

The Barth Report

Hops

1999/2000



Joh. Barth & Sohn

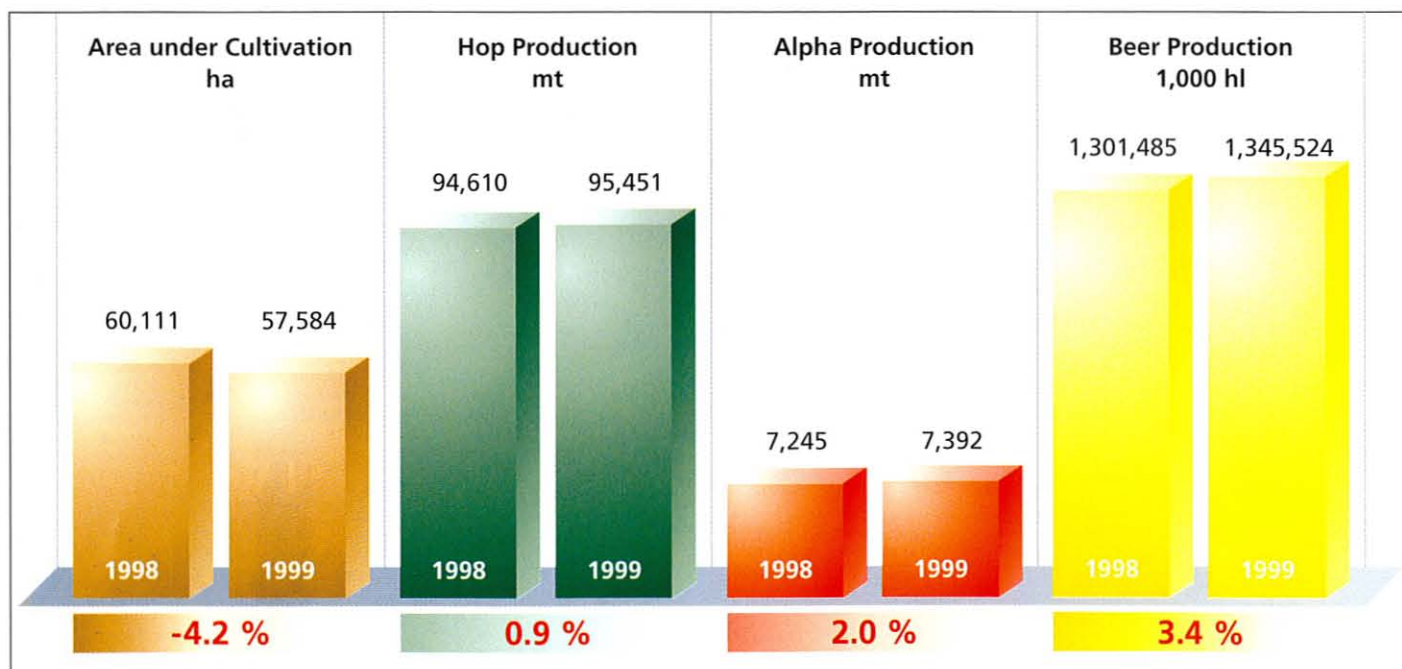
Nuremberg



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World Market Key Data



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Nuremberg, August 2000



Foreword

Dear Reader,

In the course of the change of generations in both Joh. Barth & Sohn GmbH & Co. KG and Hopunion Raiser, Scharrer KG, the respective partners have decided to merge the two globally operating companies. This merger will come into force on 31 July 2000 with cross-shareholdings being acquired by the partners in the respective companies. The jointly owned company will continue to trade under the name of Joh. Barth & Sohn GmbH & Co. KG. Thomas C. Raiser, limited partner in Hopunion, will become a new partner – along with the existing partners Regine Barth-Daiber, Stephan J. Barth and Alexander W. Barth. The departing managing directors, Peter Barth and Johannes M. Raiser, will in future be supporting the board of management in the strategic direction of the new company as members of the supervisory board together with Heinrich J. Barth.

By merging our companies, we will become the number one in the international hop market with a joint share of approx. 40 % of the (1999) world market. Our companies' accumulated turnover in 1999 was approx. DM 400 m and our joint workforce totals 570.

Benefits of the merger – external

The merger of our companies creates a global company that can meet the constantly growing needs both of the brewing industry (and the international beverage groups) and their suppliers. For this purpose, Barth will contribute, among other things, its strong global sales organi-

sation and Hopunion its long-standing alliances with growers' organisations. As a result, small, medium-sized and major customers will be guaranteed a continuous value-added chain – from the grower to the brewer.

This means:

global presence

sophisticated logistics expertise

a comprehensive product range
with all regions of origin

Benefits of the merger – internal

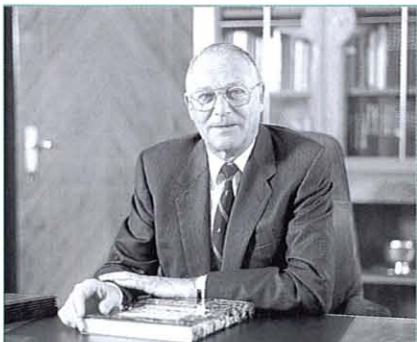
The management will integrate the operative departments of the two companies as quickly as possible, so that cost synergies may already be achieved in the foreseeable future.

Benefits of the merger – new markets

In addition, pooling our companies' resources in product research and development will open up completely new dimensions – including further innovations in the field of downstream products, i. e. molecular modification of hop components.

The partners in Joh. Barth & Sohn GmbH & Co. KG and Hopunion Raiser, Scharrer KG are convinced that the merger of our two companies will have a positive and stabilising effect on the hop industry.

Joh. Barth & Sohn



Heinrich J. Barth



Peter Barth



Stephan J. Barth



Alexander W. Barth



Thomas C. Raiser



Regine Barth-Daiber



Johannes M. Raiser



Political Situation

On 1 July 1999, Johannes Rau took office as President of the Federal Republic of Germany.

The civil war in the Chechen Republic flared up again at the end of August 1999 when Russian troops marched into the Caucasian republic which is seeking independence from the Russian Federation.

In Russia, Boris Yeltsin announced his surprise resignation from the presidency on New Year's Eve 1999 after eight years in office. He appointed as his successor the incumbent Prime Minister, Vladimir Putin, who was subsequently confirmed in office in the presidential election in the spring of 2000.

One year after the end of NATO's aerial war and the withdrawal of the Serbian army, the fragile peace in Kosovo can only be assured by the presence of UN peace-keeping troops (KFOR). The region is still plagued by the effects of the war and by ethnic friction.

In the Middle East, efforts to reach a settlement between Israel and the Palestinians have regained momentum with the election of the new Israeli Prime Minister Barak. In Jordan, Morocco and Syria, the deaths of the countries' rulers were followed by the successions of their respective sons.

In June 2000, an inner-Korean summit took place for the first time since the partition of Korea 50 years ago. The Presidents of North and South Korea signed agreements on economic aid and confidence-building measures, as well as signing a treaty on steps towards reconciliation of the two states.

In July 2000, Vicente Fox Quesada succeeded in winning the Mexican presidential elections and becoming the first presidential candidate to oust the PRI (Institutional Revolutionary Party) which has enjoyed uninterrupted rule since 1929.

Economic Situation

In 1999, too, the health of the world economy depended on the growth of the US economy. Growth in gross domestic product worldwide was a robust 2.9 %. On closer examination, however, the only economy to flourish was the USA, while Japan's economy stagnated and Europe as a whole languished in a period of relatively low growth in the economic cycle, even though signs of recovery were apparent in the second half of the year.

In the emerging economies of East Asia there were first signs of recovery from the consequences of the financial meltdown of 1997. The economies of the tiger states (Malaysia, South Korea, Singapore and

Hong Kong) in particular stabilized considerably in 1999 and returned to growth, whereas the restructuring of the economic and legal framework in Indonesia, the Philippines and Thailand proceeded much more slowly.

A source of great perplexity to the political and economic community, especially in Europe, was the new single European currency, the Euro. In the 16 months following its launch, it fell in value against the dollar by 24 %. The failure of the countries involved to reform their economies and the uneven and, in part, outdated structures of their economic, social and tax systems in

comparison with the USA, combined with the strength of the US economy, hastened the fall of the Euro's external exchange rate. Since mid-May, however, the Euro has been stable and has recovered slightly.

The growth of the world economy has been boosted by the dramatic progress made in all fields of electronics and information technology. Soaring share prices in both the USA and Europe during the period of this report once again drew central bankers' attention to ways of containing the risk of inflation. The American Federal Reserve, for example, raised the prime rate from 4.75 % to 6.5 % between 1 August 1999 and 30 June 2000.

Key Data of the USA, Japan and Germany

		GDP in %	Balance of Payments in USD bn	Balance of Trade in USD bn	Inflation Rate Ø in %	Interest Rate Ø in %*	Unemployment (as of 31.12.) in %
USA	1998	3.8 %	-129.3	-104.3	2.3 %	6.43 %	4.9 %
	1998	3.9 %	-220.6	-164.3	1.6 %	5.51 %	4.5 %
	1999	4.2 %	-338.9	-267.8	2.2 %	5.64 %	4.1 %
Japan	1998	0.9 %	96.0	103.1	1.7 %	2.14 %	3.4 %
	1998	-2.8 %	120.0	125.0	0.6 %	1.51 %	4.1 %
	1999	0.3 %	141.2	114.5	-0.2 %	1.76 %	4.8 %
Germany	1998	2.2 %	-5.8	70.3	1.8 %	5.65 %	11.4 %
	1998	2.8 %	-10.6	75.9	1.0 %	4.61 %	11.1 %
	1999	1.5 %	-20.8	68.9	0.6 %	4.52 %	10.3 %

* Interest rate: public bonds (10-year term)



World Beer Production 1998/99

Figures in 1.000 hl

Europe		
Country	1998	1999
Germany	111,700	112,800
Great Britain	56,652	57,854
Russia (CIS)	32,530	43,200
Spain	24,991	25,852
Netherlands	23,988	24,502
Poland	20,216	22,500
France	19,807	19,866
Czech Republic	18,292	17,946
Belgium	14,105	14,105*
Italy	12,164	12,097
Romania	10,229	11,117
Austria	8,830	8,869
Ireland	8,478	8,648
Ukraine (CIS)	6,830	8,500*
Denmark	8,075	8,024
Yugoslavia	6,388	7,915
Hungary	6,979	7,010
Turkey	7,131	7,000
Portugal	6,784	6,758
Finland	4,660	4,695
Sweden	4,609	4,673
Slovak Republic	4,485	4,473
Greece	3,986	4,220
Bulgaria	3,832	3,988
Croatia	3,831	3,701
Switzerland	3,586	3,599
Norway	2,250	2,300
Slovenia	2,100	2,300
Lithuania	1,464	1,763
Belorussia (CIS)	1,214*	1,300*
Bosna-Hercegovina	850*	900*
Estonia	621	892
Albania	120*	831
Latvia	662	829
Uzbekistan (CIS)	420	825
Kazakhstan (CIS)	850	800
Macedonia	578	652
Georgia (CIS)	495	545
Luxemburg	469	450
Cyprus	350	366
Other CIS-countries ¹⁾	250*	270*
Armenia	52*	187*
Malta	131*	131*
Iceland	84	97
Azerbaijan (CIS)	15*	15*
Total	446,133	469,365

¹⁾ Kirgizstan, Moldova, Tajikistan, Turkmenistan (although geographically belonging mainly to Asia, the entire CIS is listed under Europe for the time being for reasons of comparability.)

