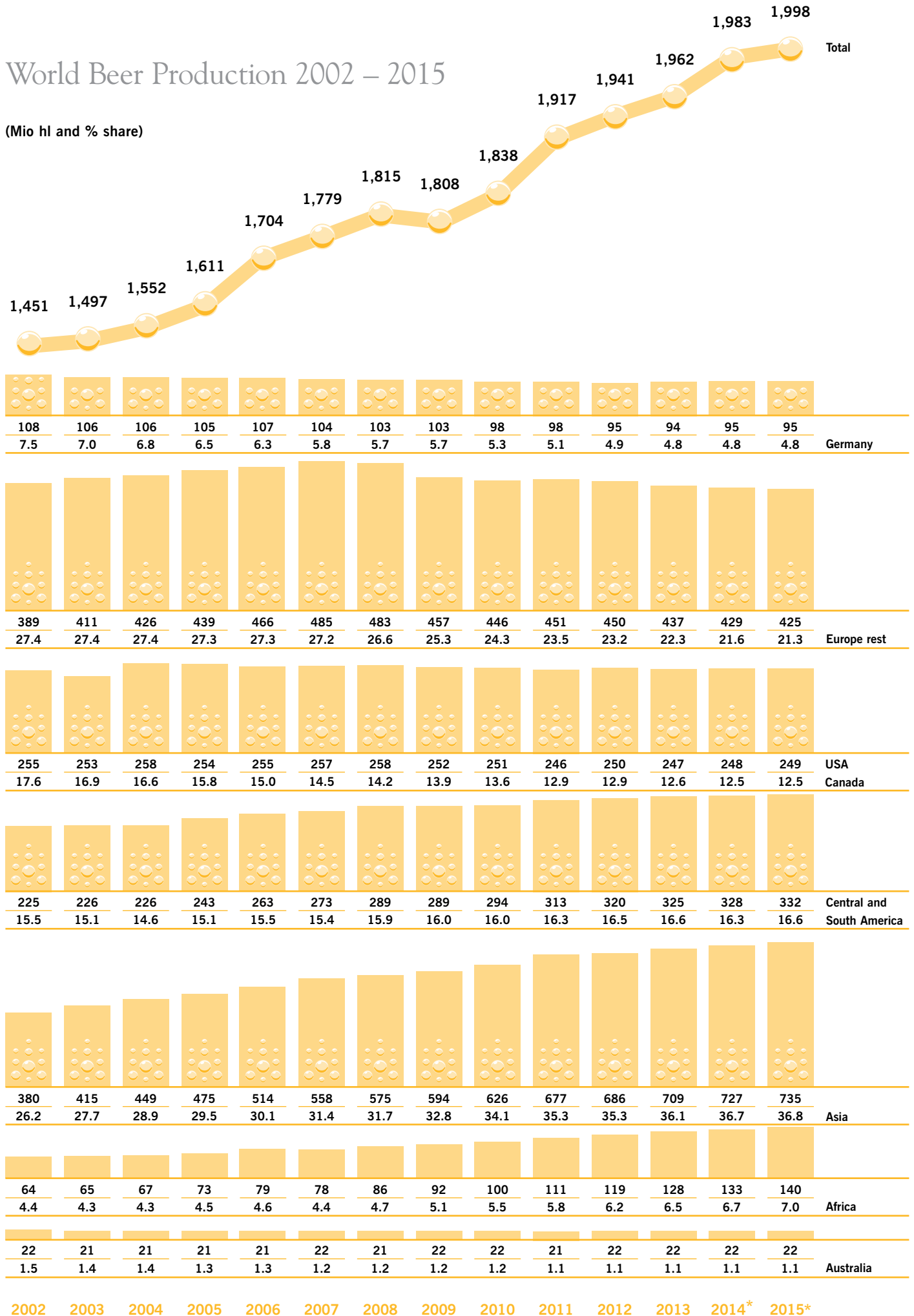
*Estimate

| | Beer Production in Mio hl | | | | +/- % | | |
|------------------------|---------------------------|----------------|----------------|----------------|--------------|--------------|--------------|
| | 2011 | 2012 | 2013 | 2014* | 11/12 | 12/13 | 13/14* |
| → Honduras | 1.0 | 1.0 | 0.9 | 0.9 | + 0.0 | - 10.0 | + 0.0 |
| Puerto Rico | 0.7 | 0.6 | 0.7 | 0.7 | - 14.3 | + 16.7 | + 0.0 |
| Trinidad | 0.4 | 0.4 | 0.4 | 0.4 | + 0.0 | + 0.0 | + 0.0 |
| America rest | 1.5 | 1.5 | 1.6 | 1.6 | + 0.0 | + 6.7 | + 0.0 |
| America total | 558.9 | 569.6 | 572.2 | 576.8 | + 1.9 | + 0.5 | + 0.8 |
| P.R.China | 489.9 | 490.0 | 506.0 | 518.0 | + 0.0 | + 3.3 | + 2.4 |
| Japan | 56.0 | 55.3 | 57.2 | 57.0 | - 1.3 | + 3.4 | - 0.3 |
| Vietnam | 27.0 | 29.7 | 32.0 | 32.8 | + 10.0 | + 7.7 | + 2.5 |
| Thailand | 20.4 | 23.9 | 21.0 | 23.1 | + 17.2 | - 12.1 | + 10.0 |
| South Korea | 18.8 | 19.0 | 19.4 | 20.9 | + 1.1 | + 2.1 | + 7.7 |
| India | 18.3 | 19.2 | 20.0 | 20.0 | + 4.9 | + 4.2 | + 0.0 |
| Philippines | 15.7 | 15.8 | 16.2 | 16.5 | + 0.6 | + 2.5 | + 1.9 |
| Taiwan | 4.0 | 3.9 | 4.9 | 5.2 | - 2.5 | + 25.6 | + 6.1 |
| Cambodscha | 1.9 | 3.5 | 4.1 | 4.4 | + 84.2 | + 17.1 | + 7.3 |
| Laos | 2.4 | 3.0 | 3.6 | 3.8 | + 25.0 | + 20.0 | + 5.6 |
| Indonesia | 2.3 | 2.6 | 2.7 | 2.9 | + 13.0 | + 3.8 | + 7.4 |
| Malaysia | 2.3 | 2.2 | 2.4 | 2.5 | - 4.3 | + 9.1 | + 4.2 |
| Myanmar | 1.1 | 1.3 | 2.0 | 2.5 | + 18.2 | + 53.8 | + 25.0 |
| Singapore | 1.1 | 1.2 | 1.2 | 1.2 | + 9.1 | + 0.0 | + 0.0 |
| Israel | 1.0 | 1.0 | 1.1 | 1.2 | + 0.0 | + 10.0 | + 9.1 |
| Sri Lanka | 0.8 | 0.8 | 0.9 | 1.0 | + 0.0 | + 12.5 | + 11.1 |
| Mongolia | 0.5 | 0.5 | 0.6 | 0.7 | + 0.0 | + 20.0 | + 16.7 |
| Nepal | 0.4 | 0.5 | 0.5 | 0.5 | + 25.0 | + 0.0 | + 0.0 |
| Lebanon | 0.2 | 0.3 | 0.3 | 0.3 | + 50.0 | + 0.0 | + 0.0 |
| Jordan | 0.1 | 0.1 | 0.1 | 0.1 | + 0.0 | + 28.6 | + 11.1 |
| Pakistan | 0.1 | 0.1 | 0.1 | 0.1 | + 28.6 | - 11.1 | + 12.5 |
