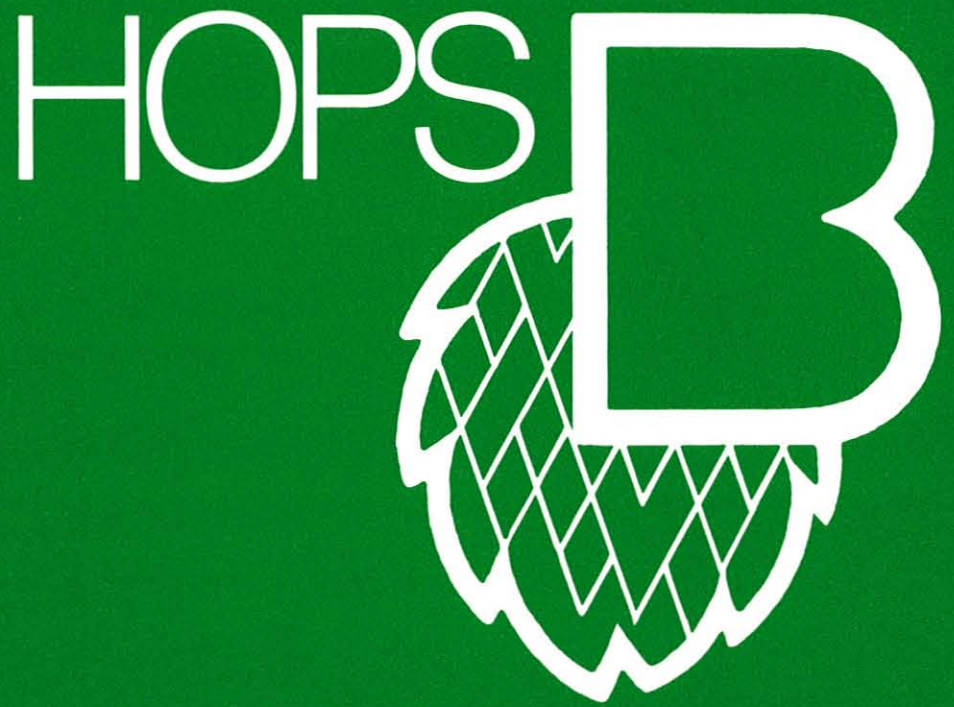


1988 / 89



Joh. Barth & Sohn

Conversion Table

1 ha	= 2,934 bayerische Tagwerk
1 ha	= 2,471 acres
1 bayerisches Tagwerk	= 0,341 ha
1 acre	= 0,405 ha
1 yard	= 3 feet = 36 inches = 91,44 cm
1 hl = 100 l	= 26,42 gall = 0,8523 bbl (USA)
	= 22,01 gall = 0,6114 bbl (Brit.)
1 bbl (USA)	= 31 gall = 1,1734 hl
1 bbl (Brit.)	= 36 gall = 1,6365 hl
1 metr. ton = 1.000 kg	= 20 Ztr. = 2.204,6 lbs
1 Ztr. = 50 kg	= 110,23 lbs = 1,102 cwt (USA)
	= 110,23 lbs = 0,984 cwt (Brit.)
1 cwt (USA)	= 100 lbs = 45,359 kg
1 cwt (Brit.)	= 112 lbs = 50,800 kg
1 cental (Brit.) = 100 lbs	= 45,359 kg = 0,9072 Ztr.
1 kg	= 2,20462 lbs
1 lb	= 0,45359 kg

Conversion of thermometer degrees
in Fahrenheit and Celsius:

$$86^{\circ}\text{F} = \frac{(86-32) \cdot 5}{9} = 30^{\circ}\text{C}$$

$$30^{\circ}\text{C} = \frac{30 \cdot 9}{5} + 32 = 86^{\circ}\text{F}$$

Currency Exchange Table

As of June, 15, 1989, the Frankfurt Currency Exchange
Market listed:

	Spot Rate 15/6/89	
	Selling Rate	Buying Rate
New York *	2.0362	2.0442
London *	3.064	3.078
Dublin *	2.665	2.679
Montreal *	1.6935	1.7015
Amsterdam	88.595	88.815
Zurich	115.320	115.520
Brussels	4.769	4.789
Paris	29.550	29.710
Copenhagen	25.635	25.755
Oslo	27.545	27.665
Stockholm	29.420	29.580
Milan **	1.3645	1.3745
Vienna	14.194	14.234
Madrid	1.607	1.617
Lisbon	1.200	1.220
Tokyo	1.4085	1.4115
Helsinki	44.790	44.990

* = 1 unit, ** = 1000 units, all other 100 units

The Most Important Data of the World Market

	1988	1987	Diff. %
acreage/ha	89.875	87.393	+ 2,8
hop production/tons	117.363	118.341	- 0,8
alpha production/tons	7.276	8.080	-10,0
beer production/ 1000 hl	1.056.625	1.044.163	+ 1,2

Table of Contents

Political Situation – Economic Situation Table of Bitter Constituents	1
World Beer Production – Table	2
Output Development Market Analysis	3
World Hop Production – Table	4
Alpha Acid Production Alpha Acid Balance	5
European Economic Community Federal Republic of Germany	6/7
Federal Republic of Germany United Kingdom	8
United Kingdom France	9
France Belgium	10
Europe	11/12
Other Countries	13
USA	14/15/16
Crop 89 and Outlook	17

Unofficial dealings

	Selling Rate	Buying Rate
Australia	1 A\$ 1.4879	1.5040
China	100 RMB 52.020	52.49
Yugoslavia	100 Dinar 0.0070	0.0170
New Zealand	1 NZ\$ 1.1420	1.1560
South Africa	1 Rand 0.7076	0.7225
USSR	1 Rubel 3.0759	3.0858

These rates are only given for the purpose of information.

Nuremberg, July 1989



Joh. Barth & Sohn

Glockenhofstraße 24-26
D-8500 Nürnberg 30 · P.O.B. 1227
Phone: (0911) 4744-0 · Telex: 622030
Telefax (0911) 4744-47

Political situation

The tide of reforms originating from the **USSR** set forces free in the Communist countries nobody could imagine one year ago: partially free elections in the **Soviet Union** and **Poland**, liberalization of economic and political life in **Hungary**, but also the tragic events on **Tiananmen Square**. Developments have started that are thoroughly unpredictable and in view of the many opportunities and risks they harbor, they demand a new way of thinking in East and West.

The superpowers, the **USA** and the **USSR**, continue their efforts to scale down the Cold War. In accordance with the provisions of the Afghanistan Agreement, Soviet troops left that country at the end of February 1989; civil war, however, continues. The Geneva disarmament talks were continued. Soviet troop reduction in western Europe was answered by a proposal for a 20% cut in US troops in Europe by the new US President, George H. W. Bush, at the May 1989 NATO meeting.

The **UN** succeeded in negotiating an armistice to end the war between **Iran** and **Iraq**. As Vietnamese troops successively withdraw from **Cambodia**, one may expect a gradual return of peace to this region of strife as well.

On the other hand, a number of unsolved problems still makes the **Near East** highly explosive: continued uprisings of the **Arab** population in the **Israeli** occupied regions and ongoing civil war in **Lebanon**, which is being pushed to the verge of total collapse. There is also still no permanent solution to bring stability to **Central America** in sight, as the tensions between the **US** and **Nicaragua/Panama** prove.

At their 39th summit meeting the **European EEC**-countries continued their preparation for a single European market in 1992. Among other things, the participants resolved to pursue their plans to establish a **European Central Bank**.

Economic situation

1988 was not a bad year at all. The improved political climate had a positive influence on the world economy. Everywhere, including in the developing countries, incentives are being given to revive market forces. **Glasnost** and **Perestroika** succeeded in bringing some elements of a market economy even to the countries of the Eastern Block.

Again the **OECD** countries enjoyed a basically positive economic development. The **GNP's** 4% growth (3.3% previous year) was mainly caused by investments and exceeded all expect-

ations. In the **Federal Republic of Germany** the trend was favorable as well. In real terms, the GNP rose by 3.4%, while prices went up only 1.8% and thus, almost 180,000 new jobs were created. Here, just as in all other EEC countries, politicians and industry are preparing for the European market of 1992.

To prevent inflationary tendencies, interest rates went up first in the **USA** and then around the world. This resulted in a continued stabilization of the **US dollar**. The twin US deficit continues to pose potential dangers for the equilibrium of the world economy, though.