Australia/Oceania		
Country	1998	1999
Australia	17,570	17,550
New Zealand	3,206	3,147
Papua New Guinea	397	372
Fiji Islands	170	170*
Tahiti	154	167
New Caledonia	126	127
Samoa	50	50*
Solomon Islands	20	35
Tonga	8	8
Vanuatu	6	7
Total	21,707	21,633

America		
Country	1998	1999
USA	233,001	236,500
Brazil	81,639	80,401
Mexico	54,791	57,256
Canada	22,779	22,949
Venezuela	17,750	17,000
Colombia	18,300*	16,000
Argentina	12,400	13,050
Peru	6,556	6,169
Chile	3,666	5,400
Dominican Republic	2,600	3,100
Cuba	1,850*	2,100*
Ecuador	2,300	2,000
Bolivia	1,800	1,800
Guatemala	1,363	1,400
Paraguay	1,400	1,300
Panama	1,448	1,260
Costa Rica	1,200	1,200
Honduras	1,108	1,079
El Salvador	900	900
Uruguay	900	900
Jamaika	669	800
Guyana	400	400
Nicaragua	400	350
Puerto Rico	400	350
Trinidad	300	300
Haiti	200	200
Bahamas	143	140
Dutch Islands	125	127
Surinam	110	97
Barbados	88	76
St. Lucia	76	76
Martinique	70*	70
Belize	100	60
St. Vincent	38	39
Grenada	35	35
Antigua	25	27
St. Kitts	18	18
Dominica	12	15
Aruba	0	12
Cayman Islands	4	4
Total	470,964	474,960

Asia		
Country	1998	1999
China	173,000*	185,000*
Japan	71,789	71,510
South Korea	14,080	16,692
Philippines	12,688	12,400
Thailand	9,305	10,499
Vietnam	6,562	7,500*
Taiwan	4,229	4,500*
India	4,340	3,670*
Indonesia	1,292	1,511
Malaysia	1,448	1,295
Israel	802*	870*
Singapore	758	768
Hong Kong	850*	504
Sri Lanka	398	419
Nepal	350*	219
Cambodia	180*	180*
Lebanon	127	113
Mongolia	100*	100*
Syria	103	97
Myanmar (Burma)	60*	60*
Jordan	54	55
Irak	50*	50*
Laos	332	36
Pakistan	22	25*
Total	302,919	318,073

Africa		
Country	1998	1999
South Africa	25,639	25,700
Nigeria	4,200	5,500
Cameroon	3,466	3,630
Kenya	2,750	2,818
Tanzania	1,650	1,995
Zaire	1,580	1,448
Zimbabwe	1,760	1,412
Ivory Coast	1,400	1,240
Uganda	1,142	1,200
Angola	1,071	1,084
Namibia	985	1,070
Ethiopia	1,000	1,000
Burundi	1,016	995
Ghana	889	900
Egypt	558	900
Mozambique	764	860
Tunesia	780	850
Gabon	850	780
Marocco	857	765
Malawi	780*	750
Madagascar	507*	610*
Zambia	600	527
Ruanda	681	520
Burkina Faso (Upper Volta)	491	514
Botswana	491	512
Congo	489	485
Algeria	120	426*
Lesotho	385	376
Mauritius	411	369
Benin	330	345
Togo	320	290
Eritrea	220	240
Réunion	262	200
Swaziland	250	190
Central African Republic	220	190
Senegal	170	171
Guinea	136	150
Chad	132	128
Seychelles	80	69
Niger	70	69
Mali	71	66
Cape Verde Islands	42	49
Liberia	55	45
Guinea Bissau	30*	30*
Gambia	21	25
Sierra Leone	41	0
Total	59,762	61,493

WORLD TOTAL	
1998	1999
1,301,485	1,345,524

In italics: corrections for 1998 as stated in last year's report; these figures became available after going to press.

* estimate



Output Development

	1998 1,000 hl	1999 1,000 hl	1998 +/- % rel.	1999 +/- % rel.
European Union	309,298	313,413	-2.1%	1.3%
Rest of Europe	136,835	155,952	9.9%	14.0%
Europe total	446,133	469,365	1.3%	5.2%
North America	255,780	259,449	0.0%	1.4%
Central America/Caribbean	67,963	70,994	6.6%	4.5%
South America	147,221	144,517	-2.3%	-1.8%
America total	470,964	474,960	0.2%	0.8%
Asia	302,919	318,073	0.3%	5.0%
Africa	59,762	61,493	2.8%	2.9%
Australia/Oceania	21,707	21,633	1.1%	-0.3%
WORLD TOTAL	1,301,485	1,345,524	0.7%	3.4%

The change in growth rates from the 1998/99 report is due to the adjustment of the beer output figures for 1998.

Annual growth in beer output considerably exceeded that of previous years and was above the 3 % mark for the first time since 1990, thanks mainly to increasingly strong growth in Eastern Europe.

Even the countries of Asia appear to have overcome the collapse caused by the financial crisis and are showing higher growth in output once again.

Market Analysis

For the first time in many years, there was almost a structural balance between the supply of hops worldwide and demand for hops from the international brewing industry. The painful process of adjustment in world hop acreage since 1988 resulted in a slight structural supply deficit in crop year 1999.

Consequently, the central question in 1999 concerned the actual stocks of hops held by the international brewing industry. There were considerable differences of opinion on this question among the various market participants, depending on their interests. Estimates ranged from six months' to an entire year's supply of hops.

The international hop industry began crop year 1999 with a historically low number of forward contracts as a direct result of the growing tendency on the part of the international brewers to purchase their hops on the spot market. The structural supply deficit, combined with the realisation immediately after the harvest that crop estimates in Germany would have to be revised downwards and with fears for the possible extent of mildew damage to American hops, led to rising prices for bitter and high alpha hops in particular. Capital losses in hop farming for several years, coupled with the need to cover an above-average rise in production costs, made growers in Germany and the USA initially reluctant to sell.

Against the background of the supply situation on the one hand and the growers' reluctance to sell on the other, considerable competition developed among buyers in Germany in particular. This intensified when the extent of the brewing industry's spot purchasing requirements became increasingly apparent. Finally, economic stabilisation and the improving beer market in Eastern Europe – a market that traditionally purchases its hops mainly on the spot market – further contributed to driving prices upwards. Nevertheless, hop growers' average incomes remained in deficit in crop year 1999.

Seldom have hop growers received such a diverse range of offers from the merchants and cooperatives as in crop year 1999. In the end, many producers were persuaded to sell by models such as minimum price guarantees, alpha bonuses, bidding after

alpha analysis or spot hop sales with simultaneous forward contract options. The price level reached by mid-October provided additional liquidity as hop merchants bought back from breweries with excess stocks and contracts were reallocated, which allowed the brewing industry to reduce stockpiles and stabilized the market.

Findings:

- Supply and demand are once again balanced
- After a nine-year cycle of structural downturn, the international hop industry is seriously weakened.
- The price level of future crops will have to be orientated towards the actual production, processing and logistics costs.
- More and more breweries are dependent on the unstable spot market.

Forward contract rates in % (as per spring 2000)

Country of cultivation	2000	2001	2002	2003	2004
Germany	75%	57%	47%	35%	23%
USA	93%	67%	45%	33%	12%
Czech Republic	97%	84%	62%	41%	38%
England	30%	17%	17%	5%	2%
Slovenia	60%	40%	25%	7%	3%

Hop Acreage and Production 1998/99

		1998				1999			
		Acreage ha	Production mt	Ø-Alpha %	Alpha mt	Acreage ha	Production mt	Ø-Alpha %	Alpha mt
Germany	Hallertau	15,906	25,926.9	7.5	1,945	14,652	22,887.6	7.2	1,648
	Tettngang	1,633	2,189.6	3.9	85	1,613	2,280.3	3.3	75
	Elbe-Saale	1,457	2,001.0	9.7	194	1,419	1,940.2	9.4	182
	Spalt	569	629.5	4.7	30	504	709.6	3.4	24
	Hersbruck	102	148.4	5.2	8	94	110.4	4.7	5
	Others	16	24.1	6.5	2	17	26.7	6.0	2
	Total	19,683	30,919.5	7.3	2,264	18,299	27,954.8	6.9	1,936
England		2,447	3,270.7	8.3	271	2,174	3,007.7	7.9	238
France		799	1,268.9	3.2	41	814	1,316.3	1.9	25
Spain		827	1,435.8	9.4	135	800	1,565.4	9.6	150
Belgium		262	539.8	9.5	51	252	453.2	8.7	39
Austria		245	384.3	7.0	27	226	316.3	6.7	21
Portugal		65	56.0	11.0	6	55	59.0	9.8	6
Ireland		6	9.5	10.6	1	6	8.4	9.2	1
European Union		24,334	37,884.5	7.4	2,796	22,626	34,681.1	7.0	2,416
Czech Republic	Zatec (Saaz)	4,458	3,758.3	3.6	135	4,640	4,792.6	3.1	149
	Ustek (Auscha)	674	679.8	3.5	24	786	920.9	2.8	26
	Trsice (Tirschitz)	510	479.9	3.6	17	620	722.6	2.8	20
	Others	15	12.3	3.6	0	15	16.4	2.8	0
	Total	5,657	4,930.3	3.6	176	6,061	6,452.5	3.0	195
Poland		2,080	2,100.0	6.1	129	2,200	2,650.0	5.5	146
Slovenia		2,010	3,150.0	7.0	221	1,737	2,638.0	7.3	193
Russia		1,330	624.3	4.3	27	1,640	1,052.0	4.5	47
Ukraine		1,200*	1,000.0*	5.0	50	1,000*	830.0*	5.0	42
Yugoslavia		477	700.0	5.3	37	451	797.7	5.9	47
Slovak Republic		450	400.0	3.6	14	360	360.0	4.0	14
Bulgaria		350	280.0	8.2	23	320	280.0	8.6	24
Romania		500*	225.0*	6.0	14	300*	150.0*	6.0	9
Turkey		284	198.5	9.0	18	285	218.8	8.6	19
Switzerland		22	46.4	7.0	3	22	46.4	7.5	3
Hungary		0	0	0	0	8	8.0*	7.0	1
Rest of Europe		14,360	13,654.5	5.2	712	14,384	15,483.4	4.8	740
EUROPE		38,694	51,539.0	6.8	3,508	37,010	50,164.5	6.3	3,156
USA	Washington	10,761	20,316.9	10.2	2,072	10,156	22,521.0	11.0	2,477
	Oregon	2,495	4,639.1	9.0	418	2,358	4,568.6	9.0	411
	Idaho	1,584	2,055.3	6.4	132	1,361	2,147.3	7.0	150
	Total	14,840	27,011.3	9.7	2,622	13,875	29,236.9	10.4	3,038¹⁾
Argentina		167	194.0	6.5	13	152	193.0	6.0	12
AMERICA		15,007	27,205.3	9.7	2,635	14,027	29,429.9	10.4	3,050
South Africa		601	955.0	10.5	100	491	821.0	10.0	82
AFRICA		601	955.0	10.5	100	491	821.0	10.0	82
China		4,276	12,057.0	6.0	723	4,385	11,300.0	6.3	712
Japan		360	618.6	6.8	42	341	720.9	6.4	46
India		215	29.6	6.0	2	127	35.0	6.0	2
South Korea		5	4.5	2.3	0	1	0.9	3.0	0
ASIA		4,856	12,709.7	6.0	767	4,854	12,056.8	6.3	760
Australia		604	1,557.0	10.2	159	842	2,237.9	11.4	255
New Zealand		349	644.4	12.4	80	360	740.5	12.2	9C
AUSTRALIA/OCEANIA		953	2,201.4	10.9	239	1,202	2,978.4	11.6	345
WORLD		60,111	94,610.4	7.7	7,249	57,584	95,450.6	7.7	7,393¹⁾

¹⁾ Around 75 mt of alpha was destroyed in a warehouse fire in the USA and approx. 28 mt of alpha in a warehouse fire in Slovenia, which in fact left only approx. 7,290 mt of alpha available worldwide. This lower quantity is also used in the alpha acid balance on page 8.

*) estimate

Any differences to the table on page 8 are rounding differences.



Alpha Acid Production

Alpha acid production worldwide was recorded according to the following groups of varieties:

Group A:	Finest aroma hops, such as: Saaz, Tettnang, Spalt
Group B:	Aroma hops, such as: Hallertau, Hersbruck, Perle, Spalt Select, Hallertau Tradition, Golding, aroma hops from USA, England, etc.
Group C:	Hops without significance for the world market (both aroma and bitter)
Group D:	Bitter hops, such as Northern Brewer, Brewers Gold, Cluster, Pride of Ringwood, high alpha hops from USA, England, Australia and Germany, etc.

With world hop volume divided into these groups, alpha acid production was as follows:

Group	Crop Share	Crop mt	1998			1999				
			Alpha Ø	Alpha mt	Alpha Share	Crop Share	Crop mt	Alpha Ø	Alpha mt	Alpha Share
A	8.6%	8,146	3.7%	301	4.2%	10.3%	9,801	3.1%	304	4.1%
B	31.6%	29,922	5.3%	1,586	21.9%	29.3%	28,011	4.8%	1,345	18.2%
C	23.5%	22,204	6.5%	1,443	19.9%	21.4%	20,437	6.8%	1,390	19.0%
D	36.3%	34,338	11.4%	3,915	54.0%	39.0%	37,202	11.7%	4,353	58.7%
Total	100.0%	94,610	7.7%	7,245	100.0%	100.0%	95,451	7.7%	7,392	100.0%

All alpha acid values were recorded on the basis of % as is, EBC Analytica 7.4. Any differences to the table on page 7 are rounding differences.