| Syria | 0.1 | 0.0 | 0.0 | 0.0 | - 100.0 | + 0.0 | + 0.0 |
| Asia rest | 12.3 | 11.9 | 12.4 | 12.7 | - 3.3 | + 4.2 | + 2.4 |
| Asia total | 676.6 | 685.8 | 708.7 | 727.4 | + 1.3 | + 3.3 | + 2.6 |
| South Africa | 30.0 | 31.3 | 31.5 | 31.8 | + 4.3 | + 0.6 | + 1.0 |
| Nigeria | 19.4 | 23.5 | 25.0 | 26.0 | + 21.1 | + 6.4 | + 4.0 |
| Algeria | 1.3 | 1.4 | 1.4 | 1.4 | + 7.7 | + 0.0 | + 0.0 |
| Angola | 8.1 | 9.4 | 10.0 | 10.5 | + 16.0 | + 6.4 | + 5.0 |
| Cameroon | 5.9 | 6.3 | 6.5 | 6.7 | + 6.8 | + 3.2 | + 3.1 |
| Kenya | 5.2 | 5.4 | 5.3 | 5.2 | + 3.8 | - 1.9 | - 1.9 |
| Zaire | 4.8 | 5.1 | 5.5 | 5.5 | + 6.2 | + 7.8 | + 0.0 |
| Ethiopia | 3.2 | 3.6 | 4.0 | 4.5 | + 12.5 | + 11.1 | + 12.5 |
| Tanzania | 3.5 | 3.5 | 3.8 | 4.2 | + 0.0 | + 8.6 | + 10.5 |
| Uganda | 2.8 | 3.1 | 3.2 | 3.2 | + 10.7 | + 3.2 | + 0.0 |
| Namibia | 2.2 | 2.4 | 2.5 | 2.5 | + 9.1 | + 4.2 | + 0.0 |
| Mosambique | 1.9 | 1.9 | 3.0 | 3.2 | + 0.0 | + 57.9 | + 6.7 |
| Ghana | 1.8 | 1.8 | 2.0 | 2.2 | + 0.0 | + 11.1 | + 10.0 |
| Tunisia | 1.4 | 1.6 | 1.9 | 1.9 | + 14.3 | + 18.8 | + 0.0 |
| Ivory Coast | 1.4 | 1.5 | 1.9 | 1.9 | + 7.1 | + 26.7 | + 0.0 |
| Zimbabwe | 0.8 | 1.0 | 1.5 | 2.2 | + 25.0 | + 50.0 | + 46.7 |
| Egypt | 1.1 | 1.0 | 1.0 | 1.0 | - 9.1 | + 0.0 | + 0.0 |
| Madagascar | 1.1 | 0.9 | 1.1 | 1.2 | - 18.2 | + 22.2 | + 9.1 |
| Marocco | 0.9 | 0.9 | 0.8 | 0.8 | + 0.0 | - 11.1 | + 0.0 |
| Zambia | 0.9 | 0.8 | 1.2 | 1.5 | - 11.1 | + 50.0 | + 25.0 |
| Mauritius | 0.4 | 0.5 | 0.5 | 0.4 | + 25.0 | + 0.0 | - 20.0 |
| Africa rest | 13.0 | 12.5 | 14.3 | 15.6 | - 3.8 | + 14.4 | + 9.1 |
| Africa total | 111.1 | 119.4 | 127.9 | 133.4 | + 7.5 | + 7.1 | + 4.3 |
| Australia | 16.6 | 17.2 | 17.3 | 17.4 | + 3.6 | + 0.6 | + 0.6 |
| New Zealand | 3.3 | 3.2 | 2.9 | 3.0 | - 3.0 | - 9.4 | + 3.4 |
| Oceania | 1.2 | 1.2 | 1.5 | 1.5 | + 0.0 | + 25.0 | + 0.0 |
| Australia total | 21.1 | 21.6 | 21.7 | 21.9 | + 2.4 | + 0.5 | + 0.9 |
| World total | 1,916.5 | 1,941.0 | 1,961.5 | 1,983.3 | + 1.3 | + 1.1 | + 1.1 |