Another danger lurks in the form of the unsolved debt crisis of the developing countries and its potential consequences for the international system of finance. Recent proposals of the so-called **G 7 Group**, incorporating all the major industrial countries, call for partial release from those debts and efforts to improve the economic structures of those respective countries.

The key 1988 economic data for the **USA** and the **Federal Republic of Germany**:

Key data	USA	FRG
Gross national product	+2.8%	+4.5%
Balance of trade	US \$ -127 bn	DM + 128 bn
Balance of current acct.	US \$ -135 bn	DM + 85 bn
Inflation rate	+4.1%	+1.8%
Interest rate on April 1, 1989	11.5% (prime rate)	4.5% (Federal Bank discount rate)
Unemployment rate on Dec. 1, 1988	5.5%	8.5%

Table of Bitter Constituents

The bitter constituent values of the most important European varieties 1988

variety	total resin	conductometric value	conductometric value in the total resin
Hallertau Hallertauer	11,8	4,1	34,7
Hallertau Hersbrucker	10,5	3,1	29,5
Hallertau Hüll	13,4	5,3	39,6
Hallertau Perle	15,3	6,5	42,5
Hallertau Record	14,2	6,2	43,7
Hallertau Northern Brewer	16,4	7,9	48,2
Hallertau Brewers Gold	13,9	6,5	46,8
Tettnanger	11,6	4,3	37,1
Spalter	11,4	4,2	36,8
Saaz	10,6	3,5	33,0
Yugoslavian Styrian Golding	12,2	4,8	39,3
Yugoslavian Super Styrian	16,3	7,8	47,9

The values are in % as is according to Woellmer. (Extraction with ether)

The values were measured in October/November after the harvest. For deliveries in the later course of the season reductions have to be taken into account.

The bitter values of other important varieties are listed in the respective country reports.

World Beer Production 1987/88

Specification in 1,000 hl

EUROPE

Country	1988	1987
Fed. Rep. of Germany	92.639	92.744
Great Britain	60.280	59.897
USSR	54.000	50.000
Spain	26.579	25.000
German Dem. Rep.	24.400	25.000 ²
Czechoslovakia	22.670	22.228
France	19.959	19.894
Netherlands	17.526	17.547
Belgium	13.792	13.990
Rumania ⁴	13.000	10.000 ⁴
Poland	12.257	11.644
Italy	11.191	11.122
Yugoslavia	11.000 [*]	11.790
Hungary	9.480	9.500
Austria	9.015	8.932
Denmark	8.600	8.200
Bulgaria	7.000 [*]	7.000 [*]
Ireland	5.401	5.369
Portugal	5.325	4.977
Sweden	4.350	4.010
Switzerland	4.100 ³	4.115
Greece	3.700	3.200 [*]
Finland	3.645	3.423
Norway	2.080	2.167
Luxemburg	635	662
Malta	165	164
Albania [*]	100	100
Iceland	51	40 ¹
TOTAL	442.940	432.715

¹ later correction to 43
² later correction to 24,300
³ No more official figures available
⁴ Please see Country Report

AMERICA

Country	1988	1987
USA	212.552	229.297
Brazil	47.800	47.500
Mexico	34.131	31.537
Canada	23.837	23.114
Colombia	18.000	17.600
Venezuela	13.000	12.100
Peru	6.700	7.500
Argentina	5.950	5.800
Cuba	3.320	3.600
Chile	2.657	2.546
Bolivia	1.280	1.180
Ecuador	1.200	2.000
Dominican Rep.	1.139	972
Jamaica	1.100	800
Panama	980	1.360
Guatemala	900	970
Paraguay	800	1.200
Costa Rica	746	800
El Salvador	690	670
Honduras	680	601
Uruguay	640	600
Puerto Rico	526	376
Trinidad	450	470
Nicaragua	300	350
Guyana	164	150
Netherl. Antilles	157	150
Barbados	110	90
Surinam	99	123
San Lucia	69	57
Martinique	66	65
Bahamas	61	21
Haiti	60	47
Belize	40	25
Guadeloupe	32	32
St. Kitts	25	27
Grenada	25	25
St. Vincent	23	17
TOTAL	380.309	393.772

AFRICA

Country	1988	1987
South Africa	19.200	18.000
Nigeria	7.300	7.000 [*]
Cameroon	5.059	5.500
Zaire [*]	4.014	4.310
Kenya	3.600	3.500
Zimbabwe	1.700	1.300
Ivory Coast	1.400	1.350
Gabon	1.000	1.000
Burundi	953	831
Ethiopia	930	964
Zambia	900	800
P. Rep. Congo [*]	725	850
Ruanda	700	642
Angola [*]	600	550
Ghana	585	526
Tansania	530	588
Burkina Faso [*]	500	500
Marocco	498	500
Egypt	480	400
Namibia	455	411
Togo	450	452
Algeria [*]	430	750
Tunesia	390	256
Botswana	342	248
Moçambique	296	213
Mauritius	290	257
Central African Rep.	285	294
Benin	250	217
Swaziland	210	216
Madagascar	203	240
Lesotho	200 [*]	205
Malawi	160	160
Uganda	155	135
Senegal	150	153
Liberia	145	138
Reunion	132	117
Chad	105	103
Niger	100	100
Mali [*]	80	80
Seychelles	53	49
People's Dem. Rep. Yemen	53	53
Sierra Leone	30	47
Gambia	17	17
Guinea Bissau	15	19
TOTAL	55.670	54.143

NEAR EAST

Country	1988	1987
Turkey	2.650	2.500
Israel	425	420
Iraq	400 [*]	500
Cyprus	291	270
Lebanon	130	130
Syria [*]	90	90
Jordan	36	35
TOTAL	4.022	3.945

FAR EAST

Country	1988	1987
Japan	57.498	53.500
People's Rep. China [*]	55.000	50.000
Philippines	12.480	10.200
Rep. of Korea	10.420	8.800
Taiwan	3.987	3.864
Vietnam [*]	2.000	2.000
Hong Kong	1.618	1.360
India	1.487 ²	2.000 ¹
Thailand	1.300	960
D. P. Rep. Korea [*]	1.000	1.000
Indonesia	910	843
Malaysia	650	507
Singapore	414	385
Iran ^{**}	100	100
Mongolia [*]	100	100
Sri Lanka	75	75
Burma	50	40
Nepal [*]	50	45
Laos [*]	10	10
Pakistan	9	10
Bangla-Desh [*]	5	5
Cambodia [*]	5	5
TOTAL	149.168	135.809

¹ later confirmed with 1,987
² from 1. 4. 1987 to 31. 3. 1988

AUSTRALIA/ OCEANIA

Country	1988	1987
Australia	19.500	18.765
New Zealand	4.100	4.087
New Guinea	502	520
Fiji Islands [*]	170	170
Tahiti	125	120
New Caledonia	64	63
Samoa	55	54
TOTAL	24.516	23.779

^{*} estimated
^{**} non-alcoholic

WORLD

	1988	1987
TOTAL	1.056.625	1.044.163

Output Development

The beer output in the continents developed as follows (in 1,000 hl):

	1988 % rel.	1987 % rel.	1988 total	1987 total	+/- total
Europe	+ 2.4	- 1.1	442,940	432,715	+10,225
America	- 3.4	+ 2.2	380,309	393,772	-13,463
Africa	+ 2.8	+12.8	55,670	54,143	+ 1,527
Asia (Far East)	+ 9.8	+14.5	149,168	135,809	+13,359
Near East	+ 2.0	+14.6	4,022	3,945	+ 77
Australia/ Oceania	+ 3.1	+ 3.5	24,516	23,779	+ 737
Total	+ 1.2	+ 2.8	1,056,625	1,044,163	+12,462

Compared to the previous year the beer output increased by only 1%. The substantial decrease in the U.S. beer production could be compensated for by the growth of Asian (Far East) output.

Please note that the surprising increase in the European beer production is due to the fact that our statistics had to be raised with regard to output figures of the People's Republic of Rumania to 13m. hl according to reliable sources. There is no doubt that these production figures had also been reached in previous years. Therefore, previous years' beer output figures for Europe must also be corrected by the respective increase. The only country showing real growth figures of a larger extent in its beer production is the U.S.S.R.

Market Analysis

After the previous year's surplus production of bitter substances, the 1988 harvest balanced supply and demand. On the one hand world beer production had risen slightly to 1,057 m hl or by 1.2%, while on the other hand world production of bitter substances was significantly lower.