The volume of hops produced in 1999 exceeded the 1998 figure by 0.9 % and the volume of alpha acids also increasing year-on-year by 2.0 %, in spite of the fact that acreage declined by 4.2 % in the same period.

Around 75 mt of alpha was destroyed in a warehouse fire in the USA and approx. 28 mt of alpha in a warehouse fire in Slovenia, which in fact left only approx. 7,290 mt of alpha available worldwide. This lower quantity is also used in the alpha acid balance below.

Once again, the farmers in the USA succeeded in significantly increasing their share of total world alpha production with 41.0 % (previous year 36.3 %), while

Germany's share of 26.1 % (31.2 %) constituted a fall by an equal margin. This means that these two countries' joint share of total alpha production remained virtually unchanged over 1998 at 67.1 % (67.5 %). This growth is undoubtedly due to the fact that the alpha levels in the USA in the previous year (1998) had been disappointingly low.

In Group A, Germany's market share fell from 37.5 % to 32.3 %, whereas the Czech Republic's share rose from 57.9 % to 62.0 %. This variety group's share of world alpha volume remained steady year-on-year.

Germany continues to have by far the greatest share of Group B with 47.3 % – well ahead of the USA with 23.1 %. This

variety group's share of world alpha volume decreased significantly once again.

More than half (52.5 %) of Group C was grown in China. As China will soon be the world's biggest beer producer (No. 2 today) and, in addition, since new varieties from the aroma and high-alpha spectrum are being grown there in increasing numbers, a reclassification of this country's hop varieties into Groups B and D is only one or two years away at the latest.

Significant growth in world alpha volume was registered in Group D. The major share of this group is held by the USA with 62.1 % (previous year 59.3 %). Germany's share decreased significantly to 27.4 % (33.6 %).

Alpha Acid Balance

Calendar year	Alpha demand		Alpha Production		Alpha supply	
	Hopping rate	Demand	Crop year	Production	Surplus	Deficit
1996	6.2 g α/hl	7,866 mt α	1995	7,831 mt α	---	35 mt α
1997	6.1 g α/hl	7,882 mt α	1996	9,300 mt α	1,418 mt α	---
1998	5.8 g α/hl	7,549 mt α	1997	8,783 mt α	1,234 mt α	---
1999	5.7 g α/hl	7,669 mt α	1998	7,245 mt α	---	424 mt α
2000*	5.6 g α/hl	7,686 mt α	1999	7,290 mt α	---	396 mt α

* Estimated demand

The change in growth rates from the 1998/99 report is due to the adjustment of the beer output figures for 1998.

The average hopping rate by the international brewing industry in terms of alpha continues to decline.

However, crop year 1999 still failed to meet the calculated alpha requirement for the current calendar year. The stockpiles built

up by the breweries in the last few years enabled them to compensate for this deficit to a great extent by reducing stocks.



European Union

Producer subsidies

In accordance with Directive (EC) No. 1554/97 of July 1997, a flat rate of producer subsidies is paid for all variety groups. The present subsidy was fixed at 480 Ecu per ha for five years as of crop year 1996. As this subsidy regulation expires with crop year 2000, a new regulation has to be passed for crop year 2001 and the following years.

The representatives of the German hop growers are calling for an increase in the subsidy due to the continuing difficulties regarding both sales and cost structure. It was therefore agreed at the last meetings of the advisory committee to the EU Commission and of the standing committee for hops that the member states would submit a standardised report to the EU Commission. For this purpose, all the hop

producing EU member states are to send the Commission a report covering acreage development, market performance and cost development, as well as the forward contract situation and variety conversion requirements, and including a conclusion, so that the Commission may initiate the required procedure for a directive amendment.

Set-aside

Production volume in the EU decreased by 8.5 %, whereas volume worldwide actually increased slightly by 0.9 %. Alpha production in the EU also fell (-13.6 %), whereas globally it actually rose by 2.0 %.

In total, hop acreage in EU countries in 1999 was reduced by 7.0 % from the previous year's level (worldwide -4.2 %). A major part of this acreage reduction can probably be

attributed to the set-aside and clearing programme initiated by Directive (EC) No. 1098/98 (cf. Barth Report "Hops 1998/99"). In 1998, the first year in which this programme applied, the following area (in hectares) was set aside or cleared in the EU:

	Set-aside	Cleared	Total
Germany	1,053	569	1,622
England	322	177	499
Belgium	11	27	38
Portugal	4	15	19
Total	1,390	788	2,178

There are yet no total figures available for the EU for 1999. In the Hallertau production area, the area set aside or cleared in 1999 was approx. 1,800 ha, followed by almost 450 ha in 2000.

Conversion Table

Area:

1 hektare (ha) = 10,000 m ²	= 2.934 bayerische Tagwerk
1 hektare (ha) = 10,000 m ²	= 2.471 acres
1 bayerisches Tagwerk	= 0.341 ha
1 acre	= 0.405 ha

Length:

1 yard	= 3 feet = 36 inches = 91.44 cm
1 mile	= 1.609 km

Volume:

1 hl = 100 l	= 26.42 gall = 0.8523 bbl (USA)
1 hl = 100 l	= 22.01 gall = 0.6114 bbl (GB)
1 barrel (bbl/USA)	= 31 gall = 1.1734 hl
1 barrel (bbl/GB)	= 36 gall = 1.6365 hl

Weight:

1 metr. ton (mt) = 1,000 kg	= 20 Ztr. = 2,204.6 lbs
1 Zentner (Ztr.) = 50 kg	= 110.23 lbs = 1.102 cwt (USA)
	= 110.23 lbs = 0.984 cwt (GB)
1 hundredweight (cwt/USA)	= 100 lbs = 45.359 kg
	= 0.9072 Ztr.
1 hundredweight (cwt/GB)	= 112 lbs = 50.800 kg
	= 1.0160 Ztr.
1 cental (GB)	= 100 lbs = 45.359 kg
	= 0.9072 Ztr.
1 kg	= 2.20462 lbs
1 lb	= 0.45359 kg

Temperature:

from Fahrenheit	from Celsius
into Celsius	into Fahrenheit
$86\text{ }^{\circ}\text{F} = \frac{(86 - 32) \times 5}{9} = 30\text{ }^{\circ}\text{C}$	$30\text{ }^{\circ}\text{C} = \frac{30 \times 9}{5} + 32 = 86\text{ }^{\circ}\text{F}$

Pressure:

1 bar = 14.5038 psi	1 psi = 0.06895 bar
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Currencies of the European Monetary Union

1 EUR equals:

(on 1 January 1999)

Belgium	40.3399	BEF
Germany	1.95583	DEM
Finland	5.94573	FIM
France	6.55957	FRF
Ireland	0.787564	IEP
Italy	1.936.27	LIT
Luxemburg	40.3399	LUX
Netherlands	2.20371	NLG
Austria	13.7603	ATS
Portugal	200.482	PTE
Spain	166.386	ESP

Currency Exchange Rates

1 EUR equals (reference rates by ECB):

(on 1 June 2000)

USA *	0.9330	USD
Australia *	1.6306	AUD
Denmark	7.4638	DKK
Great Britain*	0.6240	GBP
Japan	101.4100	JPY
Canada *	1.3958	CAD
New Zealand*	2.0358	NZD
Norway	8.3210	NOK
Poland	4.0707	PLN
Sweden	8.3560	SEK
Switzerland	1.5740	CHF
Czech Republic	36.0930	CZK

These exchange rates can only serve as an indication. They vary from bank to bank and are not binding.

* = 1 unit all others = 100 units

Germany

Area	Variety	Development of Acreage			Development of Production			
		1998	+/- Acreage ha	1999	1998 Ø-Yield mt/ha	1999	1998 Production mt	1999
Hallertau	Perle	3,453	-363	3,090	1.65	1.60	5,691.86	4,949.25
	Hersbruck	2,347	-392	1,955	1.58	1.58	3,714.41	3,087.30
	Hallertau Tradition	1,984	-301	1,683	1.77	1.74	3,511.31	2,926.40
	Spalt Select	1,158	-190	968	1.81	1.79	2,100.23	1,733.90
	Hallertau	626	37	663	1.17	1.18	734.98	782.40
	Huell	35	-17	18	1.26	1.43	44.06	25.80
	Total Aroma	9,603	-1,226	8,377	1.64	1.61	15,796.86	13,505.05
	Northern Brewer	1,738	-227	1,511	1.61	1.43	2,804.04	2,161.25
	Brewers Gold	227	-71	156	2.14	2.16	486.52	336.65
	Orion	32	-16	16	1.58	1.70	50.66	27.15
	Total Bitter	1,997	-314	1,683	1.67	1.50	3,341.21	2,525.05
	Hallertau Magnum	2,831	354	3,185	1.59	1.44	4,504.67	4,600.30
	Hallertau Taurus	753	42	795	1.25	1.53	938.09	1,220.05
	Nugget	588	-77	511	1.87	1.66	1,101.91	848.40
	Target	72	-14	58	2.07	2.08	148.90	120.45
	Total High Alpha	4,244	305	4,549	1.58	1.49	6,693.57	6,789.20
	Record	46	-16	30	1.51	1.68	69.53	50.45
	Others	16	-3	13	1.61	1.37	25.72	17.85
	TOTAL HALLERTAUE	15,906	-1,254	14,652	1.63	1.56	25,926.89	22,887.60
Tettngang	Tettngang	1,070	-10	1,060	1.25	1.27	1,337.30	1,344.50
	Hallertau	563	-10	553	1.51	1.69	852.25	935.80
TOTAL TETTNGANG	1,633	-20	1,613	1.34	1.41	2,189.55	2,280.30	
Elbe-Saale	Perle	129	-7	122	1.33	1.46	171.85	177.95
	Hallertau Tradition	13	0	13	1.57	1.41	20.45	18.30
	Saaz	5	0	5	0.49	1.16	2.45	5.80
	Other Aroma	0	1	1	0.00	2.10	0.00	2.10
	Total Aroma	147	-6	141	1.32	1.45	194.75	204.15
	Northern Brewer	545	-47	498	1.27	1.19	690.95	592.70
	Other Bitter	4	-3	1	2.13	2.90	8.50	2.90
	Total Bitter	549	-50	499	1.27	1.19	699.45	595.60
	Hallertau Magnum	552	25	577	1.50	1.53	829.40	882.85
	Nugget	111	-11	100	1.66	1.41	184.30	140.70
	Hallertau Taurus	92	3	95	0.85	1.09	77.95	103.20
	Other High Alpha	6	1	7	2.53	1.96	15.15	13.70
	Total High Alpha	761	18	779	1.45	1.46	1,106.80	1,140.45
	TOTAL ELBE SAALE	1,457	-38	1,419	1.37	1.37	2,001.00	1,940.20
Spalt	Spalt	186	-9	177	0.83	1.15	154.75	203.40
	Hallertau	164	-13	151	1.01	1.34	165.35	201.80
	Spalt Select	140	-25	115	1.45	1.86	203.25	213.55
	Hersbruck	46	-11	35	1.37	1.39	63.20	48.80
	Perle	18	-3	15	1.42	1.63	25.50	24.40
	Hallertau Tradition	12	-2	10	1.21	1.62	14.50	16.15
	Total Aroma	566	-63	503	1.11	1.41	626.55	708.10
	Bitter	2	-1	1	1.40	1.50	2.80	1.50
	Others	1	-1	0	0.00	0.00	0.20	0.00
TOTAL SPALT	569	-65	504	1.11	1.41	629.55	709.60	
Hersbruck	Hallertau	26	3	29	1.07	0.96	27.80	27.80
	Spalt Select	27	-5	22	1.75	1.48	47.20	32.65
	Perle	18	-1	17	1.45	1.22	26.05	20.75
	Hersbruck	15	-2	13	1.40	1.02	21.05	13.20
	Other Aroma	8	-2	6	1.87	1.42	14.95	8.50
	Total Aroma	94	-7	87	1.46	1.18	137.05	102.90
	Bitter	5	-2	3	1.50	1.37	7.50	4.10
	High Alpha	2	2	4	1.93	0.85	3.85	3.40
TOTAL HERSBRUCK	101	-7	94	1.47	1.17	148.40	110.40	
Baden/	Aroma	10	3	13	1.45	1.40	14.45	18.15
Bitburg/	Bitter	3	-2	1	1.80	2.95	5.40	2.95
Rhineland-Pal.	High Alpha	3	0	3	1.42	1.87	4.25	5.60
TOTAL BADEN/B./RH.	16	1	17	1.51	1.57	24.10	26.70	
Total Aroma	12,053	-1,319	10,734	1.57	1.57	18,959.21	16,818.65	
Total Bitter	2,556	-369	2,187	1.59	1.43	4,056.36	3,129.20	
Total High Alpha	5,011	324	5,335	1.56	1.49	7,808.67	7,938.65	
Total Others	62	-19	43	1.54	1.59	95.25	68.30	
GERMANY TOTAL	19,682	-1,383	18,299	1.57	1.53	30,919.49	27,954.80	

Growth, crop estimate and weights

The very heavy rainfall in autumn was followed by precipitation levels well below the long-term average in the winter and spring months. Winter began very early with unusually low temperatures in November, but was briefly interrupted by unusually high average temperatures in January before ending with a cold February. Due to long-lasting snow cover, the ground was not loosened by the effects of frost.