*Estimate

World Beer Production 2002 – 2015

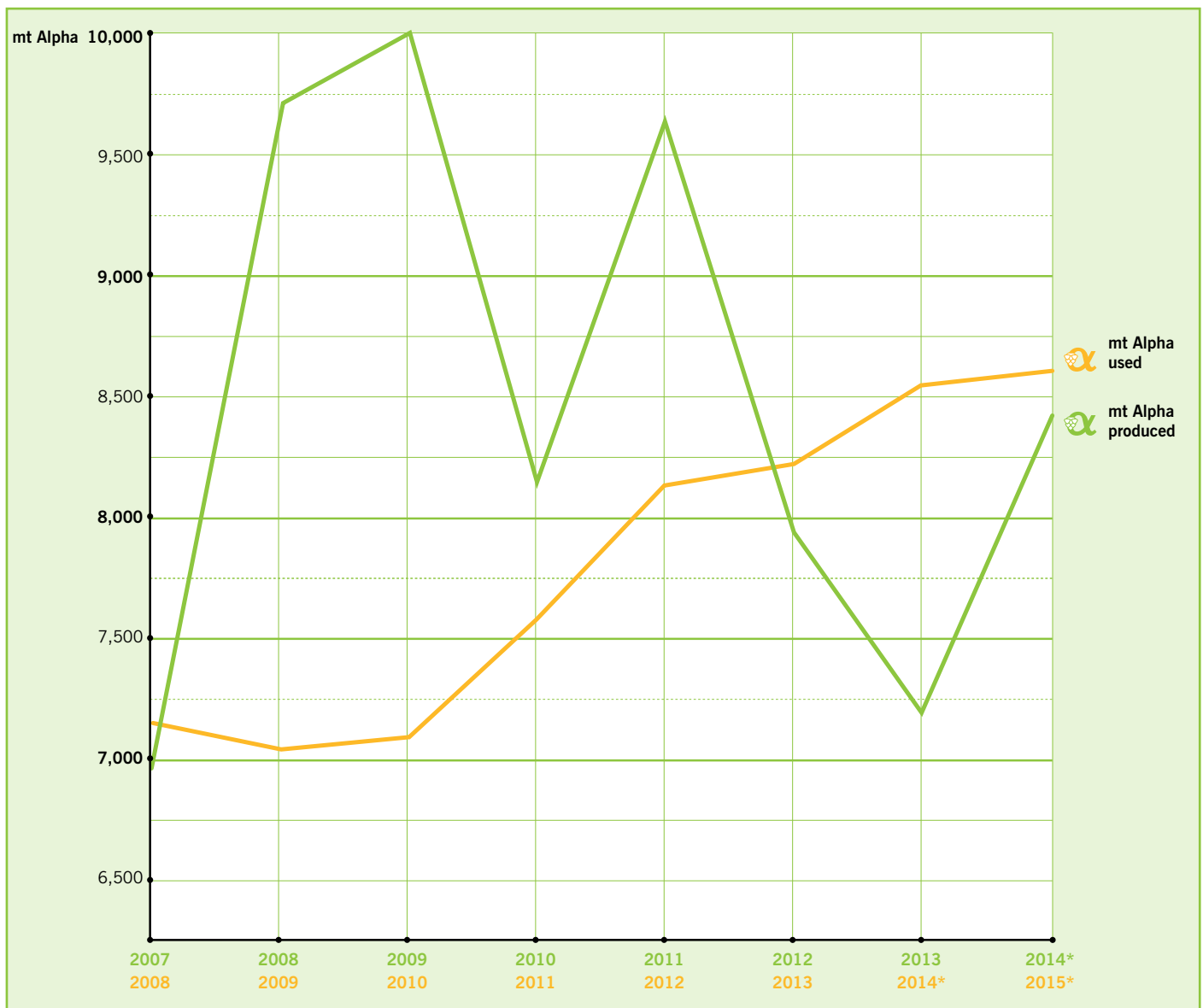
(Mio hl and % share)



