

# STRUCTURE OF THE HOP CULTIVARS IN THE MAIN GROWING COUNTRIES

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**Abstract.** On based of the data published by the International Hop Growers Convention. in 2010. of the 50.752 ha cultivated with hops. 24.495 ha were represented by flavored cultivars (48.2 %) și 26.297 ha bitter cultivars (51.8%). Of the total production of hops cones in that certain year. of 101.375 tons. 37.380 tons (36.0%) represent the production obtained from the flavored cultivars and 63.995 tons (63.1%) the total production of bitter cultivars.

Germany is currently the largest growing global of aroma hop. flavored varieties accounting for 9800 ha (53.3%) of the 18.386 hectares planted with hops and Czech Republic grown solely aromatic varieties (98.5%) of the 5307 ha of hops. Important sources of aromatic hops are in Slovenia (1299 ha of the 1355 hectares planted). England (810 ha of 1080 ha). Ukraine (660 ha of 936 ha) and France (398 ha of the total of 443 hectares planted with hops ).

U.S.A. with predilection cultivated rich varieties in bitter substances. especially super alpha varieties (68.7% of the 16.077 ha planted) and in China there are cultivated over 91% of the total area of hops (6023 ha) with bitter varieties.

In recent decades. in the world was created many varieties of hops. which are rich in alpha acids and with fine aroma of the cones. or improved physiological properties. In large hop-growing countries are a continuing concern for improving the structure of varieties in favor of the fine aroma favorite breweries around the world and for the use of varieties with high percentage of bitter substances.

The introduction and expansion in culture of the super alpha varieties has reduced the specific consumption of hops for a hectolitre of beer (about 60-65 g/hl) and alpha acids (4.1 g/hl of beer) and a significant decrease of the areas planted with hops in the world.

From 91.100 ha in 1993. surfaces of hop in the world were gradually reduced to 50.792 ha in 2010 when production stood at 101.375 tons cones (1996 kg/ha) (after Hopfen-Rundschau. no. 12/2010).

Structure of the hop varieties has undergone significant changes in recent years in favor of bitter varieties. If in 1996. about 64% of the hop surface was held flavored varieties. at present are a balance between bitter and aromatic varieties with a easy dominance of the first. Of the data published by the International Hop Growers Convention. in 2010 year. 24.495 ha were represented by flavored cultivars (48.2%) și 26.297 ha by bitter cultivars (51.8%). Of the total production of hops. 37.380 tons (36.0%) are obtained from the flavored cultivars and 63.995 tons (63.1%) from bitter cultivars (Hopfen-Rundschau. no. 12/2010).

Situation of the areas planted with aromatic and bitter varieties in Germany. the main hop-growing country in the world (36.2% of the world). is presented in table 1 (after Jahresbericht. 2010).

There is high percentage of aromatic varieties (53.3% of total). the distinguished Perle (3403 ha). followed by Hallertauer Tradition (2624 ha) and Hallertauer

Mittelfrüher (1069 ha). The other very fine flavored varieties Tettninger, Hersbrucker and Spalter Select are grown on small surfaces.

Bitter varieties (46.7% of total) are represented mainly by Hallertauer Magnum (4202 ha), which holds first place in Germany. He is followed by Hallertauer Merkur (2542 ha), which know in recent years a rapid spread and of Hallertauer Taurus (1054 ha).

Traditionally U.S.A. grown especially bitter varieties, holding 68.7% (11.047 ha) of the total area of hops (table 2, after The Barth Report, 2009/2010).

Table 1

Structure of the hop cultivars in Germany in 2010

Cultivar	Type of the cultivar	Surface (ha)	% of the total
Hallertauer Mittelfrüher	Flavored cultivar	1,069	5.8
Spalter	Flavored cultivar	91	0.5
Tettninger	Flavored cultivar	772	4.2
Hersbrucker	Flavored cultivar	758	4.1
Perle	Flavored cultivar	3,403	18.5
Spalter Select	Flavored cultivar	801	4.4
Hallertauer Tradition	Flavored cultivar	2,624	14.3
Saphir	Flavored cultivar	196	1.1
Opal	Flavored cultivar	33	0.2
Smarald	Flavored cultivar	38	0.2
Other flavored cultivars		15	0.1
<b>Total flavored cultivar</b>		<b>9,800</b>	<b>53.3</b>
Northern Brewer	Bitter cultivar	375	2.0
Brewers Gold	Bitter cultivar	27	0.1
Nagget	Bitter cultivar	266	1.4
Hallertauer Magnum	Bitter cultivar	4,202	22.9
Hallertauer Taurus	Bitter cultivar	1,054	5.7
Hallertauer Merkur	Bitter cultivar	85	0.5
Herkules	Bitter cultivar	2,542	13.8
Other bitter cultivars		35	0.2
<b>Total bitter cultivars</b>		<b>8,586</b>	<b>46.7</b>
<b>TOTAL GENERAL</b>		<b>18,386</b>	<b>100.0</b>

