New Saaz series of hop cultivars

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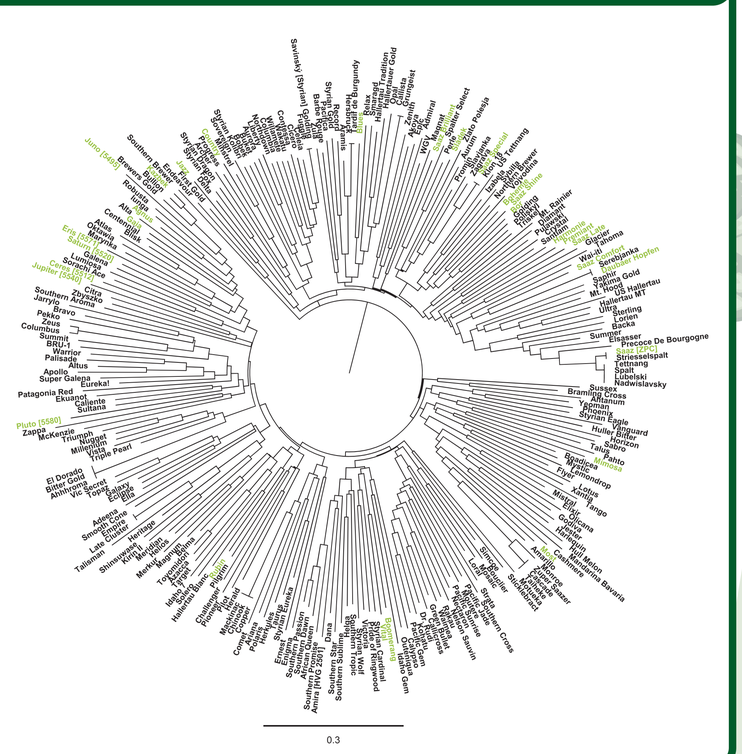
Hop Research Institute Co., Ltd.

Saaz hops has been cultivated since the 10th century in Žatec (Saaz) hop region. From 2018 to 2022 results, old clones (Zatecky, Ustecky, Trsicky, clones 86, 136, 147, etc.) did have the yield from 0.6 to 1.2 t/ha and the content of alpha acids in dry cones was from 1.8 to 4.2%. There was a high variability from 20 to 50% within these clones. At the beginning of the 20th century, clone selection was made by Karel Osvald and Hop Research Institute in Žatec. The new Saaz clones have had the yield from 0.9 to 1.4 t/ha and the alpha acid content from 2.5 to 4.0%. Since the end of the 20th century, virus-free Saaz hop plants have been cultivated. They have the yield from 1.0 to 1.8 t/ha and the alpha acid content from 3.5 to 5.0%. The variability was reduced to 15 - 25% within 20th century Saaz clones. Currently, Saaz hops is still a fine aroma cultivar with the highest production acreage (4,136 ha) worldwide. Since the 21st century, Saaz hops has been used for crossbreeding with an aim to obtain new cultivars with higher resistance to drought and fungal diseases, with higher yield and stability, while maintaining quality parameters of original Saaz hops. There were released new cultivars Saaz Late (2010), Saaz Brilliant, Saaz Comfort and Saaz Shine (2019). The yield of new Saaz hop series is from 1.8 to 2.8 t/ha and the alpha acid content is 2.5-4.0%. Saaz Comfort only has the higher alpha acid content from 4.0 to 7.0%. The Saaz hop series is a typical by the alpha/beta acid ratio from 0.8 to 1.2, cohumulone content from 18 to 28% in alpha acids and mainly the higher portion of farnesene from 12 to 27% in essential oils. The aroma of hop cones is herbal, with predominant fine hop aroma, with soft tones of spice, fruit and citrus. Saaz Comfort and Saaz Shine cultivars show good resistance to drought. Currently, brewing tests are carried out in large breweries as well as craft breweries for lager style beer with soft bitterness and noble hoppy aroma. Saaz Late is still grown on 32 ha.

Genetic map of hop varieties

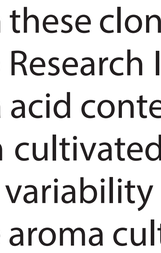


IHGC VARIETAL CODE: SAZ

Saaz

DESCRIPTION

Saaz fine aroma variety registered in 1942 was obtained by clonal selection in the original growths in the Saaz and Auscha hop growing regions. It is grown in nine clones, the most widespread are Osvald's clones 31, 72, 114. It is characterized by a pleasant herbal aroma. The most common use is for hopping of Czech premium type lager beers.