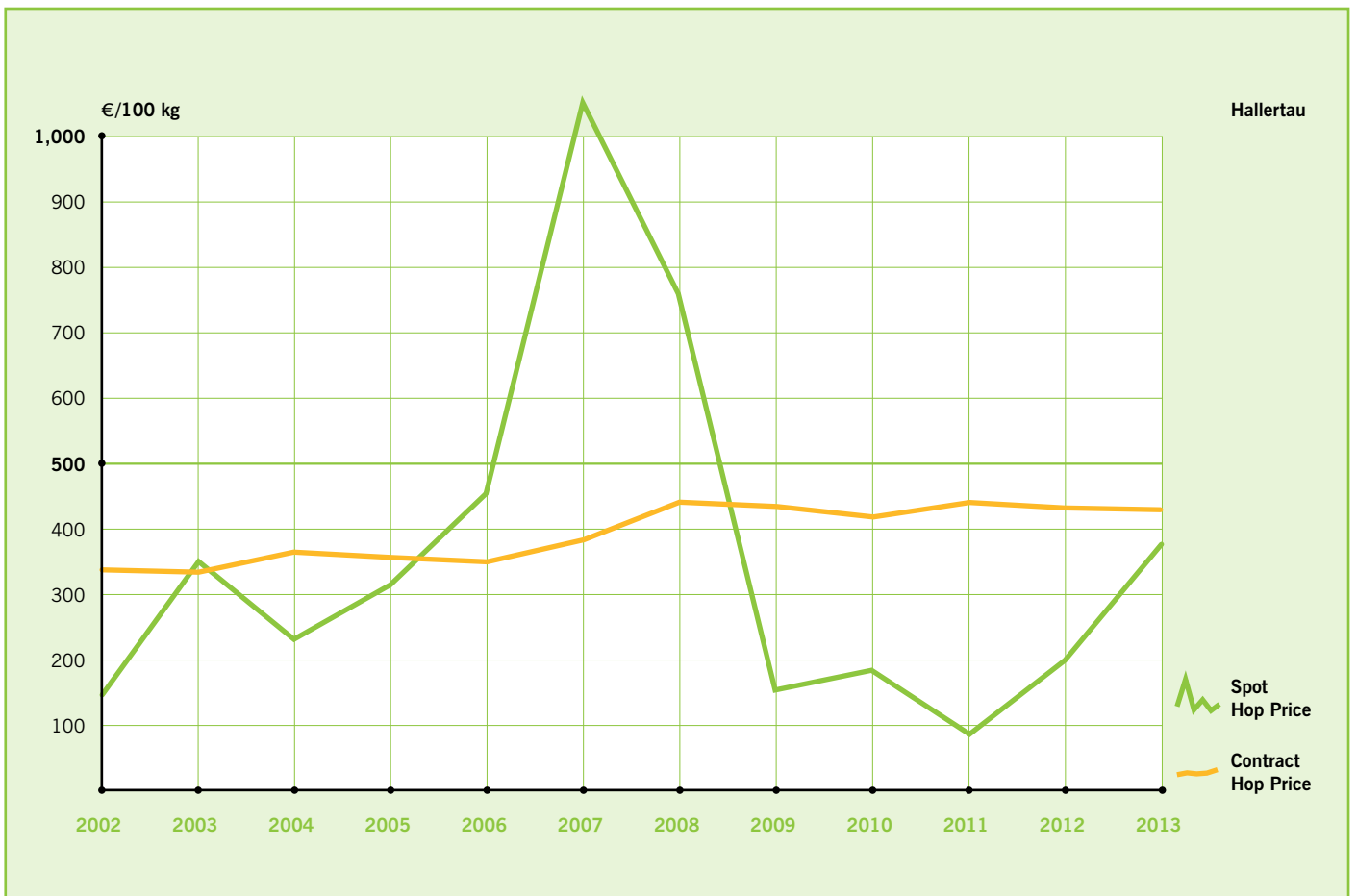