In March and April, high average temperatures led to rapid development of the hop plants in spring. Optimum distribution of rainfall from April to July, combined with relatively low temperatures in May and June, led to above-average crop development. Although of hardly any relevance in recent years, aphids were prevalent once more due to a long migration period and unfavourable weather conditions at the time of spraying. This made further pest control measures necessary to avoid financial losses.

The cone development period in August was relatively dry and hot. These conditions continued until the September harvest, greatly favouring late powdery mildew infestation. The inner bine cones were seriously affected in some areas. The significant late mildew infestation of this year's crop affected the cone colour of the entire varietal range, leading to consider-

Area	Estimate 08/1999 mt	Weight 31.03.00 mt
Hallertau	23,750	22,888
Tett nang	2,300	2,280
Elbe-Saale	2,055	1,940
Spalt	665	710
Hersbruck	120	110
Baden/Rhineland-Palatinate/Bitburg	26	27
TOTAL	28,916	27,955

able loss of yield despite intensive efforts to protect the plants.

The official crop estimate of 28,916 mt was more than 960 mt above the hop volume actually harvested, representing a relative difference of 3.3 %. This was mainly due to the fact that the loss of yield due to powdery mildew infestation was unforeseeable at the time when the crop volume was estimated.

Hop logistics and cold storage

The changeover from farmers' bales to rectangular bales is progressing rapidly. Whereas approx. 44 % of the hops purchased by Joh. Barth & Sohn in 1999 was packed in the new future-oriented rectangular bales, expectations for the 2000 crop are up to 55 %. In this way, a basis has been created for cold storage which is effective, which will maintain value and

quality and which is possible only with hops packed in standardized rectangular bale packaging. During and immediately after the 1999 harvest, large quantities of hops were delivered by the growers to the processing plant in St. Johann for storage directly after packaging and certification. Once weighed and objectively certified, the hops are delivered by the growers directly to the cold storage facility where they are unloaded for sampling and are analysed with regard to quality, moisture and alpha acid content. They are then stored in the various cold storage racks according to quality category.

The continued extension of this successful cold storage practice will constitute a further step towards conserving hops as a raw material and thus economically exploiting the enormous potential of quality-maintaining storage with regard to preserving aroma and bittering compounds.

Alpha acid table

Variety	1995	1996	1997	1998	1999	Average
Hallertau Hersbruck	2.1%	4.2%	4.3%	3.5%	1.6%	3.1%
Hallertau Perle	4.9%	7.8%	8.5%	6.2%	6.2%	6.7%
Hallertau Spalt Select	3.5%	5.5%	6.2%	5.3%	4.0%	4.9%
Hallertau Hallertau Tradition	4.5%	6.5%	6.4%	5.2%	5.5%	5.6%
Hallertau Hallertau	3.3%	5.3%	5.1%	4.6%	3.7%	4.4%
Hallertau Northern Brewer	7.1%	9.8%	9.9%	8.4%	8.1%	8.7%
Hallertau Brewers Gold	4.5%	7.1%	8.4%	7.0%	5.6%	6.5%
Hallertau Hallertau Magnum	11.1%	14.0%	15.7%	13.1%	12.3%	13.2%
Hallertau Nugget	8.8%	10.1%	12.5%	10.6%	9.3%	10.3%
Hallertau Target	9.9%	11.7%	12.5%	11.2%	9.2%	10.9%
Hallertau Taurus	-	-	15.6%	13.4%	14.0%	14.3%
Elbe-Saale Northern Brewer	6.1%	8.6%	8.9%	7.9%	7.0%	7.7%
Elbe-Saale Hallertau Magnum	11.0%	14.3%	13.9%	12.5%	11.2%	12.6%
Spalt Spalt	3.3%	5.4%	5.2%	4.1%	3.4%	4.3%
Tett nang Tett nang	2.6%	4.6%	5.0%	3.8%	3.3%	3.9%

All data in % as is, in accordance with EBC-Analytika 7.4. The values were measured in Oct./Nov. after the harvest. Appropriate deductions should be taken into account later in the course of season.

Variety Development

Over the last five years the acreage of the main varieties in the German regions developed as follows:

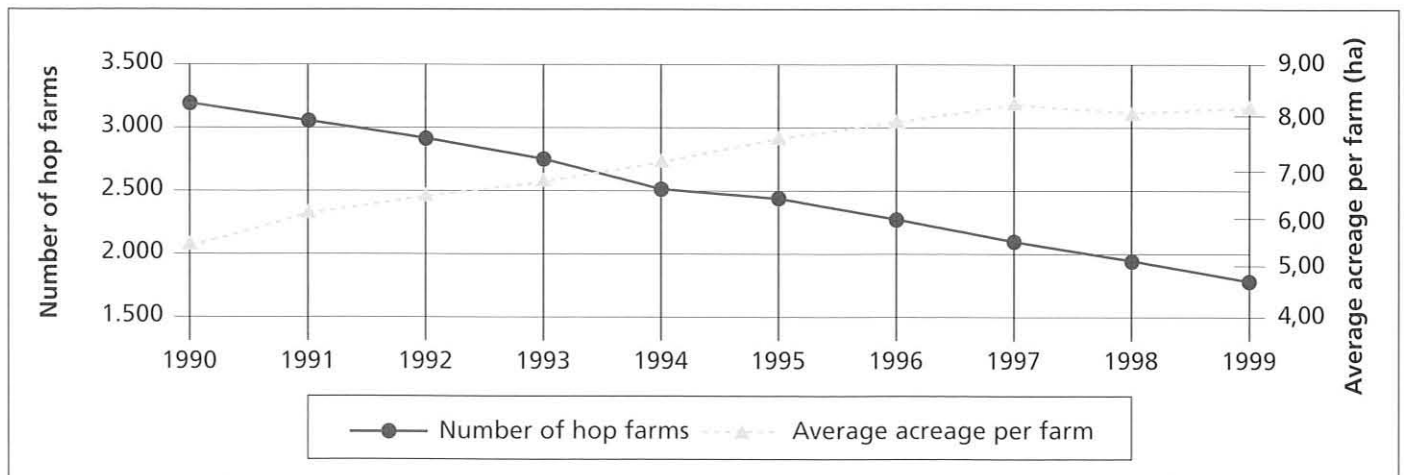
Variety	1995 ha	1996 ha	1997 ha	1998 ha	1999 ha
Hersbruck	4,956	4,104	3,104	2,408	2,003
Perle	3,705	3,889	3,985	3,623	3,251
Spalter Select	1,367	1,433	1,436	1,326	1,107
Hallertau Tradition	1,133	1,629	2,004	2,017	1,712
Hallertau	1,055	1,312	1,390	1,381	1,398
Spalt	165	168	186	190	180
Tettngang	1,061	1,094	1,102	1,070	1,060
Total main Aroma	13,442	13,629	13,207	12,015	10,711
Northern Brewer	4,313	3,588	2,962	2,286	2,009
Brewers Gold	1,140	823	505	236	162
Total main Bitter	5,453	4,411	3,467	2,522	2,171
Hallertau Magnum	1,850	2,379	2,984	3,388	3,768
Hallertau Taurus	*	216	608	845	891
Nugget	668	724	776	699	611
Target	101	95	101	78	65
Total main High Alpha	2,619	3,414	4,469	5,010	5,335

Structure of hop growing in Hallertau

As in the years before, the number of hop farms in Germany continued to decline in

1999. While there had still been 2,547 farms growing hops in 1998, their number fell by 223 to 2,324. In the Hallertau region,

the number of hop farms fell from 1,959 to 1,776. This development is likely to progress steadily in the years to come.



Market development

In 1999, there was an almost imperceptible transition during the hop harvest from the contract to the spot market with steadily rising prices. It very soon became clear not only that the production volume was short of the estimate, but also that the alpha values of most varieties were below the five-year average. The resultingly tight market led to a great variety of purchasing

forms and conditions in the Hallertau region in particular. This was an expression, on the one hand, of the strong competition between the trading companies in the market and, on the other, of the necessity for the growers to obtain better prices for their produce in order to avoid further loss of capital, as had been the case in the previous years. Growers mainly received bids which took into account the alpha value of the respective lots, and, for the first time

since 1995, the prices offered on the spot market for **Perle**, **Northern Brewer** and the high alpha varieties were orientated towards the growers' actual production costs and, in some cases, were above them. Large sections of the brewing industry reacted to this higher, but justified, price level with disconcertment and only purchased enough to cover their requirements for 1999/2000.

Purchase prices at producer level in DEM per 50 kg in farmers' bales

Area/Variety	Sep 99	Oct 99	Nov 99	Dec 99
Hallertau Hersbruck	170	180	bis 210	---
Hallertau Perle	250/270	300	bis 400	bis 400
Hallertau Hallertau Tradition	170/200	210	bis 280	bis 280
Hallertau Spalt Select	170/200	210	bis 280	bis 280
Hallertau Northern Brewer	170/250	300	bis 400	bis 400
Hallertau Hallertau Magnum	330/370	400	bis 500	bis 500
Hallertau Nugget	230/270	300	bis 360	bis 360
Hallertau Taurus	330/390	430	bis 500	bis 500
Tettnang Tettnang	400	350	350	350
Tettnang Hallertau	400	350	350	350
Spalt Spalt (small quantities)	400	350	350	---

As the spot market got off to a brisk start with rising prices, the Hallertau growers' association, HVG Hallertau, opened up a hop pool for all varieties. For the first time, growers were given a down-payment and a premium of DM 20 for high alpha and bitter varieties if an individual alpha value for each HVG variety was exceeded. The Hallertau hop pool further increased the competition in the spot market with the result that Joh. Barth & Sohn was forced to launch a spot purchasing campaign similar to that of crop year 1998. In addition to a more attractive down-payment, growers were offered a final account price DM 10 per Ztr higher than the official HVG pool price. In the course of the 1999 marketing season, it became obvious that in the growers' view the pool had proved to be both a stabilising instrument and a useful tool for increasing the competition between the HVG growers' association and the few remaining trading companies in the market. The instrumentalisation of a voluntary pool for competitive purposes is an indication of the rapid changes in the market, showing above all the extent of growers' dissatisfaction with the conditions offered by the hop industry.

The following table shows the volumes purchased by the HVG pool and in the Barth campaign:

Comparison of HVG pool and Barth campaign 1999 (mt)

Variety	HVG-Pool	Barth campaign
Perle	502.40	60.05
Hallertau Tradition	399.65	56.35
Hersbruck	326.60	65.45
Spalt Select	142.80	24.70
Hallertau	14.00	0.00
Huell	1.40	0.00
Northern Brewer	200.75	40.75
Brewers Gold	34.90	15.25
Orion	3.45	0.00
Record	3.10	0.00
Hallertau Magnum	282.05	25.20
Nugget	96.95	35.40
Taurus	39.50	3.95
Target	8.80	0.00
Total	2,056.35	327.10

With prices at more interesting levels for growers than in recent years, the spot market for all varieties except **Hersbruck** was virtually cleared at a relatively early stage in December. Due to its extremely low alpha content, the **Hersbruck** variety, unlike all the others, has major marketing problems, with the result that the final price paid for it in the HVG pool was only a minimum price of DM 100 per Ztr.