HOP AROMA

AGRONOMY

MATURITY

EARLY	SEMI-EARLY	MEDIUM	SEMI-LATE	LATE
earlier 20/08	20/08–01/09	01/09–05/09	05/09–15/09	later 15/09

YIELD

1.0–1.6 t/ha

HOP CHEMISTRY

BITTER COMPONENTS

	Range (%)
Alpha acids	2.0–5.0
Beta acids	3.5–5.0
Cohumulone*	22–26
Colupulone**	39–43
Xanthohumol	0.25–0.40

* as % rel. of alpha
** as % rel. of beta

AROMA COMPONENTS

Total oil (g/100 g)	0.2–0.8
Myrcene*	10–35
Linaool*	0.15–0.70
Geraniol*	0.05–0.50
Caryophyllene*	6–9
Farnesene*	10–25
Humulene*	15–30
Selinenes*	<3.0

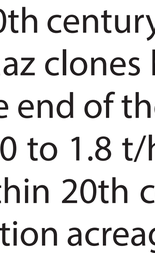
* % rel. of total oil

IHGC VARIETAL CODE: SAL

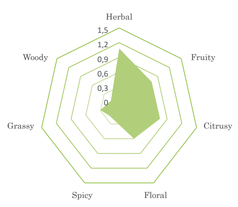
Saaz Late

DESCRIPTION

Saaz Late variety registered in 2010 was obtained by selection from the offspring after the parental combination of the breeding material, which originates in Saaz variety. It has similar attributes to Saaz and the same brewing use.



HOP AROMA



AGRONOMY

MATURITY

EARLY	SEMI-EARLY	MEDIUM	SEMI-LATE	LATE
earlier 20/08	20/08–01/09	01/09–05/09	05/09–15/09	later 15/09

YIELD

1.8–2.5 t/ha

HOP CHEMISTRY

BITTER COMPONENTS

	Range (%)
Alpha acids	2–5
Beta acids	4–6
Cohumulone*	21–26
Colupulone**	37–45
Xanthohumol	0.20–0.40

* as % rel. of alpha
** as % rel. of beta

AROMA COMPONENTS

Total oil (g/100 g)	0.4–0.8
Myrcene*	15–40
Linaool*	0.4–1.0
Geraniol*	0.15–0.45
Caryophyllene*	6–10
Farnesene*	10–20
Humulene*	15–25
Selinenes*	3–7

* % rel. of total oil

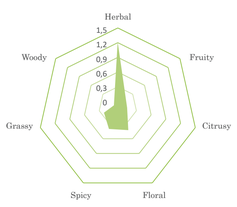
IHGC VARIETAL CODE: SAI

Saaz Brilliant

DESCRIPTION

Semi-early aroma variety, selected from Saaz progeny. It was registered in 2019. The variety is characterized by a medium-sized cones and delicate hop aroma. It is useful for the second and late hopping of lager beers.

HOP AROMA



AGRONOMY

MATURITY

EARLY	SEMI-EARLY	MEDIUM	SEMI-LATE	LATE
earlier 20/08	20/08–01/09	01/09–05/09	05/09–15/09	later 15/09

YIELD

1.7–2.1 t/ha

HOP CHEMISTRY

BITTER COMPONENTS

	Range (%)
Alpha acids	3.0–4.5
Beta acids	2–3
Cohumulone*	22–26
Colupulone**	42–47
Xanthohumol	0.20–0.40

* as % rel. of alpha
** as % rel. of beta

AROMA COMPONENTS

Total oil (g/100 g)	0.3–0.6
Myrcene*	15–30
Linaool*	0.15–0.45
Geraniol*	0.25–0.60
Caryophyllene*	9–15
Farnesene*	10–20
Humulene*	15–35
Selinenes*	1–3

* % rel. of total oil

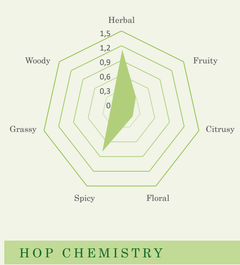
IHGC VARIETAL CODE: SAC

Saaz Comfort

DESCRIPTION

Semi-early aroma variety, selected from Daubaer hopfen and Saaz progeny, registered in 2019, with fine hoppy aroma and medium-sized cones. It is suitable for the second and late hopping of lager beers.

HOP AROMA



AGRONOMY

MATURITY

EARLY	SEMI-EARLY	MEDIUM	SEMI-LATE	LATE
earlier 20/08	20/08–01/09	01/09–05/09	05/09–15/09	later 15/09

YIELD

1.8–2.3 t/ha

HOP CHEMISTRY

BITTER COMPONENTS

	Range (%)
Alpha acids	4–7
Beta acids	3.5–5.5
Cohumulone*	15–20
Colupulone**	35–40
Xanthohumol	0.25–0.40

* as % rel. of alpha
** as % rel. of beta

AROMA COMPONENTS

Total oil (g/100 g)	0.5–1.2
Myrcene*	15–35
Linaool*	0.4–1.0
Geraniol*	0.40–0.60
Caryophyllene*	6–12
Farnesene*	15–25
Humulene*	1–4
Selinenes*	15–25

* % rel. of total oil

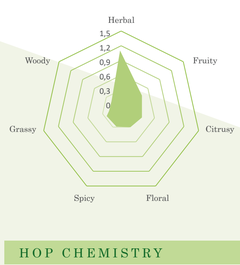
IHGC VARIETAL CODE: SAH

Saaz Shine

DESCRIPTION

Semi-early aroma variety, selected from Sládek and Saaz progeny, registered in 2019, with high yield, fine hoppy aroma and medium-sized cones. It is useful for the second and late hopping of lager beers.