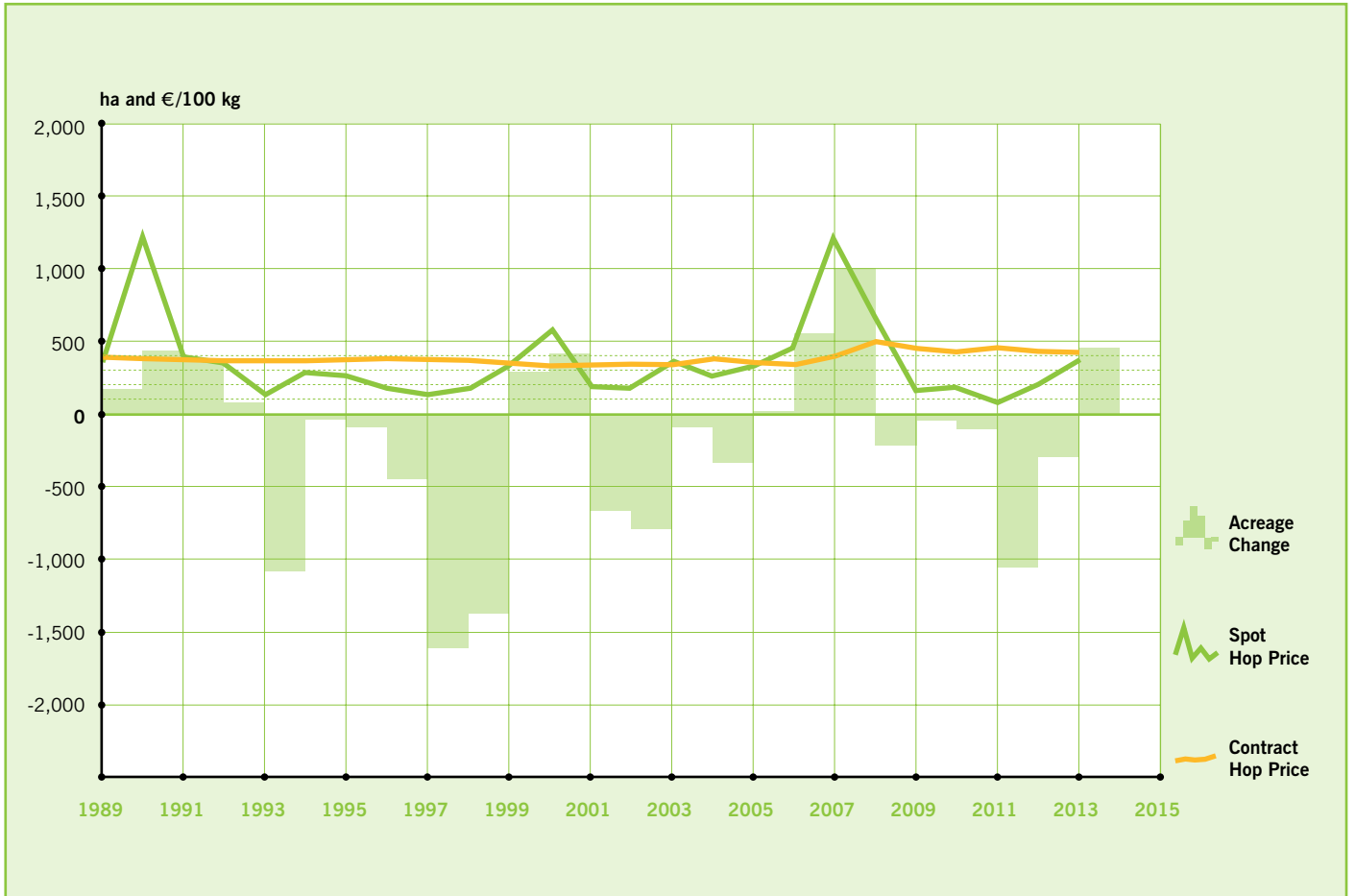
*Estimate