England

Variety	Development of Acreage			Development of Production			
	1998	+/-	1999	Ø-Yield mt/ha		Production mt	
	Acreage ha						
Goldings	485	-47	438	1.40	1.36	681.2	594.8
Fuggles	321	-8	313	1.20	1.16	384.5	363.0
Challenger	211	-28	183	1.48	1.42	311.5	259.7
Phoenix	157	-17	140	1.01	1.20	157.8	167.4
First Gold	162	-33	129	0.98	1.04	159.2	134.5
W.G.V.	111	-25	86	1.45	1.23	161.3	105.9
Progress	121	-38	83	1.48	1.31	178.7	108.4
Bramling Cross	35	-10	25	1.13	1.16	39.7	29.1
Total Aroma	1,603	-206	1,397	1.29	1.26	2,073.9	1,762.8
Northdown	181	-41	140	1.51	1.52	273.6	213.4
Total Bitter	181	-41	140	1.51	1.52	273.6	213.4
Target	580	-38	542	1.52	1.73	882.6	937.7
Herald	54	1	55	0.21	0.95	11.4	52.1
Admiral	18	8	26	1.23	1.23	22.2	32.1
Total High Alpha	652	-29	623	1.41	1.64	916.2	1,021.9
Others	11	3	14	0.64	0.68	7.0	9.6
ENGLAND TOTAL	2,447	-273	2,174	1.34	1.38	3,270.7	3,007.7

Growth and quality

As a result of the mild winters in the last few years, it is becoming increasingly important for growers to prevent the hops from germinating prematurely.

Both powdery and downy mildew were kept in check by regular spraying. Spider mite infestation, on the other hand, has been hard to control by means of available pesticides in recent years. In early August, however, infestation decreased due to a change to moist and cool weather conditions.

Unusually high temperatures during the harvest meant that the cones matured faster than they could be picked, with the result that the harvest turned into a race against time.

Alpha Acid Table

Variety	1998	1999
Goldings	6.3%	5.2%
Fuggles	5.1%	4.7%
Challenger	7.7%	6.7%
First Gold	7.3%	7.9%
Phoenix	12.2%	10.9%
Progress	7.0%	5.8%
W.G.V.	6.6%	5.9%
Bramling Cross	6.4%	6.0%
Northdown	8.9%	7.7%
Target	11.3%	10.7%
Herald	11.9%	12.5%
Admiral	15.2%	13.8%

All data in % as is, in accordance with EBC-Analytika 7.4. The values were measured in Oct./Nov. after the harvest. Appropriate deductions should be taken into account later in the course of season.

In 1999, the trading companies noticed that the alpha acid content of the high alpha variety **Target** in particular degraded unusually quickly – by up to 2 % in two weeks. This meant that larger quantities of hops had to be delivered in order to meet the terms of contracts on the basis of kgs alpha acid.

Hop research

1999 saw the expansion of farm testing of two new breeds from the Hop Research Institute at Wye. Both varieties had already been tested on a small scale the year before.

P38, a bitter variety with high resistance to wilt, achieved very good yields of 2.5 mt/ha. The British Institute of Brewing is planning to conduct commercial brewing tests with this variety as of crop year 2000.

In contrast to this, the results of another breed, **93/50**, were disappointing. Although this variety, intended for low trelliswork, produced good yields, its alpha levels were lower than expected and plans for brewing tests with this variety were scrapped.

Three further breeds were selected for farm tests as a result of their production results at the Wye Research Institute. **P6** is a bitter variety for normal trelliswork height and **S24** and **S26** are varieties for low trelliswork.

Market situation

In summer 2000, about 30 mt of hops, mainly aroma varieties, from the 1999 crop

remained unsold, although the spot market was somewhat livelier than in the year before. The following average prices were paid at producer level:

Contract market

Aroma	270 GBP/50 kg (433 EUR)
"Dual Purpose"	262 GBP/50 kg (420 EUR)
High Alpha	25 GBP/kg Alpha (40 EUR)

Spot market

Aroma	150 GBP/50 kg (240 EUR)
"Dual Purpose"	160 GBP/50 kg (256 EUR)
High Alpha	20 GBP/kg Alpha (32 EUR)

Growers are continuing to abandon hop acreage due to lack of forward contracts with merchants and breweries. The hardest hit are the so-called "dual-purpose" varieties that are used for both their aroma and their alpha properties. Estimates published by the International Hop Growing Commission put the share of forward contracts in crop year 2000 at only 30 %.

The breweries still have large stockpiles and are unlikely to play a major part in the market until 2002. Some of the larger brewers are trying to establish closer links with growers through the trading companies in the hope of influencing contract and spot prices.



France

Area	Variety	Development of Acreage			Development of Production			
		1998	+/- Acreage ha	1999	1998	1999	1998	1999
					Ø-Yield mt/ha		Production mt	
Alsace	Aroma	733	16	749	1.57	1.61	1,148.5	1,204.5
	Bitter	15	-1	14	2.12	2.63	31.8	36.8
	High Alpha	21	0	21	2.10	1.68	44.2	35.3
	Total Alsace	769	15	784	1.59	1.63	1,224.5	1,276.6
Nord	Aroma	10	1	11	1.31	1.23	13.1	13.5
	Bitter	10	-1	9	1.44	1.14	14.4	10.3
	High Alpha	10	0	10	1.69	1.59	16.9	15.9
	Total Nord	30	0	30	1.48	1.32	44.4	39.7
FRANCE TOTAL		799	15	814	1.59	1.62	1,268.9	1,316.3

The slight increase in acreage of aroma varieties, which has been noticeable in Alsace for many years now, continued in 1999. In Northern France, on the other hand, there was no change in acreage. The number of hop growers fell slightly from the previous year to 106.

Growth and quality

During the vegetative phase, growers had to contend repeatedly with winds, gales

and hail. The quality of the hops was seriously affected by powdery mildew – a problem that occurred in many hop regions in Europe and America in 1999. Downy mildew, aphid and red spider mite infestation was limited and control measures proved successful.

In Alsace, the alpha values of **Strisselspalt**, the main variety, were significantly lower than in previous years, with only 1.35 % (EBC 7.4), whereas the aroma varieties were satisfactory.

Market situation

As is usual in France, virtually the entire crop volume (98 %) had already been sold through forward contracts, with the remainder being sold on the spot market. By spring, 95 % of the expected crop volume for 2000 had already been contracted.

Spain

Variety	Acreage ha	Ø-Yield mt/ha	Production mt
H-3 Leonés	343	1.22	418.1
Total Bitter	343	1.22	418.1
Nugget	446	2.55	1,135.6
Magnum	10	1.03	10.3
Total High Alpha	456	2.51	1,145.9
Others	1	1.40	1.4
SPAIN TOTAL	800	1.96	1,565.4

Once again, a slight year-on-year reduction in acreage can be observed. However, the 1998 acreage estimates were lower than the figure officially registered, and it is to be expected that acreage will decrease only slightly over the next few years. By far the greatest part of this area is in the León region, with only 8 ha remaining in La Rioja. Hops are grown by approx. 500-550 farmers.

Due to their considerably higher average yields, the sharp increase in high-alpha

varieties over the past few years will probably continue at the expense of the bitter variety **H-3**, reaching nearly 100 % in the next two years.

Growth and quality

The vegetative phase was characterized by changeable weather conditions. A mild, dry winter was followed by a cool spring. The summer was hot and dry, with numerous gales. As a result, flowering was early, but

the cones were late in maturing. The crop was free of disease and pests. The average alpha acid content (EBC 7.4) was slightly lower than the figure for the previous years:

H-3	6.4 %
Nugget	10.8 %
Magnum	11.6 %

Market situation

The entire crop was processed into Type 90 pellets, and approx. 8 % of the pellets was further processed into CO₂ extract. On average, producers were paid the following prices:

H-3	2.52 EUR/kg
Nugget	3.01 EUR/kg
Magnum	3.31 EUR/kg

Belgium

Variety Group	Acreage ha	Ø-Yield mt/ha	Production mt
Aroma	83	1.45	120.5
Bitter/High Alpha	169	1.97	332.7
BELGIUM TOTAL	252	1.80	453.2

The trend towards reduced acreage continued in 1999, although at a significantly slower pace than in 1998.

Quality

The alpha content in the main variety **Target** was 10 % (EBC 7.4). An unusually

sharp rate of degradation could be observed in this variety, with a residual alpha content of only 7 % in the hops after approx. six months. The alpha acid content of the high-alpha variety **Magnum** was between 11 % and 13 %, depending on the time of harvest. The figures for the aroma varieties **Challenger** and **Hallertau** were 5 % and 3.8 % respectively.

Market situation

The entire production volume was sold. The growers were paid the following average prices for their produce:

Contract Market

Aroma	204,50 EUR/50 kg
Bitter/High Alpha	158,50 EUR/50 kg

Spot Market

Aroma	102,25 EUR/50 kg
Bitter/High Alpha	112,50 EUR/50 kg

By spring 1999, approx. 25 mt of the 2000 crop and 24 mt of the 2001 crop had been sold through forward contracts. The forward contracts are mainly for the aroma variety **Challenger**.

Austria

Area	Acreage ha	Ø-Yield mt/ha	Production mt
Mühlviertel	114	1.57	179.3
Leutschach	91	1.15	104.7
Waldviertel	21	1.54	32.3
AUSTRIA TOTAL	226	1.40	316.3

Mühlviertel/Upper Austria

The 48 hop farms in this region produced a good yield with satisfactory quality on an acreage 8 ha down on the previous year. The alpha acid content of the main variety **Malling**, which accounts for almost half of the acreage, averaged 6.6 % (EBC 7.4). The entire crop was sold at an average price of 4.22 EUR/kg, but not only – as in 1998 – to local breweries.

The figures reported for 2000 place acreage at 110 ha, the number of growers

at 46 and the forward contract rate at approx. 80 %.

Leutschach/Steiermark

In this region there was a year-on-year reduction in acreage of approx. 10 %. Due to unfavourable weather conditions during the vegetative phase, the yield per ha was far below the long-term average. The main variety, **Golding**, which accounts for approximately half of the acreage, produced an average alpha content of 5.1 % (EBC 7.4).

There was hardly any occurrence of pests or disease, and approx. 96 % of the total production was classed as Quality Grade I. The entire crop was sold at an average price of 4.67 EUR/kg.

Waldviertel/Lower Austria

The 10 growers in this region continue to grow the **Zwettl Perle** variety. Both yield and organoleptic quality were good. The alpha content of approx. 9 % (EBC 7.4) was lower than in the previous year. As in the previous years, 18 mt was purchased by a local brewery by forward contract, with the remainder being sold on the spot market. The sales prices were 4.58 EUR/kg (Grade I) and 4.12 EUR/kg (Grade II). The crop volume expected for 2000 is unchanged, but the contracted volume is only 12 mt.

Portugal

Expectations of a significant increase in crop volume from 1998 were not met. Although the yield per hectare of 1.07 mt/ha was still very low, it was at least higher year-on-year, with the result that a volume of 59 mt was

harvested on the further reduced acreage of 55 ha. The alpha content of **Nugget**, the only variety grown in Portugal, averaged 9.8 % (EBC 7.4).

Contract sales accounted for the entire crop volume. The growers received an average price of 30.68 EUR/kg alpha acid. No change is expected in crop volume for the year 2000.

Czech Republic

Area	Development of Acreage			Development of Production			
	1998	+/-	1999	1998	1999	1998	1999
	Acreage ha			Ø-Yield mt/ha		Production mt	
Zatec (Saaz)	4,458	112	4,570	0.84	1.05	3,758.3	4,792.6
Ustek (Auscha)	674	111	785	1.01	1.17	679.8	920.9
Trsice (Tirschitz)	510	111	621	0.94	1.16	479.9	722.6
Others	15	0	15	0.82	1.09	12.3	16.4
CZECH REPUBLIC TOTAL	5,657	334	5,991	0.87	1.08	4,930.3	6,452.5

Contrary to expectations, acreage not only stabilized but in fact increased again slightly, reversing the drastic decline in recent years. Furthermore, the yield per ha considerably exceeded the ten-year average (0.95 mt/ha). Currently, there are 194 hop growers in the Czech Republic.

Growth and quality

In the spring months, temperatures were slightly above the average, and this, together with sufficient moisture, had a

positive influence on hop growth. In the later course of the vegetative phase – at the time of cone and resin formation – the weather conditions worsened, however. August, in particular, was hot and too dry. As a result, the average alpha content (EBC 7.4) was far below the levels of the past 5 years, with 3.1 % in the Saaz region, 2.8 % in Auscha and 2.9 % in Tirschitz. Powdery mildew was detected in some hop gardens, especially on virus-free plants, which affected the quality of part of the crop.

