Back to the future:
an expansion of a SAAZ hop family pedigree

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Introduction

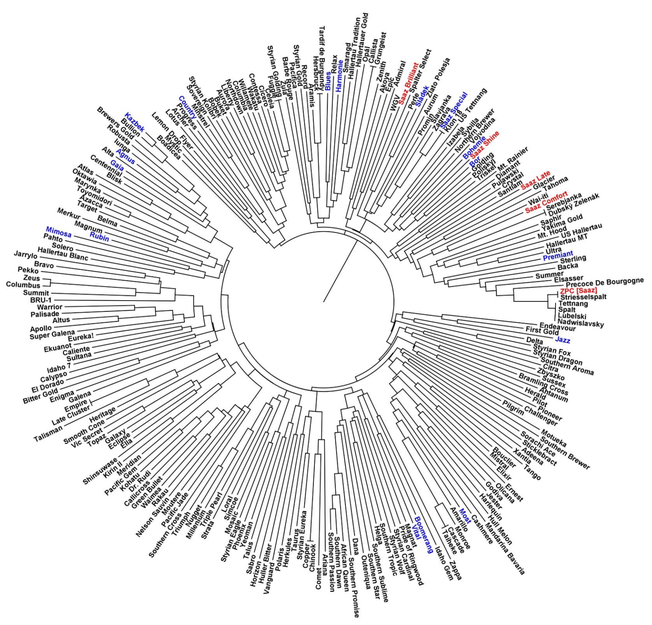
Hop breeding in the Czech Republic has a long tradition. The founder of modern breeding methods was Karel Osvald who was engaged in it from 1927. Osvald's clones No. 31, 72, 114, well known as **Saaz**, represent 90% of the hop-growing area in the Czech Republic.
A new member of the Saaz family – **Saaz Late** was registered in 2010. This variety is very late and has good tolerance to main fungal diseases.
Further, new cultivars **Saaz Brilliant, Saaz Comfort**, and **Saaz Shine** were registered in 2019.
All of the new hop varieties have significantly higher yields than the traditional Saaz variety.

The aim of this study is a comparison of new Saaz varieties with the original Saaz using brewing tests.

Experimental design

- ✓ 5 beers from 200 l research brewery
  (in triplicate, double decoction 12.5° PLATO, atmospheric hopping in three doses; 75 min, bottom fermentation by W34/70 from fermentis)
- ✓ Chemical analysis *(hop oils, bitterness, basic beer parameters)*
- ✓ Sensory analysis *(profile, projective mapping)*