World Hop Acid Supply and Demand 2007 – 2014

| | Production (mt Alpha) | Beer Production (Mio hl) | Alpha Dosage (g Alpha/hl) | Alpha Usage (mt Alpha) | Annual Balance (mt Alpha) | |
|-------|--------------------------|-----------------------------|------------------------------|---------------------------|------------------------------|---------|
| 2007 | 6,983 | 2008 | 1,815 | 4.0 | 7,260 | - 277 |
| 2008 | 9,748 | 2009 | 1,808 | 3.9 | 7,051 | 2,697 |
| 2009 | 10,062 | 2010 | 1,838 | 3.9 | 7,166 | 2,896 |
| 2010 | 8,192 | 2011 | 1,917 | 4.0 | 7,668 | 524 |
| 2011 | 9,560 | 2012 | 1,941 | 4.2 | 8,152 | 1,408 |
| 2012 | 7,955 | 2013 | 1,962 | 4.2 | 8,240 | - 285 |
| 2013 | 7,211 | 2014* | 1,983 | 4.3 | 8,527 | - 1,316 |
| 2014* | 8,396 | 2015* | 1,998 | 4.3 | 8,591 | - 195 |



*Estimate



Hop Market Review and Outlook

Looking back

Crop 2013 was short in Germany, below average in the Czech Republic and Slovenia and normal in USA. The primary effect was a smaller-than-expected supply of aroma varieties and some implementation of the aroma hop „alpha clause“. Overall the world crop of 82,631 mt hops contained approximately 7,211mt alpha acids. This represented an alpha acid decline of 9.4% from 2012 and was a deficit compared to an estimated demand of 8,500 mt alpha. This was the second consecutive crop with a „paper“ deficit, as crop 2012's alpha production was approximately 1,300 mt alpha less than calculated demand.