Market situation

The crop was sold in its entirety. Due to the low alpha acid levels, many customers also closed forward contracts for the 2000 crop to cover their alpha requirements. On the basis of an average yield, the 2000 crop can be considered to be sold out, and the forward contract rate for the following years is also higher than in the past. The average prices for contracted hops for the years 2000 to 2004 are between 3.60 and 3.66 EUR/kg.

Poland

Variety Group	Development of Acreage			Development of Production			
	1998	+/-	1999	1998	1999	1998	1999
	Acreage ha			Ø-Yield mt/ha		Production mt	
Aroma	1,480	20	1,500	0.91	1.07	1,350.0	1,600.0
Bitter	600	100	700	1.25	1.50	750.0	1,050.0
POLAND TOTAL	2,080	120	2,200	1.01	1.20	2,100.0	2,650.0

After a sharp reduction in acreage in the previous year, 1999 saw a slight increase, mainly among the bitter varieties. Moreover, in contrast to 1998 several vines were trained per hill, which meant that the yield returned to the levels of the years before.

Growth and quality

Weather conditions permitted spring work to be conducted without any difficulty. The entire vegetative phase was accompanied by higher rainfall and somewhat higher temperatures than the long-term average, ensuring sufficient water supply for the hops. There were no occurrences of pests or diseases, and the organoleptic quality of the hops can be described as good average. The average alpha acid content (EBC 7.4) was 3.7 % for the aroma varieties (**Lublin** and **Lomik**) and 8.3 % for the bitter varieties (**Marynka** and **Northern Brewer**).

Market situation

The market situation appears to have stabilized. The producers were able to sell their entire crop, largely through forward contracts, with the remainder finding buyers in the spot market.

For the 2000 crop, too, the forward contract rate is estimated at around 75 %. Unlike the year before, most of the forward contracts are based on fixed prices, with 2.33 EUR/kg for aroma varieties and slightly more for bitter varieties.

Slovenia

Variety	Development of Acreage			Development of Production			
	1998	+/-	1999	1998	1999	1998	1999
	Acreage ha			Ø-Yield mt/ha		Production mt	
Aurora	1,196	-95	1,101	1.67	1.67	2,003.0	1,837.0
Steirer Golding	512	-100	412	1.15	1.13	588.0	466.0
Bobek	217	-117	100	1.83	1.75	397.0	175.0
Magnum	*	*	30	*	1.40	*	42.0
Others	85	9	94	1.91	1.26	162.0	118.0
SLOVENIA TOTAL	2,010	-273	1,737	1.57	1.52	3,150.0	2,638.0

* Included in „Others“

As a result of continuing marketing difficulties, acreage declined year-on-year by a further 13 %, with the number of hop growers falling by 40 to 245.

In 1999, **Magnum** was grown to a significant extent for the first time.

Growth and quality

The main feature of the vegetative phase was heavy rainfall which, however, was very unevenly distributed. In certain regions, the

hop gardens were damaged by hail. Sharp fluctuations in temperature were registered in July in particular.

The average alpha levels (EBC 7.4) were 8.3 % for **Aurora** (Super Styrian), 4.0 % for **Styrian Golding**, 5.5 % for **Bobek** and 13.0 % for **Magnum**.

Market

The proportion of the crop sold by forward contract was approx. 58 %, slightly above

the figure of the previous year. In autumn, fire destroyed a warehouse containing more than 400 mt of Slovenian hops, some 85 % of which were from the 1999 crop, with the result that the volume available was considerably lower than expected. By far the greatest proportion of non-contracted hops was sold on the spot market, and by spring 2000 only about 37 mt remained unsold.

Slovak Republic

Variety	Development of Acreage			Development of Production			
	1998	+/-	1999	1998	1999	1998	1999
	Acreage ha			Ø-Yield mt/ha		Production mt	
Saaz	450	-90	360	0.89	1.00	400.0	360.0
SLOVAK REPUBLIC TOTAL	450	-90	360	0.89	1.00	400.0	360.0

Although the marketing problems of the previous years did not continue, acreage still decreased by another 20 %. Acreage has thus declined to one quarter of its 1989 level within 10 years.

Growth and quality

Weather conditions were similar to those in the Czech Republic, although without the extreme water shortage during the cone and resin development stages, resulting in higher alpha levels of approx. 4.0 % (EBC 7.4). The quality of the hops was affected in part by powdery mildew.

Market situation

The 1999 crop was completely sold out. Contract sales also account for the entire 2000 crop already. The average prices (contracted hops) were 2.40 EUR/kg for crop year 1999, 2.43 EUR/kg for 2000 and 2.31 EUR/kg for 2001.

Yugoslavia

Variety Group	Acreage ha	Ø-Yield mt/ha	Production mt
Aroma	41	1.50	61.5
Bitter	361	1.70	613.7
Others	49	2.50	122.5
YUGOSLAVIA TOTAL	451	1.77	797.7

Growth and quality

Moderate temperatures and above-average precipitation ensured good hop growth. Due to the shortage of pesticides, however,

powdery mildew was able to spread unchecked, which had adverse effects on both yield and quality.

The alpha content (EBC 7.4) of the aroma variety **Bačka** was only 1.2 %, while that of

the bitter variety **Brewers Gold** was 6.0 %. A new variety called **Aroma** achieved an alpha level of 7.2 %.

Market

Around 60 % of the crop volume had already been sold by forward contracts. The growers were paid between 2.05 and 4.60 EUR/kg, which, in some cases, was significantly more than in previous years. At the time of going to press, there was still a volume of 45 mt available on the spot market.



Bulgaria

Variety Group	Acreage ha	Ø-Yield mt/ha	Production mt
Aroma	70	1.00	70.0
Bitter	250	0.84	210.0
BULGARIA TOTAL	320	0.88	280.0

The gradual reduction in acreage continued in 1999. As a result of higher yields, however, the volume of hops harvested remained unchanged year-on-year. The hops grown were the aroma varieties **CFJ-8** and **Perle** and the bitter varieties **Nugget**, **Chinook**, **Olympic**, **Galena** and **Brewers Gold**.

The average alpha acid levels (EBC 7.4) were 5.5 % for the aroma varieties and 9.0 % for the bitter varieties – an improvement on previous years.

The crop was sold on the spot market. The crop volume expected for 2000 is similar to that of 1999. No forward contracts had been closed by spring 2000.

Romania

In mid-January 2000 a new land restitution law came into effect. The land that is currently state property and owned by so-called "agroindustrial trading companies" is to be returned to the former owners or their heirs. At the same time, these state farms are to be privatized. It is still unclear how this will work in practice, since capital and labour intensive cultures, to which hop growing belongs, are hardly within the means of private citizens on a large scale at present.

Consequently, the decline in acreage will go on. In the early 1990s there was still an area of over 2,400 ha. In 1999 acreage was estimated at approx. 300 ha, which, with an average yield of 0.50 t mt/ha, produced a crop volume of 150 mt.

Turkey

Variety Group	Acreage ha	Ø-Yield mt/ha	Production mt
Aroma	91	1.51	137.4
Bitter	191	0.42	80.2
High Alpha	3	0.40	1.2
TURKEY TOTAL	285	0.77	218.8

The acreage planted with **Erciyas**, the new high-alpha variety, was enlarged slightly, while the acreage of bitter varieties was slightly reduced. All in all, there was a slight year-on-year increase in the volume produced on a virtually unchanged acreage, with sufficient and evenly distributed rainfall encouraging above-average yield during

the growing period. The alpha acid content (EBC 7.4) of the bitter variety **Brewers Gold** was 7.9 % and thus below the 8.9 % of the **Efes Aroma** variety.

As in previous years, contract sales to the Turkish brewing industry accounted for the entire volume produced. Prices ranged between 4.60 and 5.10 EUR/kg for pellets.

Switzerland

Hop acreage in Switzerland stands at 22 ha, unchanged since 1996. The crop volume of 46.4 mt (0.45 mt of which was organically grown) was the same as in the previous year. The yield of 2.10 mt/ha was average for Switzerland, but by international standards it was one of the highest yields anywhere. This was particularly remarkable in 1999, since moist weather conditions during the vegetative phase brought about severe mould.

The varieties grown were **Hallertauer**, **Perle** and **Magnum**. The entire crop was sold to the Swiss brewing industry.

Russia

Variety Group	Acreage ha	Ø-Yield mt/ha	Production mt
Aroma	1,260	0.62	776.4
Bitter	380	0.73	275.6
RUSSIA TOTAL	1,640	0.64	1,052.0

The expected increase in acreage due to rising demand from the Russian brewing industry for locally grown hops materialized in 1999.

The average alpha acid content (EBC 7.4) was 3.8 % for the aroma varieties and 6.3 % for the bitter varieties. The organoleptic quality of the hops is described as good.

60 % of the production volume was contracted, with the remainder being sold completely on the spot market.

Frost in May 2000 slowed hop growth by about two weeks, but no adverse effects on volume or quality are anticipated. Forward contracts for some 40 % of the expected volume have already been signed with the domestic brewing industry.

Hungary

In Hungary, experimental growing has been resumed. The varieties **Magnum**, **Taurus**, **Aurora**, **Celeja** and **Bobek** have been planted on an area of approx. 8 ha. The exact volume harvested is not known, but the entire crop was processed into Type 90 pellets and sold to a Hungarian brewery – at a very low price, however.

Ukraine

Once again, no figures are available for hop growing in Ukraine. The International Hop Growing Commission has also been unable to obtain any information since August 1998.

Area	Variety	Development of Acreage			Development of Production			
		1998	+/- Acreage ha	1999	1998 Ø-Yield mt/ha	1999	1998 Production mt	1999
Washington	Willamette	1,588	-226	1,362	1.32	1.61	2,099.2	2,197.3
	Cascade	402	-35	367	2.01	2.25	809.9	826.0
	Mount Hood	146	10	156	1.15	1.23	168.6	191.6
	Perle	120	-9	111	0.71	1.19	84.6	132.5
	Horizon	154	-45	109	0.94	1.38	144.0	150.7
	Tettnang	102	-50	52	1.01	1.13	102.9	58.5
	Golding	34	-20	14	1.19	1.67	40.6	23.4
	Total Aroma	2,546	-375	2,171	1.35	1.65	3,449.8	3,580.0
	Cluster	1,055	-520	535	2.14	2.15	2,256.9	1,150.5
	Total Bitter	1,055	-520	535	2.14	2.15	2,256.9	1,150.5
	Super High Alpha	1,909	862	2,771	2.70	2.62	5,159.4	7,259.1
	Galena	2,340	-201	2,139	1.90	2.25	4,456.3	4,815.7
	Nugget	1,941	-242	1,699	1.69	2.32	3,282.9	3,938.9
	Chinook	408	-88	320	1.75	2.05	712.6	655.9
	Others High Alpha	332	50	382	1.94	2.25	645.2	858.8
	Total High Alpha	6,930	381	7,311	2.06	2.40	14,256.4	17,528.4
	Others	230	-91	139	1.54	1.89	353.8	262.1
TOTAL WASHINGTON	10,761	-605	10,156	1.89	2.22	20,316.9	22,521.0	
Oregon	Willamette	927	13	940	1.70	1.58	1,575.4	1,489.7
	Perle	156	8	164	1.46	1.50	228.1	245.8
	Mount Hood	91	11	102	1.69	2.05	154.1	209.4
	Golding	95	-50	45	0.95	1.55	90.2	69.6
	Fuggle	77	-37	40	1.22	1.20	93.7	47.8
	Tettnang	62	-26	36	1.33	1.36	82.2	48.9
	Total Aroma	1,408	-81	1,327	1.58	1.59	2,223.7	2,111.2
	Nugget	978	-106	872	2.26	2.51	2,211.4	2,187.6
	Others High Alpha	*	*	38	*	1.58	*	60.0
	Total High Alpha	978	-68	910	2.26	2.47	2,211.4	2,247.6
	Others	109	12	121	1.87	1.73	204.0	209.8
TOTAL OREGON	2,495	-137	2,358	1.86	1.94	4,639.1	4,568.6	
Idaho	Willamette	91	9	100	0.80	1.51	72.9	151.0
	Others Aroma	699	-62	637	1.26	1.22	883.2	778.6
	Total Aroma	790	-53	737	1.21	1.26	956.1	929.6
	Cluster	266	-97	169	1.51	1.86	402.0	315.1
	Total Bitter	266	-97	169	1.51	1.86	402.0	315.1
	Galena	297	-44	253	1.37	1.88	406.3	476.0
	Chinook	156	-74	82	1.48	2.12	230.2	174.1
	Super High Alpha	*	*	81	*	2.22	*	180.1
	Nugget	39	-3	36	1.53	1.92	59.8	69.2
	Total High Alpha	492	-40	452	1.42	1.99	696.3	899.4
	Others	36	-33	3	0.03	1.07	0.9	3.2
	TOTAL IDAHO	1,584	-170	1,361	1.30	1.58	2,055.3	2,147.3
Total Aroma	4,744	-509	4,235	1.40	1.56	6,629.6	6,620.8	
Total Bitter	1,321	-617	704	2.01	2.08	2,658.9	1,465.6	
Total High Alpha	8,400	273	8,673	2.04	2.38	17,164.1	20,675.4	
Total Others	375	-112	263	1.49	1.81	558.7	475.1	
USA TOTAL	14,840	-965	13,875	1.82	2.11	27,011.3	29,236.9	

* Included in „Others“

Minor statistical deviations may result from conversion of acres into ha and lbs into tons.