HOP AROMA



AGRONOMY

MATURITY

EARLY	SEMI-EARLY	MEDIUM	SEMI-LATE	LATE
earlier 20/08	20/08–01/09	01/09–05/09	05/09–15/09	later 15/09

YIELD

1.7–2.2 t/ha

HOP CHEMISTRY

BITTER COMPONENTS

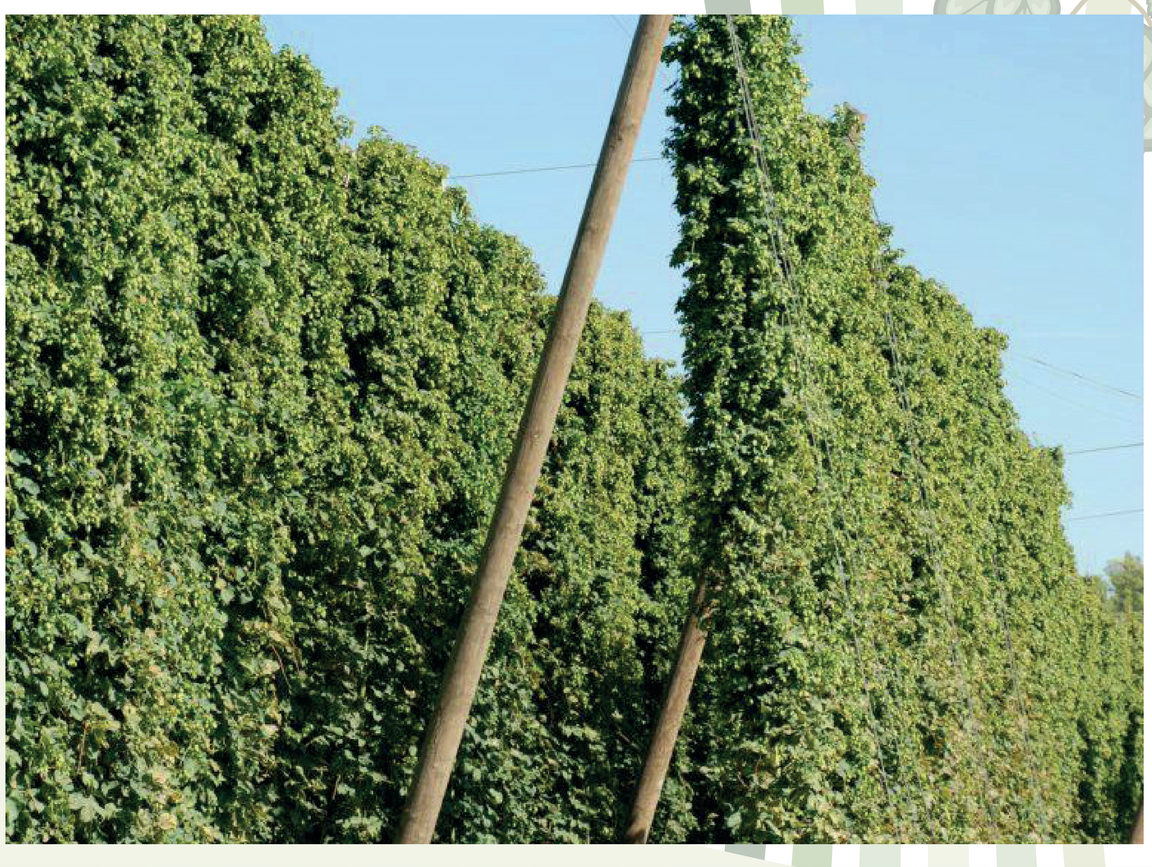
	Range (%)
Alpha acids	2–5
Beta acids	2–4
Cohumulone*	21–27
Colupulone**	40–50
Xanthohumol	0.30–0.40

* as % rel. of alpha
** as % rel. of beta

AROMA COMPONENTS

Total oil (g/100 g)	0.45–1.0
Myrcene*	10–30
Linaool*	0.5–1.2
Geraniol*	<0.2
Caryophyllene*	7–15
Farnesene*	10–20
Humulene*	20–40
Selinenes*	1–4

* % rel. of total oil



Acknowledgement

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