The stabilization of the market expressed itself in somewhat higher prices, although the bitter hops experienced a price decline in the later part of the season. The hop merchants had to make additional purchases shortly after the harvest to cover their sales made on the basis of alpha acid, because the average bitter content of the major European hops was lower than anticipated. The brewing industry held back from entering the spot market, because it had supplied itself with advance contracts and stocks of previous years.

With little price fluctuation in the later part of the season the markets of the main growing areas were sold out by April/May, 1989. Although the average price level was unsatisfactory for growers, a healthier market climate is

indicated by the fact that the hops in the hands of the farmers were completely sold out and that the breweries are slowly reducing their surpluses.

Exports to the **USA**, which are very important for hop growers in the **Federal Republic of Germany** and other European countries, could be effected after lengthy and costly control checks. It was not possible, however, to deliver hops to the **USA** from the **Tettang** area and from **Czechoslovakia**, because the growers in these areas did not adhere to the US regulations for pesticides.

The amounts of the different varieties which had been stable for years have now been changing in the major

growing countries. Thus the acreage of the traditional **Cluster** variety in the **USA** fell from 37% last year to 32% this year, while aroma hops increased from 13% last year to 20% this year. In the **Federal Republic of Germany** the acreage for bitter and other varieties was 504 ha less; at the same time, that of aroma hops increased by 976 ha.

Six of the seven hop-growing countries of the **EEC** applied for the **EEC program**, aiming at restructuring regarding varieties (for details see section on "European Community"). In the **Federal Republic of Germany** only the region of **Spalt** is participating in the program.

On the basis of the 1988 crop, we anticipate the following advance contract rates (%) for the world's hop growing areas for the next years:

Country	1989	1990	1991	1992	1993
Fed. Rep. of Germany	85	80	75	50	40
USA	90	82	65	46	9
CSSR	75	65	40	25	20
United Kingdom	80	65	40	15	5
Yugoslavia	80	75	50	45	40

Acreage and Hop Production

area	1988			1987		
	acreage in ha	Ø tons per ha	crop in tons = 1000 kg	acreage in ha	Ø tons per ha	crop in tons = 1000 kg
Hallertau	16.756	1,54	25.845,8	16.329	1,64	26.852,0
Spalt	814	1,29	1.048,1	821	1,29	1.059,3
Hersbruck	130	1,13	146,9	134	0,88	117,7
Jura	727	1,59	1.155,5	708	1,75	1.239,5
Tettwang	1.336	1,39	1.858,2	1.299	1,34	1.746,7
others	19	1,23	23,3	19	1,25	23,7
Fed. Rep. of Germany	19.782	1,52	30.077,8	19.310	1,61	31.038,9
England	3.878	1,27	4.915,4	3.983	1,30	5.190,0
Aalst	84	1,67	140,4	84	1,63	137,3
Poperinge	332	1,39	461,4	342	1,69	579,1
Belgium	416	1,44	601,8	426	1,68	716,4
Alsace	425	1,68	715,0	421	1,40	590,0
Burgundy	8	1,63	13,0	15	1,13	17,0
Nord	56	1,00	56,0	123	0,81	100,0
France	489	1,60	784,0	559	1,26	707,0
Ireland	22	1,27	28,0	34	1,27	43,3
Spain	1.600	1,02	1.624,3	1.630	1,13	1.848,9
Portugal	134	1,15	154,3	153	2,00	305,9
EEC	26.321	1,45	38.185,6	26.095	1,53	39.850,4
Saaz	7.678	1,34	10.259,0	7.678	0,90	6.923,0
Auscha	1.657	1,27	2.105,0	1.657	1,25	2.079,0
Tirschtitz	1.015	1,52	1.542,0	1.015	1,46	1.479,0
Slovakia	1.600	0,92	1.465,0	1.600	0,90	1.436,0
Czechoslovakia	11.950	1,29	15.371,0	11.950	1,00	11.917,0
USSR*	15.000	0,63	9.500,0	15.000	0,73	11.000,0
Slovenia	2.460	1,50	3.702,0	2.494	1,75	4.354,0
Bačka and Ilok	706	1,50	1.059,0	701	1,51	1.061,0
Yugoslavia	3.166	1,50	4.761,0	3.195	1,69	5.415,0
Germ. Dem. Rep.	2.320	1,36	3.156,9	2.360	1,52	3.575,5
Poland	2.399	1,19	2.840,0	2.445	1,06	2.602,0
Bulgaria	950	0,83	785,5	950	0,74	701,0
Rumania¹	2.200	0,75	1.650,0	2.200	0,77	1.700,0
Hungary	495	1,28	637,8	515	1,29	665,6
Mühlviertel	91	1,71	155,7	83	1,48	123,1
Leutschach	86	1,14	98,0	74	1,49	110,0
Waldviertel	3	0,23	0,7	-	-	-
Austria	180	1,41	254,4	157	1,48	233,1
Switzerland	23	1,81	41,7	20	1,96	39,2
Albania*	70	1,00	70,0	70	1,00	70,0
EUROPE	65.074	1,19	77.253,9	64.957	1,20	77.768,8
Washington	9.424	1,92	18.131,0	8.141	2,08	16.963,0
Oregon	3.010	1,63	4.914,0	2.430	1,64	3.991,6
Idaho	1.186	1,43	1.699,0	891	1,96	1.746,0
USA	13.620**	1,80	24.744,0	11.462	1,98	22.700,6
Canada	281	1,59	445,9	281	1,57	441,0
Japan	980	1,90	1.862,2	996	1,82	1.817,6
Australia	1.085	2,14	2.325,0	844	2,25	1.899,0
New Zealand	162	2,47	400,0	175	2,04	357,5
People's Rep. of China	5.000	1,40	7.000,0	5.000	2,00	10.000,0
Dem. People's Rep. of North Korea	2.000	0,80	1.600,0	2.000	0,80	1.600,0
Republic of South Korea	412	1,30	536,4	442	1,17	517,1
South Africa	481	1,16	556,0	456	1,39	634,5
India*	450	0,56	250,0	450	0,56	250,0
Turkey	80	1,75	140,0	80	1,69	135,0
Argentina*	250	1,00	250,0	250	0,88	220,0
WORLD	89.875	1,31	117.363,4	87.393	1,36	118.341,0

* estimated

** "strung for harvest" acreage

¹ see corresponding country report.

Alpha Acid Production

Alpha acid production on the world market was determined on the basis of the following groups of varieties:

Group A: finest aroma hops
(Saaz, Tettnanger, Spalter, Strisselspalt)

Group B: aroma hops
(Hallertauer, Hersbrucker, Hüll, Perle, Golding, Fuggle, Cascade and others)

Group C: hop varieties without significance for the world market

Group D: bitter hops
(Northern Brewer, Brewers Gold, Cluster, Bullion, Pride of Ringwood, high-alpha hops from the USA and the UK)

When grouping world hop production in this way the following alpha production results for 1988 which compares to the previous year's as follows:

Group	1988				1987			
	share %	crop tons	α % ϕ	α tons	share %	crop tons	α % ϕ	α tons
A	10	18,733	3.7	694	7	14,631	3.8	556
B	15	25,788	4.2	1,091	16	23,885	5.5	1,323
C	24	31,477	5.6	1,771	21	33,644	5.1	1,716
D	51	41,365	9.0	3,720	56	46,181	9.7	4,485
Total	100	117,363	6.2	7,276	100	118,341	6.8	8,080

The higher share of group **A** hops of the world alpha production was caused by **Czechoslovakia's** extraordinarily high production of hops.

In contrast to this the percentage of group **B** dropped because of the low bitter content of some European aroma varieties. Variety group **C** observed only a slight increase of tonnage compared to the previous year, although this was enough to result in a 3% increase in the world market share.

The low average bitter values of group **D** hops in addition to the low volume of their crop reduced their share from 56% in 1987 to 51% in 1988.

Alpha acid balance

The extraordinarily high bitter values of the 1987 harvest in connection with only a slight increase of the 1988 beer output resulted in the surplus production of bitter substances which was already estimated in the last report.

Provided there will be a further increase in the beer output of 1% in 1989, the moderate alpha acid values of the 1988 harvest are expected to cause a numeric shortage in the supply of the world market.

The 1988 harvest deficit can be compensated for by the existing breweries' stocks. The international brewing industry has thus a reduced supply on store which is said to be 6-8 months.