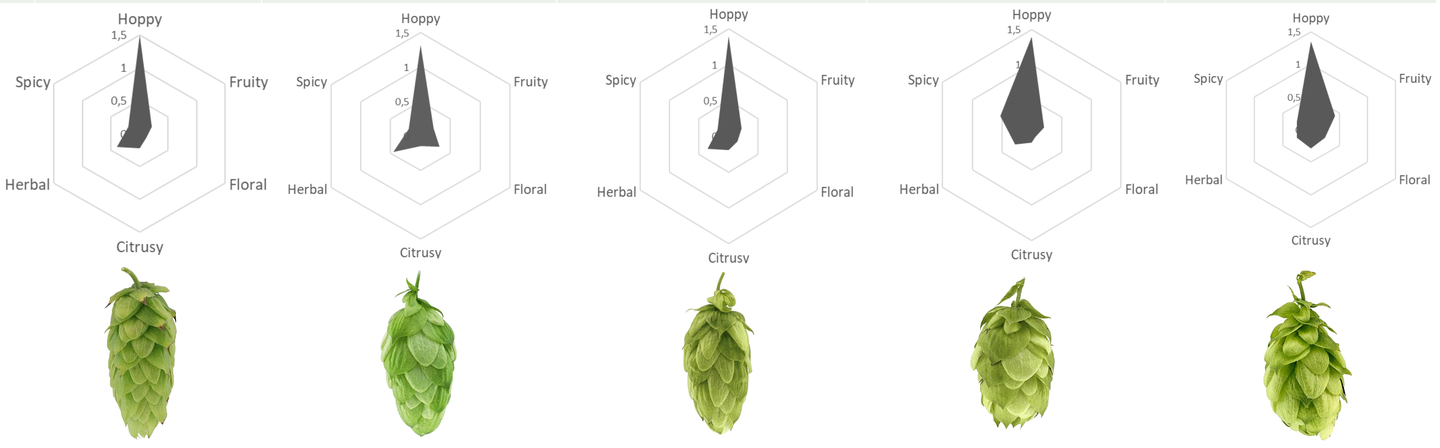
Results



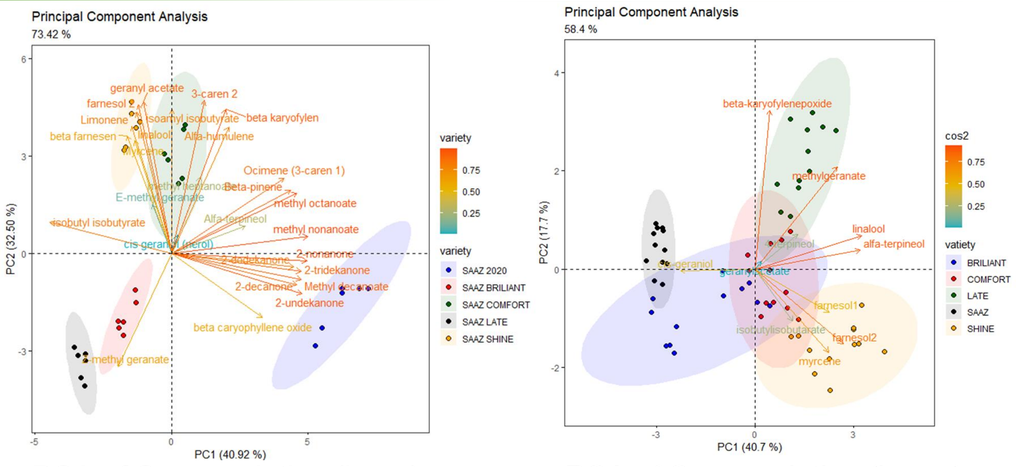
Dendrogram of genetic distances for 250 world hop cultivars.
Czech Saaz hop cultivars labeled in **RED**.
(Patzak et al., Czech J. Genet Plant Beed., 2018)

Data from monitoring in the years 2005 to 2021.

	Saaz	S. Late	S. Brilliant	S. Comfort	S. Shine
Yield (t/ha)	1.65	2.06	1.93	2.16	2.21
α-acids (%)	3.24	3.12	3.80	5.60	3.62
α/β	0.85	0.68	1.42	1.06	1.28
Hop oils (%)	0.3-0.9	0.4-0.9	0.3-0.8	0.4-1.1	0.5-1.3



FINAL BEERS WERE DISCRIMINATED BY CHEMICAL ANALYSIS



PCA of Saaz varieties (hops)

PCA of Saaz varieties (beers)

FINAL BEERS WERE NOT DISCRIMINATED BY PROJECTIVE MAPPING

Saaz – fine bitterness, weak aroma, hoppy, herbal, floral
S. Late – fine bitterness, weak aroma, hoppy, fruity, woody
S. Brilliant – fine bitterness, medium aroma, hoppy, frutity, herbal, floral
S. Comfort – fine bitterness, medium aroma, hoppy, herbal, fruity, floral
S. Shine - fine bitterness, weak aroma, hoppy, fruity, floral

- New varieties have a higher yield and concentration of bitter acids and hop oils.
- Slight difference among beers hopped by Saaz varieties.

Conclusion

New fine aroma varieties of Saaz family are well substitutable and maintain the quality of the og the original well-known Saaz variety.

Acknowledgement

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