Variety Development

The acreage of the main varieties in all of the US growing regions developed as follows:

Variety	1995 ha	1996 ha	1997 ha	1998 ha	1999 ha
Willamette	2,453	2,746	3,082	2,605	2,401
Cascade	457	423	420	401	367
Perle	162	167	237	276	275
Mount Hood	568	483	319	241	271
Total main Aroma	3,640	3,819	4,058	3,523	3,314
Cluster	2,418	2,295	1,795	1,320	703
Total main Bitter	2,418	2,295	1,795	1,320	703
Nugget	3,310	3,499	3,638	2,956	2,605
Galena	3,631	3,497	3,098	2,635	2,391
Super High Alpha	309	805	1,677	1,907	2,850
Total main High Alpha	7,250	7,801	8,413	7,498	7,846

Growth

Washington – The winter months brought adequate precipitation in the surrounding mountains but failed to blanket the growing area with a protective layer of snow. As a result, the few nights of below-freezing temperatures were able to penetrate the soil and reduce the number of overwintering powdery mildew spores. In spring, reports of flag shoots were rare and it was believed that Washington would be able to keep powdery mildew under control for the first time since its initial outbreak two years earlier.

By May, however, numerous secondary infections were reported. These findings coincided with lower than normal temperatures, which caused training of hops to be disrupted and prolonged. It is likely that the prolonged training time and the low but existing source of powdery mildew physically helped spread the disease evenly across fields and across varieties.

Growers who maintained a rigorous preventive control program were able to keep the disease well under control throughout the season. However, some farms mainly growing **super high alpha** varieties fell behind in their control activities. These varieties, made up of **Columbus**, **Thomahawk** and **Zeus**, proved even more sensitive than originally thought. This only became evident shortly before harvest, however. Until that time, many growers had expected normal to above-normal yields.

Ultimately, most of the **super high alpha** varieties yielded poorly, both in volume and in alpha. The total alpha per acre production of this group fell by approx. 20 % to only 360 kg. alpha per ha versus an anticipated 450 kg alpha per ha.

Oregon – Autumn and winter brought above-normal precipitation. However, the flooding experienced in previous years did not occur and the above-normal spring temperatures enabled the crop to get off to a good start. Throughout the season, temperatures increased steadily, providing excellent growing conditions.

Having experienced powdery mildew for the first time during crop 1998, growers in Oregon implemented similar preventive measures as growers in Washington. However, success was limited, as the disease spread heavily through yards planted to **Perle** and to a lesser degree to **Willamette**. Fortunately, **Nugget**, which is grown on approx. half of the Oregon acreage, still maintained its resistance to the disease and therefore required no control measures.

The varieties **Perle**, **Fuggle** and **Willamette** yielded less than normal, while **Nugget** produced one of its highest yields in a long time, which ultimately resulted in a higher total production than originally forecasted.

Idaho – Adequate winter precipitation filled mountain reservoirs with sufficient water to meet the summer irrigation needs, while average temperatures allowed normal plant growth.

Also in this state, growers prepared to fight powdery mildew early on, as their fields had become infected for the first time the previous year. Both the control measures and the relative lack of highly sensitive varieties resulted in a relatively low incidence of powdery mildew damage. Overall yields were slightly better than forecasted.

Quality

The overall appearance of the crop of 1999 was highly variable. Because powdery mildew got out of control in some areas, especially in yards of **super high alpha** varieties, several lots had small, deformed cones, which not only reduced the physical quality but also the alpha contents. The average seed content of 1.15 % was significantly higher than normal and equal to the poor-quality crops of 1997 and 1991. Of the total production, approx. 1,900 mt had a seed content of 4 % and higher, a level of high seed content that had not occurred since 1986. The cone damage due to powdery mildew also depressed the alpha levels. The super alpha varieties produced an average alpha content of approx. 1 % percentage point lower than anticipated. Total alpha production for the US crop amounted to 3,038 mt, which was reduced to 2,963 after a warehouse fire.

Spot Market

There was little activity in spring of 1999, as the market was thought to be oversupplied and Germany was projected to produce another record crop. The few transactions that did occur centered on **super high alpha** at levels of \$1.00 to \$1.10 per pound plus premiums. Only when the extent of powdery mildew became evident in early September did the market become more active. Initially, **Nugget** and **Galena** sold at \$1.40, but prices jumped to \$1.50 after a warehouse fire destroyed approx. 650 mt of mostly high alpha hops. **Super high alpha** hops, initially selling at \$1.40 also jumped to \$1.50 plus premiums. The estimated 1000 mt of spot high alpha hops were virtually all sold by early October.

Alpha acid table

Variety	1995	1996	1997	1998	1999	Average
Willamette	4.0%	3.8%	3.8%	4.2%	4.5%	4.1%
Tettnang	3.2%	3.8%	3.8%	3.4%	3.9%	3.6%
Mount Hood	3.2%	3.9%	4.3%	4.0%	4.3%	3.9%
Cascade	3.8%	5.4%	5.0%	4.9%	5.4%	4.9%
Cluster	6.2%	6.3%	6.4%	6.5%	6.8%	6.4%
Galena	10.6%	11.4%	10.6%	11.7%	12.1%	11.3%
Nugget	11.3%	12.6%	12.0%	12.3%	12.9%	12.2%
Chinook	10.4%	11.0%	10.3%	11.0%	11.2%	10.8%
Super High Alpha	13.5%	14.4%	14.2%	14.0%	13.1%	13.8%

All data were converted from ASBC spectrophotometric (at time of harvest) into % as is according to EBC-Analytica 7.4 (Oct/Nov. after the harvest) to ensure comparability within this report.

Contract Market

Between spring of 1999 and spring of 2000, growers signed new contracts for approx. 9,000 mt for crop 2000. Although this volume is much higher than in the last years, the degree of forward contracts for 2000 that existed in 1999 was well below normal.

Based on an estimated production of 29,500 mt for crop 2000, growers hold forward contracts covering 93 % of their production, which is in line with historical averages. However, the contracting coverage in the subsequent years continues to decline and is close to 20 percentage points below historical forward coverage.

The initial contract activity in autumn of 1999 focused on the **Nugget** and **Galena** varieties. Prices of \$1.40 and \$1.45 per pound plus premiums for 2000 and 2001 for **Nugget** met with little enthusiasm. Most growers only covered small amounts in 2000 and even less in 2001. Another round that included **Galena** raised prices in 2001 to \$1.50 and \$0.05 higher for sub-

sequent years. In spring, the 2000 and 2001 prices increased to \$1.50 and \$1.55. At that level, most of the 2000 crop remaining open was sold.

Small amounts of **super high alpha** varieties sold in the autumn at \$1.20 for 2000 with a \$0.05 increase for the later years. During late winter and spring, prices increased to \$1.50 for 2000. For 2001 and 2002, the price was also \$1.50.

June 2000 saw some activity in the aroma market, restricted to **Willamette**, however, and bought via a direct purchasing program of a brewer. Although the price of \$2.70 for crop 2001 was based on a projected revenue per ha of \$9,850, growers expressed disappointment, claiming the price would only meet the cost of production and not allow an adequate profit.

Financial Aspects

The season average price rose by approx. 3.6 % to 3.70 per kg for crop 1999 and resulted in a total crop value of \$108.2 million compared to \$96.7 million the previous

year. Although this increase represents a positive trend, US growers still find themselves in their worst financial situation in decades.

A detailed industry cost study released in the summer of 1999 puts the full production cost at \$9,850 per hectare. The estimated revenue per ha of \$7,810 for crop 1999 therefore would indicate that growers have lost approx. \$28 million on this crop. Even if the 1999 crop revenue is compared to the cash costs of \$8,400 estimated in an earlier study, growers still lost in excess of \$8 million. The loss on the 1999 crop comes after two previous financially disastrous crops. As in the previous year, many growers will have to fund their losses by taking on more long-term debt, thereby further leveraging their farm's equity. The farm consolidation that has occurred over the past years will continue, as many growers who will no longer receive financing will have to sell their farms or simply give up hop farming to prevent further asset destruction.

Quantities Contracted Forward (in mt)

Report as of spring	same Crop Year	Years forward ...				
		1 Year	2 Years	3 Years	4 Years	5 Years
2000	27,539	19,719	13,312	9,735	3,655	2,588
1999	24,117	18,551	12,651	9,698	2,958	2,451
1998	27,844	19,237	15,896	9,172	2,915	1,767
1997	31,343	28,395	20,321	16,511	5,171	4,581
1996	30,073	28,486	22,498	13,653	9,117	3,765

Degree of Forward Contracting (in %)

	same Crop Year	Years forward ...				
		1 Year	2 Years	3 Years	4 Years	5 Years
2000	93%	67%	45%	33%	12%	9%
Ø 1995-99	91%	84%	67%	51%	28%	18%

Variety Development

The US breeding programs, whether public or private, have struggled to find high alpha

varieties with powdery mildew resistance to replace **Columbus**, **Tomahawk** and **Zeus**. As a first step, the varieties **Warrior** and **Millennium** are being tested on a larger

acreage. Whether these varieties will be able to maintain their performance, however, will depend on the continued mutation of powdery mildew.

Estimate Revenue per Hectare (in USD)						
	1995	1996	1997	1998	1999	Average
Washington	8,007	7,323	7,100	6,664	7,877	7,431
Oregon	7,481	6,181	6,735	7,301	8,721	7,544
Idaho *	6,941	6,644	6,177	4,632	6,683	6,649
USA TOTAL	7,830	7,052	6,837	6,620	7,963	7,385

* excludes revenue for „other aroma varieties“ mostly grown in Northern Idaho.

Average Prices per kg (in USD)						
	1995	1996	1997	1998	1999	Average
Washington	3.70	3.59	3.53	3.53	3.55	3.63
Oregon	4.19	3.99	3.70	3.92	4.50	4.16
Idaho	3.55	3.28	3.10	3.35	3.57	3.51
USA TOTAL	3.77	3.63	3.53	3.57	3.70	3.71

China

Variety	Development of Acreage			Development of Production			
	1998	+/-	1999	1998	1999	1998	1999
	Acreage ha			Ø-Yield mt/ha		Production mt	
Qingdao Flower 641	3,853	47	3,900	2.82	2.59	10,850.0	10,100.0
Kirin Flower	208	17	225	2.89	2.67	602.0	600.0
Aroma	130	0	130	2.77	2.31	360.0	300.0
Others	85	45	130	2.88	2.31	245.0	300.0
CHINA TOTAL	4,276	109	4,385	2.82	2.58	12,057.0	11,300.0

In contrast to previous years, we are not presenting the Chinese figures according to regions but according to varieties. As of 1999, there are only two hop regions in China – Xinjiang and Gansu – but an increasingly greater number of varieties are presenting an alternative to the main variety **Qingdao Flower 641**.

Growth and quality

Unfavourable weather conditions early in the vegetative phase led to uneven cone growth. In the south of Xinjiang strong winds in early August contributed to low yields and alpha levels.

The average alpha content of the main

variety **Qingdao Flower 641** was 6.3 % (EBC 7.4).

Market situation

Approx 5,000 mt of the volume produced had already been sold to a Chinese trader through forward contracts. When many farmers had still not received any money for their hops by April 2000, they were not averse to offers of cash payments on the spot market. Another trader secured a ten-year contract on the entire production volume of several farms, amounting to 2,000 mt.

In early April approx. 1,000 mt was held unsold by one Chinese trader who presu-

mably intends to have them pelleted in a new pelleting plant in Urumqi in the summer.

Since only a few lots had an alpha content of more than 6.5 %, their price rose rapidly. So, in turn, did prices for lots with lower alpha content at a later stage. In March 2000, lots with 5.5 % alpha were being sold at the same price as lots with 6.5 % in September 1999.