Our balance of the supply of the world market with bitter substances looks as follows:

1986 demand (hopping rate 7.2 g alpha/hl) 7,314.7 tons alpha
1985 production 7,056.0 tons alpha
deficit 258.7 tons alpha

1987 demand (hopping rate 7.1 g alpha/hl) 7,413.6 tons alpha
1986 production 7,199.0 tons alpha
deficit 214.6 tons alpha

1988 demand (hopping rate 7.0 g alpha/hl) 7,396.4 tons alpha
1987 production 8,080.0 tons alpha
surplus 683.6 tons alpha

1989 demand (estimated - hopping rate 7.0 g alpha/hl) 7,500.0 tons alpha
1988 production 7,276.0 tons alpha
deficit 224.0 tons alpha

European Community

The subsidy for the 1987 harvest for the hop-growing member countries of the EEC was fixed according to Regulation (EEC) no. 3771/88 dated Nov. 28, 1988 as follows:

Type of variety	ECU = DM/per ha	
Aroma	330	779,15
Bitter	380	897,22
Other	370	873,60

1 ECU = DM 2,36110

The individual member countries received the following amounts in subsidies:

Country	ECU	DM
FRG	6,768,000.--	15,979,924.--
France	196,629.70	464,262.38
Belgium	159,203.80	375,896.09
United Kingdom	1,410,718.--	3,330,846.20
Ireland	12,761.80	30,131.88
Spain	599,228.--	1,414,837.20
Portugal	60,800.--	143,554.88
Total	9,207,341.30	21,739,453.--

In recent years the subsidies amounted to the following sums:

Year	1,000 ECU	1,000 DM
1981	5,087.82	13,105
1982	7,621.25	11,050
1983	7,472.18	19,267
1984	7,867.98	18,778
1985	8,043.25	19,182
1986	9,423.88	22,354
1987	9,207.34	21,739

For the 1988 harvest the Council suggests the following subsidy rates:

Type of variety	ECU = DM/per ha	
Aroma	330	779.15
Bitter	390	920.83
Other	390	920.83

In the form of Regulation (EEC) nos. 2997/87 and 3888/87 the EEC Council rules particularities for the structure improvement of hop growing for member countries.

By granting a special subsidy of ECU 2,500 per hectare (= approx. DM 5,962.--), the member states are being stimulated to change from less commercial varieties to planting High Alpha or Aroma varieties. The subsidy is limited to a

maximum acreage of 800 ha per member country and the total acreage of the member country requiring this subsidy may not exceed the extension it had at the end of 1986 until 31. 12. 1990. Up to now six hop-growing member countries have introduced programmes for a change in the varieties:

Country	announced change in acreage April 1989
United Kingdom	787 ha
France	198 ha
FRG	15 ha
Belgium	97 ha
Spain	107 ha
Portugal	166 ha
Total EEC	1,370 ha

In the Federal Republic of Germany only the growing region of Spalt participated in the programme. For further details regarding this programme, please take a look at the respective country reports.

Sources:
EEC Council, Council Report of production and distribution of hops from the 1988 harvest.

Federal Republic of Germany Growth, Estimated Harvest and Actual Weight

The month of March had 23 rainy days, which was rather unfavorable; not until April did conditions improve enough to permit the start of spring work. The following months of May and June were relatively dry, which did not help the hops' growth very much. Despite this, all the varieties had grown up to the height of the trellises. The lack of rain caused all varieties to bloom about one week earlier than normal. Cones also formed very fast and hops matured earlier than usual. The dry summer caused yields to remain below average. Rainfall in August was too late to benefit the crop.

Harvesting had already started on August 22 and the official estimates of August 19 for the German growing areas predicted the following volumes:

area	estimate tons	quantity harvested tons
Hallertau	26,250	25,846
Jura	1,325	1,156
Spalt	1,140	1,048
Tettnang	1,825	1,858
Hersbruck	160	147

With the exception of the quantity harvested in the Tettnang area, the estimates were higher than the actual crop, but for Hallertau there was only a minor deviation of 3%.

After the report on the Federal Republic of Germany including the table had been compiled, we received the following correction from the **Verband Deutscher Hopfenpflanzer**:

Correction of final report for the 1988 harvest: The community of Pfeffenhausen, by mistake, reported the gross weight of the bales weighed to the Verband Deutscher Hopfenpflanzer e.V. for the weighing of the 1988 crop. This amounts to a difference of 1248 Zentner for Pfeffenhausen. (62.4 to)

Consequently the total crop for Hallertau only amounts to 515,668 Zentner = 25.783 to.

Market development

Due to the relatively small quantity of spot hops in 1988, the market began only slowly, because growers expected the prices to climb in the course of the

season. The growers' position was further strengthened by news about the disappointing bitter content of some major German varieties.

Contradictory information about export possibilities for German hops to the USA characterized the further development of the market, where the first sales were recorded at the end of September. The merchants were forced to make additional purchases for their advance contracts based on alpha acid quantities.

In the course of the season there was not much demand once the second hand had supplied itself with the quantities required. In particular, German breweries were restrained, because they could more than satisfy their demand with the advance contract volumes in view of the slow beer sales. Neither did this year's low bitter values tempt anybody to build up stocks.

Towards the end of the year, farmers' prices dropped generally. On the other hand, the market was almost sold out at the end of the year. Only quantities stocked by farmers were offered until spring.

Our **market report** quotes the following prices for the major varieties:

area/variety	6/88	9/88	10/88	11/88	12/88	1/89	2/89
HALLERTA U Hersbrucker	(530)	580	600	580	520	o.N.	o.N.
HALLERTA U Perle	350	480	(500)	460	460	460	460
HALLERTA U Northern Brewer	270	480	420	420	380	380	380
HALLERTA U Brewers Gold	220	280	320	280	270	270	270
SPALT	(640)	580	630	630	620	o.N.	o.N.
TETT NANG	(640)	680	(630)	(630)	620	o.N.	o.N.

Prices in brackets = available only in limited amounts o.N. = no trade due to lack of merchandise

The above prices are quoted in DM for 50 kg ready packed, ex warehouse, excluding packaging material.

Varieties

In the german hop districts the following varieties were cultivated and produced the following crop quantities:

area	variety	ha	Ø-yield/tons	crop quantity/tons
Hallertau	Hallertauer	608	1,02	620
	Hersbrucker	5.959	1,47	8.741
	Hüller	684	1,45	994
	Perle	2.053	1,51	3.100
	Northern Brewer	5.226	1,43	7.448
	Brewers Gold	1.842	2,36	4.346
	Orion	134	1,55	208
	others	250	1,56	391
Jura	Hallertauer	49	0,88	43
	Hersbrucker	428	1,54	661
	Hüller	8	1,25	10
	Perle	86	1,62	139
	Northern Brewer	53	1,32	70
	Brewers Gold	91	2,45	223
	others	12	0,75	9
Spalt	Hallertauer	442	1,26	556
	Spalter	234	1,12	263
	Hersbrucker	95	1,57	149
	Perle	32	1,78	57
	others	11	2,09	23
Hersbruck	Hallertauer	65	0,95	62
	Hersbrucker	49	1,29	63
	others	15	1,47	22
Tett nang	Hallertauer	366	1,70	622
	Hersbrucker	6	1,50	9
	Tett nanger	964	1,27	1.228
remainder		19	1,21	23

Acreage Development

The following table shows the acreage development of the individual varieties resp. types of varieties in 1988 compared to the previous year:

The change in varieties realised in German areas, together with the extension of acreage, led to an increase in the share of aroma acreage to the debit of bitter hop acreage.

The share in % of aroma to bitter varieties is as follows:

Type of Variety	1988	1987
Aroma	58 %	54 %
Bitter	37 %	40 %
Others	5 %	6 %
	100 %	100 %

Type of Variety	Variety	1988 ha	1987 ha	+/- ha
Aroma	Hallertauer	1,535	1,660	- 125
	Hersbrucker	6,537	5,825	+ 712
	Tett nanger	970	945	+ 25
	Perle	2,178	1,827	+ 351
	Spalter	249	236	+ 13
	Sub-Total		11,469	10,493
Bitter	North. Brew.	5,291	5,429	- 138
	Brew. Gold	1,945	2,173	- 228
	Orion	137	117	+ 20
	Sub-Total		7,373	7,719
Others		940	1,098	- 158
Total		19,782	19,310	+ 472

Acreage

in the Federal Republic of Germany the following acreage development resulted:

area	acreage development			aroma varieties					bitter varieties and others			
	acreage 1988 (ha)	+ / - (ha)	acreage 1987 (ha)	Hallertauer (ha)	Hersbrucker (ha)	Spalter (ha)	Tettnanger (ha)	Perle (ha)	Northern Brewer (ha)	Brewers Gold (ha)	Orion (ha)	others (ha)
Hallertau	16.756	+427	16.329	608	5.959	5	—	2.053	5.226	1.842	134	927
Jura	727	+ 19	708	49	428	9	—	86	53	91	3	11
Spalt	814	- 7	821	442	95	234	—	32	4	7	—	—
Hersbruck	130	- 4	134	65	49	—	—	5	7	3	—	—
Tettnang	1.336	+ 37	1.299	366	6	—	964	—	—	—	—	—
others	19	—	19	5	—	1	6	2	1	2	—	2
total	19.782	+472	19.310	1.535	6.537	249	970	2.178	5.291	1.945	137	940

Source: Verband Deutscher Hopfenpflanzer, „Statistik über die Hopfenvermarktung 1988“.