The fund of aromatic hop is represented mainly of varieties Willamette (2,100 ha) and Cascade (900 ha). Of bitter varieties are attractive and the Columbus-Tomahawk-Zeus group (5004 ha) and famous super alpha varieties Summit (1310 ha), Nugget (1134 ha), Galena (1038 ha) and others, which averaged over 5 years were achieved between 11.6 to 15.4% alpha acids (table 3, after the Barth Report, 2009/2010).

Table 2

## Dynamic of the hop cultivar structure in USA (2005-2009)

Cultivar	Type of the cultivar	Surface cultivated (ha) in the years:					
		2005	2006	2007	2008	2009	% of the total
Willamette	Flavored	2,465	2,823	2,824	2,985	2,100	13.1
Cascade	Flavored	505	484	559	891	900	5.6
Cluster	Flavored	250	146	152	174	207	1.3
Palisade	Flavored	22	22	37	126	142	0.9
Centennial	Flavored	45	86	86	102	121	0.7
Mount Hood	Flavored	109	64	89	87	103	0.6
Other flavored cultivars		1,266	1,309	1,394	1,377	1,458	9.1
<b>Total flavored cultivars</b>		<b>4,842</b>	<b>4,936</b>	<b>5,141</b>	<b>5,742</b>	<b>5,030</b>	<b>31.3</b>
Columbus-Tomahawk-Zeus	Bitter	2,911	2,911	3,448	5,213	5,004	31.1
Summit	Bitter		27	256	972	1,310	8.1
Nugget	Bitter	1,004	1,067	1,135	1,318	1,134	7.1
Galena	Bitter	1,849	1,733	1,418	1,207	1,083	6.7
Chelan/Tilicum/S Galena	Bitter	140	259	244	641	887	5.5
Millenium	Bitter	571	473	414	429	365	2.3
Chinook	Bitter	251	174	153	167	245	1.5
Warrior	Bitter	241	175	137	159	122	0.8
Other super alpha		115	131	165	702	898	5.6
<b>Total super alpha</b>		<b>7,082</b>	<b>6,950</b>	<b>7,369</b>	<b>10,809</b>	<b>11,047</b>	<b>68.7</b>
<b>TOTAL GENERAL</b>		<b>11,924</b>	<b>11,884</b>	<b>12,510</b>	<b>16,551</b>	<b>16,077</b>	<b>100.0</b>

Among other growing countries. the rich collection of aromatic hops is in Czech Republic (5210 ha). representing 98.5% of the 5307 ha of hops in this country. while in China. bitter varieties have more than 91% of total area (6023 ha) (The Barth Report. 2009/2010). Important sources of aromatic hops are in Slovenia (1299 ha of the 1355 hectares planted). England (810 ha of 1080 ha). Ukraine (660 ha of 936 ha) and France (398 ha of the total of 443 hectares planted with hops ) (after Hopfen-Rundschau, no. 12/2010).

Table 3

## The content of hop varieties in alfa acids in SUA (2005-2009)

No crt	Cultivar	Type of the cultivar	Content of alpha acids (%) in the years:					Average (2005- 2009)
			2005	2006	2007	2008	2009	
1	Willamette	Flavored cultivar	4.2	4.6	4.5	4.7	4.3	4.5
2	Mount Hood	Flavored cultivar	4.4	4.6	4.4	4.9	4.5	4.6
3	Cascade	Flavored cultivar	5.8	6.1	5.7	6.2	5.6	5.9
4	Palisade	Flavored cultivar	5.9	5.9	7.7	6.7	6.8	6.6
5	Cluster	Flavored cultivar	6.0	7.0	6.5	6.4	7.0	6.6
6	Centenial	Flavored cultivar	9.5	9.5	8.7	9.0	8.1	9.0
7	Galena	Bitter cultivar	12.1	12.1	11.6	11.9	11.6	11.9
8	Nugget	Bitter cultivar	12.3	13.2	12.3	12.3	12.2	12.5
9	Chinook	Bitter cultivar	11.5	12.2	11.6	11.8	11.0	11.6
10	Other super alpha cultivars	Bitter cultivar	14.4	15.2	13.2	13.3	13.5	13.9
11	Summit	Bitter cultivar	-	-	15.7	15.8	14.8	15.4

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