These deficits were particularly meaningful for noble aroma varieties in Europe and the principal aroma varieties in USA. The bitter hops market was again shielded from significant supply-demand issues by the continued presence of excess brewery inventories.

Following the crop, growers in USA continued to transfer acres from bitter hops to aroma hops to meet the demand of craft brewers. Growers in Germany again went in the opposite direction and shifted acreage up the alpha scale from Magnum and other lesser varieties to Hercules.

Looking forward

As of this writing, the 48,069 ha planted to hops worldwide in 2014 were estimated to produce 96,332 mt hops. At a world average alpha content of 8.7% this would produce 8,396 mt alpha.

This estimate is practically the same as was produced by the somewhat weak 2013 crop. The continued variety changeover in USA means that the world's average alpha content is declining despite continuous increases in acreage. The ledger now shows that the USA's aroma-bitter variety mix that as recently as 2011 was 40-60 has transitioned to a lineup that is 55-45 in favor of aroma varieties. It should be noted, however, that the once-firm line that distinguished aroma and bitter varieties has been considerably blurred. Not only are there more varieties with alphas that are in the former „dual-purpose“ range, but there are newer varieties that are used for aroma purposes but that have alpha content well above 10%. This is a result of the demand for aroma differentiation, and many of the unique new aromas and higher oil contents have been found in varieties with higher levels of alpha.

Our method for calculating our prognosis of the demand and supply picture for alpha acids is the focus of this year's GHB. In past years our calculation of alpha demand was based upon analysis of key beer brands from around the world. Our goal was to extrapolate demand from a minimum of 70% of these brands. This method was correct until now.

The rise of craft beer, in particular in USA, has, however, meant that we have had to revise how we analyze the supply and demand for alpha acids. The US craft brewing industry is poised to produce over 20 million barrels in 2014 – just 1.2% of the world's beer volume – but is expected to consume nearly 1.3 lbs of hops (51 g alpha) for each of these barrels. The effect on the market of this high usage is further increased by the large amount of dry hopping employed by these brewers. The consequence of this usage is that the world average alpha dosage, which over many years had declined to 3.8g, is now back up to an estimated 4.3g. The trend is worldwide – craft-style beers are emerging in many international markets and this demand will affect the demand calculation in due course. At present craft beer consumes 13% of the world's hop production - and growth continues to be strong.



All of this has clearly changed the supply of hops. During the winter of 2013-14 we reported meaningful price increases throughout the market. All of these increases are linked to the revenue per acre that a grower realizes, regardless of variety. Significant investments continue to be made to increase and upgrade hop yards as well as picking, drying and cooling equipment. All of this has a cost that needs to be reflected in future crop pricing.

The supply of bitter hops and the primary German aroma hops was not affected by crop 2013 despite somewhat lower alpha values. We expect the same for crop 2014. Nevertheless, given the overall reduction in bitter hop acreage and the steady decrease in brewer inventory, the bitter hop market will have to start to awaken from this period of dormancy. While it is not easy to calculate how long inventories will last, it is clear that the current streak of years with „paper“ alpha deficits has to mean that demand will soon have to pick up. In addition, the competition for acres between bitter and aroma hops, based upon demand and revenue per acre, has shown that growers are variety agnostic so long as they achieve a comparable return.

Furthermore, the existing deficits of specific aroma varieties like Saaz, Golding and Centennial are an indication that additional acres are needed, some of which will undoubtedly replace bitter hops. The shift in the variety mix in USA will push bitter hop demand to Germany, and the obvious question is how much acreage is needed to meet that market.

All of this is based upon a model of continued steady growth in the craft sector. The recent peak of US hop acreage – 44,000 acres in 1996 – is within sight again. Unlike in some other times of tightening markets, the current pace of growth is steady and based upon beers that are heavily hopped in a traditional manner. Brewers who may not be experiencing this growth in their own businesses must nevertheless recognize the change in the market and act sooner rather than later to secure their needs.

We will continue to keep you updated with developments.



COMMITTED TO THE BREWER.



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