Situation of US-Export

The market for German aroma varieties was again characterized by insecurity about whether the contracts sold to the USA could really be exported, due to US pesticide regulations. During the spring, the **Verband Deutscher Hopfenkäufer** (Merchants' Association) agreed with the **Verband Deutscher Hopfenpflanzer** (Growers' Association) to pay DM 10 per hundredweight as a premium to those farmers that were prepared to treat the export varieties for the USA only with pesticides licensed there. Spot checks of the US-lots then showed that despite this additional incentive, some parts of the lots had still been treated with prohibited substances. After merchants had made considerable reorganizational efforts and additional analysis, most of the exports could then proceed. This does not apply to hops from Tettnang, which were treated with a pesticide unlicensed in the USA.

UNITED KINGDOM

Growth

Right until harvesting time the weather was quite unfavorable, which resulted in relatively poor quality of most varieties. Alpha content was also less than in 1987.

Alpha acid values

The major varieties' bitter values compare to last year's as follows:

variety	α-acids %	
	1988	1987
Goldings	5,28	5,90
W.G.V.	5,85	6,20
Fuggles	4,13	5,40
Target	10,80	12,50
Yeoman	10,74	11,80
Challenger	6,74	8,00
Northdown	7,77	8,30

Varietal cultivation and yield per variety

variety	area (ha)		crop (to)		Ø yield to/ha	
	1987	1988	1987	1988	1987	1988
Goldings	487	464	580,0	640,6	1,19	1,38
Fuggles	539	481	600,0	550,1	1,11	1,14
W.G.V.	145	117	150,0	124,8	1,03	1,07
Progress	59	47	55,0	51,7	0,93	1,10
Bramling Cross	44	38	50,0	40,3	1,14	1,06
Target	1.192	1.328	1.620,0	1.638,3	1,36	1,23
Yeoman	379	328	450,0	363,8	1,19	1,11
Zenith	64	59	87,5	51,7	1,37	0,88
Omega	59	62	57,5	76,9	0,97	1,24
Challenger	474	457	730,0	689,6	1,54	1,51
Northdown	469	460	700,0	651,6	1,49	1,42
Northern Brewer	41	28	60,0	25,0	1,46	0,89
Bullion	14	—	22,5	—	1,61	—
others	17	9	27,5	11,0	1,62	1,22
total	3.983	3.878	5.190,0	4.915,4	1,30	1,27

Basically the same acreage is expected for the next year.

On March 17, 1988 the UK submitted its program for changes in varieties to the EEC Commission, which was approved in an amended version on December 21, 1988.

At first, 635 ha were reported as "acreage covered by the program" on which the following varieties are to be grown in the future:

Aroma varieties:		Super alpha varieties:	
Bramling Cross	8 ha	Target	533 ha
Challenger	56 ha	Yeoman	23 ha
Fuggles	15 ha		
Goldings	11 ha		
Progress	4 ha		
WGV	5 ha		
subtotal	99 ha		556 ha
total			655 ha

Another 132 ha were registered for the program, they have not been approved by the EEC Commission yet.

FRANCE

Growth and market development

Growth of the plants was delayed by a wet and cold spring. Later weather became more favorable and continued to be so until the harvest.

The hops suffered some damage due to rain and strong winds during harvesting time. Despite this, their quality was good, although bitter values were only average, i.e. the following:

Variety	Bitter value
Strisselspalter	3.8%
Brewers Gold	5.4%
Northern Brewer	8.0%

At the time of the report the French 1988 harvest had been sold with the exception of a small amount of Brewers Gold hops. Some growers in northern France are said to have a few lots of Hi-Alpha varieties.

The previous years' trend of a decreasing acreage for Brewers Gold continued. Those for the aroma variety Strisselspalt and for super alpha hops increased, though.

Development of varieties

Compared with 1985, the acreage for the main French varieties changed as follows in recent years (ha):

Variety	1986	1987	1988
Aroma	+ 53	+ 71	+ 34
Brewers Gold	- 91	- 89	- 114
Northern Brewer	- 18	- 22	- 12

Structural program for changes in varieties

Following the EEC Commission's decision of December 21, 1988 approving the program for changes in varieties, submitted by France a total of 198.6 ha were reported in the Alsatian and Nord growing areas.

On this acreage the following varieties will be cultivated:

Aroma varieties		Super alpha varieties	
Strisselspalt	65.75 ha	Yeoman	57.52 ha
		Target	32.72 ha
		Nugget/Chinook, Galena	42.60 ha
Total	65.75 ha		132.84 ha

FRANCE

Cultivation of varieties

French acreage can be broken down into varieties as follows:

variety/ha area	total		Aroma hops		Brewers Gold		Northern Brewer		Target/Yeoman		Others	
	1988	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988	1987
Alsace	425,0	421,0	345,0	310,5	74,0	106,5	-	4,0	3,0	-	3,0	-
Nord	56,0	123,0	-	-	14,0	89,0	27,0	34,0	12,5	-	2,5	-
Burgundy	7,5	15,0	0,5	1,5	7,0	13,0	-	0,5	-	-	-	-
total	488,5	559,0	345,5	312,0	95,0	208,5	27,0	38,5	15,5	-	5,5	-

The quantity harvested can be broken down into varieties as follows (to):

variety/ area	total	Aroma hops	Brewers Gold	Northern Brewer	Target/Yeoman	Others
Alsace	713,5	535,0	175,0	-	3,0	0,5
Nord	57,0	-	26,0	24,0	6,5	0,5
Burgundy	13,5	0,5	13,0	-	-	-
total	784,0	535,5	214,0	24,0	9,5	1,0

BELGIUM

Growth and varieties

Throughout most of the vegetation period the climate was relatively unfavorable, negatively influencing production. Therefore average yield per ha was only 1.39 tons in the region of

Poperinge, considerably less than last year when it was 1.69 tons.

The acreage was somewhat smaller than last year and the following varieties were cultivated:

Area	Total ha	Northern Brewer ha	Hallertauer ha	Brewers Gold ha	Others ha
Poperinge	332	203	62	45	22
Aalst	84	21	42	1	20
Total	416	224	104	46	42

The term, "Others", comprises the Target, Spalter, Star, Saazer and Record varieties.

The different varieties have the following share in total Belgian production (in tons):

Area	Total to	Northern Brewer to	Hallertauer to	Brewers Gold to	Others to
Poperinge	461,4	268,7	88,2	60,2	44,3
Aalst	140,4	30,6	74,6	2,3	33,0
Total	601,8	299,3	162,8	62,5	77,3

Belgian varieties had the following average bitter values (measured conductometrically, "as is" after harvesting):

Variety	%
Northern Brewer	8,7
Hallertauer	4,7
Record	7,2
Brewers Gold	5,9

In the course of the season Belgian Northern Brewer was sold for BFR 6,700, Hallertauer on average for BFR 9,800 and Brewers Gold on average for BFR 4,000. At the time of the report, the market was sold out.

Belgium submitted 97 ha for the EEC program to change varieties (see chapter EEC). The application is still awaiting the Commission's approval.

YUGOSLAVIA

Bačka

An extraordinarily cold period in February and March delayed the plants' growth and spring work. Spring came late with much precipitation and summer with a long draught, both having negative effects on the size of the crop and the bitter values.

The total acreage was cultivated with the following varieties:

Variety	Acreage/ha	
	1988	1987
Bačka	430	639
Neo Planta	100	150
Other varieties	176	270
Total	706	1,059

Slovenia

The winter was very mild with little snow. Normal weather characterized the spring, but starting in the middle of June and throughout July drought prevailed and maximum temperatures reached between 28 and 35°C. The plants suffered from these unfavorable conditions although in some places irrigation helped to ameliorate the situation.

Nevertheless yields were lower than in average years and also bitter values could not keep up with expectations.