As farmers were able to sell their entire 1999 production, no reduction in acreage is anticipated for 2000. Experimental planting of varieties with higher alpha content continues, but this is unlikely to have any effect on overall alpha production in 2000.

Japan

Brewing Group	Development of Acreage			Development of Production			
	1998	+/-	1999	1998	1999	1998	1999
	Acreage ha			Ø-Yield mt/ha		Production mt	
Kirin	230	-14	216	1.63	2.05	375.1	442.5
Sapporo	99	0	99	1.88	2.25	185.8	222.3
Asahi	28	-5	23	1.93	2.23	53.9	51.3
Suntory	3	0	3	1.27	1.60	3.8	4.8
JAPAN TOTAL	360	-19	341	1.72	2.11	618.6	720.9

Year-on-year the number of hop farms fell by 9 % to 550, while acreage was reduced by another 5 %.

Growth and quality

Despite heat and drought in early June and strong wind in July, the weather conditions

during the vegetative phase were mostly ideal, with sufficient rainfall and sunshine for hop growth. As a result, the yield was significantly higher than the ten-year average of 1.88 mt/ha.

The average alpha acid content (converted to EBC 7.4) was lower than in previous years: approx. 5.4 % for **Shinsu Wase** and approx. 4.1 % for **Furano Ace**.

Market situation

97.8 % of the production volume was designated first class. The purchase price paid for it was unchanged year-on-year at 2,067 JPY/kg (20,38 EUR) plus a trading commission of 100 JPY/kg.

2000 Crop

New Zealand

Variety	Development of Acreage			Development of Production			
	1999	+/-	2000	1999	2000	1999	2000
	Acreage ha			Ø-Yield mt/ha		Production mt	
NZ Hallertau Aroma	118	13	131	1.71	2.07	201.2	271.7
NZ Pacific Hallertau	37	3	40	1.48	1.66	54.8	66.5
NZ Saaz Triploid	0	2	2	0.00	1.70	0.0	3.4
Total Aroma	155	18	173	1.65	1.97	256.0	341.6
NZ Super Alpha	89	-1	88	2.17	2.34	193.4	206.1
NZ Pacific Gem	70	2	72	2.69	2.62	188.0	188.5
NZ Green Bullet	29	-2	27	2.43	2.04	70.4	55.2
NZ Sticklebract	6	1	7	2.32	2.10	13.9	14.7
NZ Southern Cross	8	1	9	2.00	2.07	16.0	18.6
Total High Alpha	202	1	203	2.38	2.38	481.7	483.1
Trial Varieties	3	2	5	0.93	1.20	2.8	6.0
NEW ZEALAND TOTAL	360	21	381	2.06	2.18	740.5	830.7

In order to expand the range of varieties in New Zealand, various new varieties are currently being tested on farms and in brewing trials.

Growth and quality

The summer was unusually cool and it was not until mid-February that temperatures began to rise. There was sufficient rainfall to ensure the water supply, which enabled

the hops to develop well. Warm and dry conditions during the harvest in March accelerated cone ripening, and the planters had to work additional shifts in order to harvest the cones at the best-possible stage of maturity.

The organoleptic quality was described as good. The average alpha acid levels (EBC 7.4 at time of harvest) were higher than in the previous years:

NZ Hallertau Aroma	9.7 %
NZ Pacific Hallertau	6.5 %
NZ Super Alpha	14.3 %
NZ Pacific Gem	17.1 %
NZ Green Bullet	14.0 %

Market situation

By the time of harvest, some 80 % of the hops had already been sold. In May, only small quantities of various varieties were still available.



Australia

Area	Variety	Development of Acreage			Development of Production			
		1999	+/-	2000	1999	2000	1999	2000
		Acreage ha			Ø-Yield mt/ha		Production mt	
Tasmania	Aroma	4	0	4	1.65	1.65	6.6	6.6
	Pride of Ringwood (Bitter)	306	-96	210	2.69	3.07	823.7	644.0
	Victoria	138	11	149	3.00	2.77	414.0	412.0
	Nugget	74	0	74	2.56	2.55	189.3	188.6
	Super Pride	8	63	71	0.89	0.45	7.1	32.0
	Opal	58	0	58	2.02	2.62	116.9	151.9
	Others High Alpha	25	-4	21	2.16	0.48	54.0	10.0
	Total High Alpha	303	70	373	2.58	2.13	781.3	794.5
	Others	11	10	21	1.52	1.24	16.7	26.0
	Total Tasmania	624	-16	608	2.61	2.42	1,628.3	1,471.1
Victoria	Pride of Ringwood	84	-22	62	2.41	3.14	202.7	194.4
	Cluster	16	0	16	1.66	1.66	26.5	26.5
	Total Bitter	100	-22	78	2.29	2.83	229.2	220.9
	Victoria	94	-1	93	3.13	3.48	294.1	324.0
	Super Pride	8	0	8	2.94	2.73	23.5	21.8
	Others High Alpha	16	10	26	3.93	3.00	62.8	78.0
	Total High Alpha	118	9	127	3.22	3.34	380.4	423.8
	Total Victoria	218	-13	205	2.80	3.14	609.6	644.7
	Total Aroma	4	0	4	1.65	1.65	6.6	6.6
	Total Bitter	406	-118	288	2.59	3.00	1,052.9	864.9
	Total High Alpha	421	79	500	2.76	2.44	1,161.7	1,218.3
	Total Others	11	10	21	1.52	1.24	16.7	26.0
	AUSTRALIA TOTAL	842	-29	813	2.66	2.60	2,237.9	2,115.8

The area set aside was approx. 150 ha, only slightly less than the area in 1999.

The two production areas still have eight hop farms each.

Growth and quality

From the beginning of the vegetative phase until well into December, hop growth was slowed by unusually cold conditions. In January, crop estimates pointed to production volume at least 5 % below the average in Tasmania and normal crop volume in Victoria. The warm weather in the summer, especially in February, resulted in average

yields and good alpha acid levels on all farms despite dry conditions.

Alpha Acid Table

Variety	1999	2000
Pride of Ringwood	9.9%	11.0%
Cluster	6.8%	5.9%
Victoria	13.8%	14.0%
Nugget	10.8%	12.6%
Opal	11.7%	11.7%
Super Pride	14.1%	14.5%

All data for pellets in % as is, in accordance with EBC-Analytika 7.4. The values were measured in March/April after the harvest. Appropriate deductions should be taken into account later in the course of the season.

Market situation

85 % of the crop had already been sold through forward contracts. Small amounts of hops were still available on the spot market in May.

Little change in acreage is expected for 2001. The decline of **Pride of Ringwood** will continue, **Super Pride** is likely to increase by 74 ha and the super alpha varieties by 55 ha.

Argentina

Variety	Acreage ha	Ø-Yield mt/ha	Production mt
Cascade	98	1.28	125.0
Others	2	1.10	2.2
ARGENTINA TOTAL	100	1.27	127.2

As of crop year 2000, the only hop growing region is El Bolsón, as the last remaining hop farm in the Alto Valle region has stopped growing hops. In the El Bolsón region, the acreage reduction trend observed for several years continues.

Growth and quality

During the vegetative phase, the weather conditions were mostly favourable for the hops, with the exception of a heat wave

and heavy rainfall in late February. The alpha content of the aroma variety **Cascade** was approx. 6.5 % (EBC 7.4).

Market situation

The entire crop volume had already been sold to domestic breweries on a forward contract basis.



South Africa

Variety	Acreage ha	Ø-Yield mt/ha	Production mt
Southern Brewer	353	1.76	623.0
Outeniqua	87	2.13	185.0
Southern Promise	26	2.12	55.0
Others	3	2.00	6.0
SOUTH AFRICA TOTAL	469	1.85	869.0

Overall acreage remained virtually unchanged year-on-year, but there was a considerable shift away from the bitter variety **Southern Brewer** to the higher yield high alpha varieties **Outeniqua** and **Southern Promise**. Further movement in this direc-

tion between the varieties is expected for 2001.

Growth and quality

Sufficient rainfall during the vegetative phase made up for the severe drought of

the previous year, with the result that better yields and alpha acid levels than in 1999 were guaranteed.

The alpha levels (EBC 7.4) were 10.0 % for **Southern Brewer**, 13.1 % for **Outeniqua** and 11.4 % for **Southern Promise**.

Market situation

The entire crop volume had already been sold to the domestic brewing industry on a forward contract basis. The price for all varieties was 21.60 Rand/kg (3.21 EUR).

Plant development 2000

Germany

The volume of rainfall in autumn and winter 1999 was far below the long-term average. As a result, it was possible to loosen the ground intensively in the relatively dry hop gardens in the autumn without any structural disturbance.

The relatively mild winter ended early in the year with heavy precipitation in January and February. With the soil waterlogged, spring work was delayed slightly and could not always be carried out in ideal conditions. Spring began early and hop development was correspondingly rapid due to favourable weather conditions. High temperatures in May accelerated growth even further and made up for damage due to hail earlier in the month.

As a result of last year's experience of severe powdery mildew infestation, the

growers were better prepared, and the first control measures were taken much earlier this year.

Most of the crop had already reached trellis height by mid-May. This one-week lead in terms of growth was cut back again by cold nights in late June and early July, however. Severe thunderstorms were reported in Tett nang in early July, causing serious hail damage to around half of the acreage there.

Acreage increased year-on-year by 398 ha to 18,597 ha.

USA

Winter brought sufficient precipitation to replenish reservoirs, assuring an adequate water supply for crop 2000. While temperatures have remained within normal ranges in Washington, wind has been more

severe than in previous years. Intermittent rain showers have favoured the spread of powdery mildew. Oregon has experienced none of the flooding of recent years but received adequate rainfall in spring. The warmer temperatures have provided good growth conditions.

In June, the USDA released its annual acreage survey and reported that the US production had increased by approx. 900 ha to 14,744 ha. Based on this data and historical yields, the US production is estimated at 30,400 mt of hops containing 3,300 mt of alpha. However, the amount of powdery mildew found in hop yards at the start of the season raises the possibility that up to 1,500 mt of hops could be lost to this disease.

Outlook 2000

Quo vadis, hop industry?

In the main hop-producing countries, Germany and the USA, acreage has increased by around 1,300 ha (approx. 4 %)

over the previous year. Nevertheless, the market for virtually all the standard varieties can be expected to be tight. On the one hand, the international brewing industry has reduced its stockpiles and, on the other,

growth in beer output is likely to be between 2 % and 3 % again in 2000.

The future situation of the hop market will thus depend in a crucial manner on the crop results 2000 in Germany and the USA.



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Source material from all over the world was required to publish this report. We would like to thank all those who supported us with their information.

Ray of hope

The way in which the two partners to the merger organised their joint press conference on June 5, 2000 at the research brewery in St. Johann was itself a real ray of hope. Military precision, professional, first class.

These are fitting words to describe this historic event in the world of hops, at which Joh. Barth & Sohn and Hopunion announced their international merger.

Johannes M. Raiser and Peter Barth gave the numerous visitors and representatives of the press a review of the history of their respective companies – which have shown astonishing parallels over the years – up to their present situation as internationally operating hop businesses.

The new world leader will have a close network covering the entire globe and all hop-growing areas and a market share of some 40 % of international hop purchases.

The merger of these two „hop masters“ – who in fact have known each other since their schooldays –

is not just a reaction to the strong trend towards concentration in the international brewing industry.

The merger on August 1 also marks a change of generations in the two companies. In addition to greater market strength, the new company is particularly keen to create a new platform, to offer growers and brewers a new standard of co-operation.

There can be no doubt that the merger of the two trading companies is the right answer to the rising demands of expanding multinational brewing groups.

In the foreseeable future the number of breweries producing some 50 % of the world's beer will fall from now 14 to a mere 5.

The new generation of managers in the two companies felt that these foreseeable trends were reason enough to take the future into their own hands rather than only react to events.

The new top management of the world's future „Number 1“ hop trading company are therefore tailoring their concepts and visions squarely towards these trends.

Of particular interest, however, is the pleasing announcement that the new company will work towards intensifying its co-operation with national and international growers' co-operatives.

Constructive dialogue should ensure that producers and traders can adjust in good time to market changes with a resulting increase in their mutual added value.

The bottom line is a clearly positive impression of the arguments for a new hop marketing concept and a new style of co-operation between producer, trader and brewer. It is to be hoped that the organizations in the German hop industry will in future pay even greater attention to concentrating their forces and activities.

Then we might see some rays of hope there, too!

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