The acreage per variety changed as follows compared to the previous year:

Variety	Acreage/ha	
	1988	1987
Styrian Golding	1,014	974
Aurora	1,179	1,190
Other varieties	267	330
Total	2,460	2,494

Below the yield per variety is stated:

Variety	Crop (tons)	
	1988	1987
Styrian Golding	1,225	1,424
Aurora	2,099	2,425
Other varieties	378	505
Total	3,702	4,354

No significant changes in acreage are expected for 1989. One can assume that the share of aroma varieties will progressively expand to the detriment of bitter and other varieties.

CZECHOSLOVAKIA

Extraordinarily favorable weather throughout the growing period resulted in far above average yields. Shortly before the harvest, the volume was estimated to be 11,500 tons by a Board Meeting of the IHB.

After weighing had been closed 15,371 tons had been recorded which is an average yield per ha of 1.29 tons compared to 1.00 ton in previous years.

It was not so much the large volume of the crop, but rather the fact that about 2,000 tons of Czech hops of the 1988 harvest could not be exported to the USA, that caused certain marketing problems. The hops had been treated with the agent Brompropylate against aphids and red spider mites. This agent is not licensed in the USA which means that they could not be exported. It is expected that the unfulfilled 1988 supply contracts will have to be honored in the next years.

Acreage is reported as unchanged with 11,950 ha for 1989. Only varieties of the aroma type will be cultivated.

SPAIN

The area under cultivation was slightly smaller than the year before yielding 490 tons of H7 variety and 1,131 tons of H3 variety. The remainder was 2.8 tons of Strisselspalter and a small amount of Cascade.

Variety H7 had an average alpha content of 6.8%; the bitter values of H3 amounted to 8.2%.

A small reduction of acreage, to 1,580 ha, is expected.

German Democratic Republic

Acreage remained virtually unchanged from last year, but the crop was 13% less, mainly because of a prolonged dry

Area	ha	Average yield per ha (to)	Total crop tons
Halle/Magdeburg	1,031	1.43	1,477.6
Erfurt	540	1.47	795.1
Dresden/Leipzig	714	1.19	845.0
Gera/Karl-Marx-Stadt	35	1.12	39.2

Average alpha acid content was 7.2% (as is) which is less than last year's very high content.

PORTUGAL

The two cultivation areas experienced the worst harvest in 25 years.

Area	Acreage/ha	
	1988	1987
Braga	48.6	58.3
Braganza	85.6	99.5
Total	134.2	157.8

Area	Yield/tons	
	1988	1987
Braga	30.3	117.3
Braganza	124.0	188.5
Total	154.3	305.8

The average bitter value of the hops was 7.3%. New plantations of Perle and Zenit were in their second year. For the EEC's program (see EEC) Portugal submitted 166 ha.

Spain informed the EEC regarding the structural improvement program (see corresponding chapter), that it will not be feasible to complete such changes on the 107 ha intended for this purpose within the period set down by Regulation (EEC) no. 2997/87. The farms willing to change are currently involved in a farmland consolidation measure and cannot start changing varieties until 1990.

period in spring until the end of May. The four growing regions had the following yields:

POLAND

At first conditions were favorable for the plants' growth. In the latter half of May continued drought impaired the plants' further development. Subsequently the weather improved and stayed good until the harvest.

Harvesting started on August 20 and was satisfying regarding both quantity and quality.

The total acreage of 2,399 ha contains 87 ha of newly planted gardens.

The different varieties had the following shares of the entire crop:

Variety	area/ha	crop/to
Lublin	2,102	2,533
Pulawi	10	12
Northern Brewer	140	210
Estera	30	40
Others	30	45

Bitter values of aroma hops were 4.0% and for bitter hops 8%.

AUSTRIA

Muehlviertel

Excellent weather during the entire growing period from May to August resulted in good average yields of 1.86 tons. Almost 100% of the crop was classified as finest quality hops. (Grade I)

Leutschach

Overall conditions were quite favorable, except for some local hail showers that reduced the crop by about 5-10%.

The structure of varieties cultivated changed as bitter hops lost some ground. The crop consists of approximately 40 tons of bitter hops, mainly of the Apollo variety, the remainder of aroma hops of the Golding variety. For bitter hops alpha content was approx. 8-9% and for aroma hops 5.5% on average.

The entire crop is purchased by a local brewery.

Waldviertel

For the first time, hops were grown on 3 ha in this part of Austria.

SWITZERLAND

Acreage was expanded a little. Despite this fewer hops were harvested than last year because of the below average yield of the Hallertauer variety. In contrast the Perle variety had above average yield.

The Swiss brewing industry bought the entire Swiss crop as first quality at SFR 630.- for 50 kg.

2.8 ha of the Swiss acreage is planted with Tettnanger, 6.5 ha with Hallertauer and 13.8 ha with Perle.

SOVIET UNION

After a few years of stagnation or even recession beer consumption picked up by 4 million hl in 1988. For the next year as well the trend seems positive.

The entire crop consisted of 9,500 tons, of these 6,500 tons came from the Ukraine and 3,000 tons from Georgia.

TURKEY

The acreage which remained unaltered is planted 1/3 with Brewers Gold and 2/3 with Late Cluster. Average alpha content of the 1988 crop was 7-8%.

RUMANIA

Previous estimates putting acreage at 2,200 ha seem to be correct. For 1990 an extension to 2,800 ha is expected.

The crop is said to be larger than assumed as average yield is more than 1.30 tons/ha. 80% of the hops cultivated are new bitter hop breeds called "Transilvania", "Napoca", and "Sighisoara". They probably originate from Northern Brewer, Brewers Gold and Hüll varieties.

Hops are presently grown on twelve state farms. The largest and oldest of the hop growing regions is in the vicinity of the city of Sighisoara (Schässburg) comprising 1,200 ha. Other new farms are near Sibiu (Hermannstadt) or Orastie (Broos) and Cluj (Klausenburg). Also beer production seems to exceed prior estimates. It is reported as being 13-15 million hl.

HUNGARY

Of Hungary's acreage about 160 ha are planted with aroma hops and 335 ha with bitter hops.

638 tons were reported as the total crop, 113 tons aroma hops and the remainder bitter hops. Aroma hops contained 2.5% and bitter hops 5.7% alpha acid.

The acreage reported for 1989 is about the same as that of 1988.

BULGARIA

On the same acreage as last year the 1988 crop of 785 tons fell short of the expected 850 tons. 280 tons are aroma and the rest bitter hops. Imports of about 700 tons were required to meet the demand of domestic breweries.

OTHER COUNTRIES

AUSTRALIA

In view of the results of the 1988 harvest in Australia our report of the previous year has to be altered slightly as follows:

Area	ha	Ø tons ha	Total tons	Ø alpha acid in %
Tasmania	716	2.275	1,629	10,5
Victoria	365	1.997	729	8,5
Total	1,081	2.181	2,358	9,9

Average bitter content was 0.2% lower than the 10.1% that had been estimated. This does not apply, however, to Tasmania, where bitter content was again above average.

The poor bitter content in Victoria was caused by extraordinarily hot weather

and lack of rain in some regions until the end of the season. In this weather the red spider mite proliferated, it could be contained, however, by pesticides.

Tasmania had ideal weather once again, some occasional rainfall and almost completely healthy plants.

JAPAN

Reports say that the weather was extraordinarily bad during the entire hop growing season. In spring temperatures were very low with little sunshine. This retarded the plants' growth permanently by 7-10 days.

Despite this the crop was somewhat higher than last year, although acreage shrank by 16.6 ha at the same time.

The Japanese hop crop is purchased to the following extent by the four domestic brewing groups:

Brewery	Acreage 1988 ha	Crop 1988 tons	Changes from 1987 area/ha	Prod./to
Kirin	627.7	1,189.0	- 14,7	+ 17.4
Sapporo	202.4	366.1	- 0.5	+ 21.5
Asahi	136.9	281.2	- 1.4	+ 4.9
Suntory	12.8	25.9	-	+ 0.7
Total	979.8	1,862.2	- 16.6	+ 44.6

Japanese hops were bought by the Japanese breweries for Yen 2,214 to 2,227 per kg (100 yen = DM 1.36)

CANADA

The total area under cultivation of 281 ha – the same as last year – was planted with the following varieties:

Variety	ha
Fuggles	52
Bramblings	156
Willamettes	21
Kents	8
Others	44

The plants' growth and harvest in British Columbia was normal. The hop varieties of British origin are mostly purchased by domestic breweries.

Certain shifts in varieties are planned for the years to come.

NEW ZEALAND

Growth of the plants was marked by favourable conditions, with rainfall and sunshine and without disease. Nevertheless, heavy rainfall shortly before and during the harvest hindered the picking somewhat.

A division of the harvest brought in gives the following picture.

Roborghs	42,5 %
Sticklebract	35,0 %
Green Bullet	21,0 %
others	1,5 %

PEOPLE'S REPUBLIC OF CHINA

It can safely be assumed that beer production continued to rise in 1988. Still no precise production figures or data on hop cultivation are available. It seems, however, that Chinese production is still large enough to cover domestic demand.

SOUTH AFRICA

Although wide areas of South Africa suffered floods, the hop growing region experienced considerable drought. Therefore the 481 ha of farms yielded only 556 tons. Average bitter value was low as well, 8.8%.

On the basis of an exchange rate of DM 0.78 = 1 Rand the growers received DM 340.– per 50 kg.

REPUBLIC OF KOREA

Bad weather again kept the crop below average. At first the weather was hot and dry followed by rain and low temperatures from the middle of July until early August.

The government had ordered a reduction of acreage compared to last year for the following reasons:

1. The cultivation of domestic hops is of little economic interest now that prices are relatively low on the world market.
2. There is a lack of manpower in the hop growing regions and the farms partly have out dated machines.
3. Cultivation shall be concentrated in the hands of efficient farms.

Thus one can expect that the government will somewhat ease the regulations regarding the domestic purchases the breweries have to make.

The two brewing groups bought the local crop as follows:

Brewing group	acreage ha	crop tons
Doosan	195.7	300.4
Crown	216.4	236.0
Total	412.1	536.4

Because of the Olympic Games a 20% higher beer consumption was reported.

USA

Growth

As has been the situation for the past few years, a very mild and dry winter was experienced in all growing areas of the USA.

Concern about water shortages, especially in the Yakima Valley, was eased by above normal precipitation during the month of March, but some rationing was still necessary.

Acreage increased in 1988 by approximately 5,600 acres, resulting in a total crop of 54,557,151 lbs. (1987 - 50.05 million lbs.), with an average yield of 1,609 pounds per acre, compared to 1,768 pounds per acre in 1987. The reduction in average yield can be attributed to the lower yielding aroma varieties and substantial baby acreage.

Washington

Due to a mild winter, snowpack was well below normal through the month of February. Severe water rationing would have been necessary had it not been for substantially above normal snowfall in March, allowing for adequate water supply throughout the year.

Normal growing conditions prevailed during the spring and the crop advanced

on schedule. As warmer temperatures arrived with summer, controlling insects became a full time job. The hot weather delayed the beginning of harvest and contributed to increased discoloration from sunburn and insect damage.

Due to the increase in lower yielding aroma and baby acreage, the overall yield/acre decreased from 1,860 lbs./acre in 1987 to 1,717 lbs./acre in 1988. This in spite of the normal or slightly above normal yield of the Hi-Alpha varieties.

Oregon

The winter was rather mild with precipitation below normal. Early spring growth on all varieties looked to be normal, but cool temperatures in May caused mildew in the aroma varieties and they were slowed considerably, but the cool weather seemed to have little effect on the Hi-Alpha varieties. By early summer warm weather allowed for some recovery in growth for the aroma varieties, but very hot temperatures during the bloom stage in July and August caused below normal yields, especially in the **Willamette** and **Fuggle** varieties. In

spite of the heat, the Hi-Alpha varieties produced a normal or above normal crop, but overall yields still decreased from 1,470 lbs./acre in 1987 to 1,407 lbs./acre in 1988.

Idaho

With well below normal snowpack during the winter and an unusually dry spring, irrigation was necessary earlier than normal, causing the implementation of water rationing throughout the growing season.

The crop suffered further as a result of well above normal average temperatures during July and August, causing considerable bloom drop and insect damage. As a result, there was a reduction in yield from 1,750 lbs./acre in 1987 to 1,279 lbs./acre in 1988. Another contributing factor to the low yield was the expansion of aroma hop acreage in Northern Idaho of approximately 600 acres.

California

Conditions have not changed, as acreage still remains well below 100 acres, and no acreage increase is anticipated in the near future.

Quality

Overall appearance of the crop was slightly below normal due to high temperatures and greater problems controlling insects. The picking quality improved, as the average leaf and stem dropped from 1.23% to 1.00%. Seed content also improved over 1987.

Total alpha production can be estimated at 2.230 tons (1987 - 2.181 tons). Although the alpha average of the crop fell to 9% (9.6%) the production increase reflects the larger acreage of the crop in 1988. Cluster hops remained stable at about 7.5% alpha, whereas the Hi-Alpha varieties were down, ranging from 10.8 - 13.6%. The aroma varieties analyzed from 4-5% with Perle variety showing alphas from 6.7 - 9%.

Spot Market

There were approximately 3,000 bales of 1987 spots that remained in growers' hands at the beginning of 1988. Most of these moved by June at prices of \$ 0.95/lb. for **Hi-Alpha** to \$ 0.70-0.80/lb. for **Cluster**.

The 1988 spot market opened up in August with **Cascades** selling for \$1.25/lb., **Hi-Alpha** at \$ 1.05/lb., **Tettnangs** at \$ 2.45/lb., **Willamettes** at \$ 2.05/lb. and **Perles** at \$ 1.50/lb. After harvest, prices for the aroma varieties stayed constant while the **Hi-Alpha** price moved up to \$ 1.15/lb. and sold out at \$ 1.25/lb. in December, 1988 and **Clusters** declined from \$ 0.80 to \$ 0.50/lb. during September, 1988 - April, 1989. The total number of spot hops available was estimated at approximately 25,000 bales, consisting of only a few hundred bales of Aroma varieties and the balance split evenly between **Clusters** and **Hi-Alpha varieties**. Sudden demand in May, 1989 revived the market by moving all unsold **Clusters** at prices ranging mostly from \$ 0.60 to \$ 0.70/lb.

The latest September 1st hops stocks report is still high but reduced significantly from last year and is at its lowest level since 1982.

1983	61.6 Million Pounds
1984	68.6 Million Pounds
1985	70.5 Million Pounds
1986	70.9 Million Pounds
1987	70.6 Million Pounds
1988	60.6 Million Pounds

Exports increased from 28.4 million pounds in 1986/87 to 35.4 million pounds in 1987/88. Imports decreased from 14.6 million pounds in 1986/87 to 11.1 million pounds in 1987/88, mainly due to pesticide tolerance problems in European hops.

USA

Varietal Structure

Acreeage per variety and yield in the U.S. hop growing areas are as follows:

Acreeage (ha) per Variety/Variety Group (absolute)

Variety/ Variety Group	Washington		Oregon		Idaho		Total	
	88	87	88	87	88	87	88	87
Cluster	3.264	4.010	-	-	200	207	3.464	4.217
Cascade	410	668	-	-	see others		410	668
Highalpha	3.422	2.920	617	672	458	446	4.497	4.038
Aroma varieties	1.997	344	2.178	1.177	-	20	4.175	1.541
others*	338	199	217	581	530	218	1.084	998
total	9.431	8.141	3.012	2.430	1.188	891	13.361	11.462

Acreeage per Variety/Variety Group (%)

Variety/ Variety Group	Washington		Oregon		Idaho		Total	
	88	87	88	87	88	87	88	87
Cluster	35	49	-	-	17	23	25	37
Cascade	4	8	-	-	-	-	3	6
Highalpha	36	36	20	28	39	50	33	35
Aroma varieties	21	4	73	48	-	2	31	13
others*	4	2	7	24	44	25	8	9
total	100	100	100	100	100	100	100	100

Yield (to) per ha

Variety/ Variety Group	Washington		Oregon		Idaho		Total	
	88	87	88	87	88	87	88	87
Cluster	2,26	2,19	-	-	2,10	2,11	2,25	2,19
Cascade	2,27	2,19	-	-	-	-	2,27	2,15
Highalpha	2,10	2,10	2,35	2,17	1,85	2,07	2,11	2,11
Aroma varieties	1,03	1,01	1,39	1,64	-	0,85	1,22	1,49
others*	1,73	1,28	2,03	1,05	0,81	1,70	1,34	1,24
total	1,92	2,08	1,63	1,64	1,43	1,96	1,82	1,98

Yield (to) 1988

Variety	Washington	Oregon	Idaho	Total
Cluster	7.376	-	420	7.796
Cascade	930	-	see others	930
Highalpha	7.187	1.450	849	9.486
Aroma varieties	2.056	3.023	-	5.078
others*	584	441	430	1.454
total	18.131	4.914	1.699	24.744

By converting acres into ha and lbs into tons insignificant deviations may result.

* The groups "others" include the varieties Hallertauer, Fuggle, Hersbrucker, Northern Brewer, Aguila, Banner plus the varieties up to the present marked with numbers only.

Contract Market

As was the case in 1987, the bulk of the contract market activity occurred in the **Hi-Alpha** and **Aroma varieties**. It also seems that there has been some renewed interest in **Cascades**. **Clusters** continue to receive less attention in the market place.

Contracts were made between January and July, 1988 as follows:

Variety/\$	1988	1989	1990	1991	1992	1993
Clusters			(No Activity)			
Hi-Alpha	1.05	1.15	1.25	1.30	1.35	1.40
Willamette and Fuggle	2.05	2.10	2.15	2.20	2.25	
Tettnang	2.30	2.35	2.40	2.45	2.50	
Hallertau	2.35	2.40	2.45	2.50		
Perle		1.80	1.85	1.90		
Cascade	0.75	1.20	1.25	1.35		

From September, 1988 – March, 1989 prices became somewhat softer depending on which variety and combination of years were contracted. With the sale of all crop 88 hops the underlying tone of the market firmed slightly and contract prices as of June 15, 1989 can be indicated as follows:

Variety/\$	1989	1990	1991	1992	1993
Clusters	1.05	1.10	1.15		
Hi-Alpha	1.15	1.20	1.30	1.35	1.40
Cascade	1.25	1.25			
Tettnang *	2.50	2.55	2.60	2.65	
Willamette and Fuggle *	2.10	2.15	2.20	2.25	
Perle			2.20	2.20	

* Prices can only be considered as nominal. No market activity recorded.

Average Price return for Growers

Year	\$/lb.
1983	1.93
1984	2.15
1985	1.98
1986	1.74
1987	1.56
1988	1.34

Continued depressed prices have caused another drastic drop in the average price to growers. It must also be pointed out when considering the average price per pound, that the high prices paid for Aroma varieties are included, without taking into account yields of one-half or less compared to other varieties. This means that the adjusted price paid for aroma hops, based on yield, and the actual price paid for other varieties (e.g. Hi-Alpha, Cluster) is much less than is represented by the above mentioned grower average price.

Outlook USA for 1989

Growers continue to struggle with low prices while their cost of production moves steadily upward. New, higher minimum wage laws, as well as ongoing efforts by organized labor for additional benefits, will no doubt push growing costs higher in the future.

As fewer new chemicals are being cleared and more existing products eliminated, there will be a direct effect on production and quality. This, in turn, will cause cost per pound to increase. It is anticipated that the industry will continue the same acreage trend, namely switching out of Clusters to other varieties.

The 1989 **Sold Projection of Hop Growers of America** was released on May 17, 1989. The listing of the percentage sold is based on the 1988 acreage:

Year	Pounds contracted	% of 1988 crop
1989	49,707,999	91
1990	44,503,791	82
1991	35,489,434	65
1992	25,063,911	46
1993	4,672,857	9
1994	1,154,285	2

Growth 1989

For the first time in many years all growing areas seem to have had adequate precipitation throughout the winter so that water for irrigation should not be a concern.

The hop plants came through the winter in fine shape and even with spring work starting a little late, things appear to be progressing at a normal rate.

According to a preliminary acreage count, approximately 900 acres (= 365 ha) more will be strung for harvest 1989.

1989 Harvest

AUSTRALIA

The 1989 harvest had the following results in the two growing regions:

Region	Total ha	Ø tons per ha	Total tons	Alpha acid in % (on average)
Tasmania	736	2.352	1,731	10.6
Victoria	377	1.968	742	8.7
Total	1,113	2.222	2,473	10.0

Sufficient rainfall in Tasmania produced above average results. Especially in the regions Scottsdale (north eastern Tasmania) and Gunns Plains (north western Tasmania) alpha values were high.

In Victoria the red spider mite spread towards the end of the harvest.

Only the Pride of Ringwood variety is cultivated in Australia – except for 54 ha planted with Cluster. Therefore the hops can become excessively mature towards the end of the harvest as the picking generally takes very long.

NEW ZEALAND

Acreage has expanded slightly to a total of 190 ha, total crop was approx. 439 tons. The following amounts were yielded by the different varieties:

Roborghs	193 tons
Sticklebract	122 tons
Green Bullet	96 tons
Pacific Gem	24 tons
Others	4 tons

It can be expected that in future a significant number of farmers will plant the Hi-Alpha variety Pacific Gem and new triploid Hallertauer aroma breeds. Also an increase of acreage has been contemplated.

REPUBLIC OF SOUTH AFRICA

Extensive drought characterized the 1989 harvest. The regions that were hit most severely produced **Southern Brewer** with a bitter content of only 6% compared to the regular 9%.

ARGENTINA

It is reported that 278 tons were harvested compared to 250 tons in the previous year.

Hi-Alpha, Aroma varieties and new breeds are being tested.

Australia and New Zealand are the only major hop growing regions of the world where almost all pests are unknown. Neither peronospora nor aphids exist there.

EUROPE

The 1988/89 winter was one of the mildest since weather reporting started in the meteorological stations of Hüll and Weihenstephan.

The median temperature for December was +1.2°C which is +2.1°C higher than the average of several years. Likewise the months January and February were above average with +1.8°C and +2.5°C resp.

Due to the mild weather, spring work could start as early as February. In early April the plants had already grown 10 cm bringing them 3-4 weeks ahead of the normal development of previous years.

Until the time of this report the weather continued to be favorable. The weevil became widespread in the Hallertau, but could be controlled with the US-licensed pesticide Basudin (agent Diazinone) and with lime nitrogen.

The Hallertau was hit by a hailstorm in the last week of May which affected an area of approximately 1,200-1,300 ha. On 320 ha the entire crop is said to have been destroyed which means a loss of 500 tons.

1989 Prospects

The unusually mild European winter of 1988/89 has increased the danger that the plants will suffer from pest infestations during the growing period. Controlling the pests becomes even more difficult because only a limited number of pesticides is available for varieties to be exported to the USA.

If the weather continues to favor the spreading of pests, the agents available to combat them might prove insufficient. This applies in particular to aphids and red spider mites.

The trend to plant hops of all varieties i.e. from aroma to Hi-Alpha varieties, now prevalent in all major producing countries, will probably become even stronger. It is too early to determine how this will affect the market, especially because such new plantations will not yield fully until two or three years from now.

In the short run the market could be revived by the reduction of surplus stocks in the USA and increased purchases of certain state trading countries.

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The publication of our Hop Report involves obtaining data from all parts of the world. We wish to express our gratitude to all who assisted us.

It is high time

*For decades peronospora (*Pseudoperonospora humuli*), aphids (*Phorodon humuli*) and red spider mites (*Tetranychus urticae*) have been the main threats to hop cultivation in almost all growing regions of the world. Controlling them successfully is indispensable for economically efficient, good quality hop cultivation. The measures used in the different countries are mainly determined by the specific weather conditions and the climates that characterize them calling for different treatment of the plants. As a result legal provisions for the application of pesticides differ from country to country – especially between Europe and the USA. Consequently European hops destined for export to the US may only be treated with preparations that are authorized for hops in the USA as well or have tolerances for imports or vice versa. However, only 4-5 agents from a total number of approximately 40 are licensed on both sides of the Atlantic.*

Since 1986 this situation has already been an obstacle to free trade. Breweries are worried that they will not receive the basic raw materials required and the growers concerned are becoming embittered because they think that this is merely a trade barrier. This is not true, however. Rather it is a legal problem that arose as a consequence of increased awareness of environmental issues.

The solution will be an international coordination of the different regulations and the approval of a catalogue of agents that can be used everywhere and will permit the growers to produce first class hops in all growing countries. This is an appeal addressed to the European growing countries as a group on the one hand and to the USA on the other.

And it is high time to do so!

Several times the question has arisen whether it is possible to grow hops ecologically. This might be an alternative in the individual case, but is not feasible for large-scale production. Quality would deteriorate, yields drop and prices skyrocket. And worst of all: the demand of the brewing industry could not be met anymore. When talking about untreated hops one should remember that in the mid-twenties the German hop crop was almost entirely wiped out by the first appearance of peronospora.

The only viable alternative is using pesticides as little as possible on the basis of the results of ongoing research and development. Many examples prove that the international hop industry has accepted this challenge.