

## *“Applications of Czech hops in the brewing industry”*

*Hop seminar – 28<sup>th</sup> April 2016-, Zatec (Saaz)*



Bohemia Hop

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Czech hops

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## INTRODUCTION

Bohemia Hop in cooperation with the Hop Research Institute in Zatec organized a gathering and educational session focused on the application of Czech hops in the brewing industry that took place on 28<sup>th</sup> April 2016. This traditional event is an opportunity for brewers and other experts related to the brewing industry to meet, mingle and mutually share their experiences. This year, almost 100 participants gathered at the Hop Research Institute to learn about the current trends in the hop and brewing industries and to taste and evaluate beers brewed from Czech hop varieties in the experimental brewery at the Hop Research Institute.

Mr. Josef Patzak, director of the Institute, and Mr. Zdenek Rosa, chairman of Bohemia Hop and Chmelarstvi cooperative, welcomed all participants and opened the seminar. The program included 4 oral presentations and 4 rounds of the evaluation of different beer types.

The main topics of the seminar were focused on:

- Methods of Analyses According to EBC 7.4, EBC 7.5, EBC 7.7. (HPLC) And Evaluation of HSI And Alpha-acid Development Over Time (Karel Krofta, Hop Research Institute )
- The Breeding Program of Czech Hop Varieties (Vladimir Nesvadba, Hop Research Institute)
- Beer Stability and Its Aging Process (Martin Slabý, Research Institute of Brewing and Malting) )
- Czech And Global Hop Markets Overview (Zdeněk Rosa, Bohemia Hop a.s.)



Beers evaluated:

- Pale Lager 11° Plato – comparison of different IBU in beers brewed with different hops (Saaz, Sladek)
- Half Dark Lager – single-hop beers (Rubin, Harmonie, Bohemie )
- ALE –comparison between beers dry-hopped with hops from a breeding program at the Hop Research Institute
- ALE 14% EPM – Dry hopped with Kazbek; comparison of beers using pellets/whole leaf hops for dry hopping and development of sensory properties of beers kegged in different times.

## TESTING AND EVALUATION

### The first round

Pale lager 11,3 % EPM; bottom fermentation; single hop – Saaz vs. Sládek; comparison of different IBU in beers

Sample	aroma		biterness		Final impression	
	points	ranking	points	ranking	points	ranking
Saaz 33 IBU					231	1-2
Saaz 39 IBU					231	1-2
Saaz 44 IBU					181	3
Sládek 32 IBU					139	3
Sládek 37 IBU					147	2
Sládek 41 IBU					153	1

*The results of beers with Sládek were very close. Concerning Sládek variety, beer testers preferred the beers with higher IBU. Contrarily, concerning Saaz variety, testers preferred beers with lower IBU.*

### The second round

Half dark lager, bottom fermentation; 11,3 % EPM;

Sample	aroma		biterness		Final impression	
	points	ranking	points	ranking	points	ranking
Harmonie 27 IBU					156	1
Bohemie 31 IBU					175	2
Rubín 30 IBU					193	3

*In the second round the clear winner of the final impression was the beer where Harmonie hops were used. This beer even had a lower bitterness compared to the other 2 samples, whose IBU were very close.*





### The third round

ALE; upper fermentation; 13 % EPM; hops for kettle addition – 1<sup>st</sup> hop addition Agnus, 2<sup>nd</sup> hop addition Kazbek.

Dry hopping: 3 g/l; 10 days; 2 °C

Sample	aroma		biterness		Final impression
	points	ranking	points	ranking	number of preferences
Pluto					1,8,5,2,6,4,9,7
Slunce					1,8,3
Ceres					6,3
Uran					5,2,4
Saturn					7
Jupiter					5,7
Země					1,8,2,6,3,4,9

During the third round of testing and evaluation, each table determined 3 most-preferred beers from seven beer samples where the hops from breeding program were used. The samples have been provisionally named according to planets. A panel discussion was passionate. Sensory properties were changing over time, thus the preferences were changing as well. All samples were interesting and some of them are very promising.

### The fourth round

ALE; upper fermentation; 14,4 -14,6 % EPM; hops for kettle addition – 1<sup>st</sup> hop addition Agnus, 2<sup>nd</sup> hop addition Kazbek. Dry hopped with Kazbek

Dry hopping: 3 g/l; 10 days; 2 °C, pellets/whole leaf hops

Date of kegging: fresh/1 month before

Treatment: Pasteurization/no-pasteurization

Sample	aroma		biterness		Final impression	
	points	ranking	points	ranking	points	ranking
Old beer, pasteur.; whole leaf hops						
Old beer, pasteur.; pellets						
Old beer, no-pasteur.; whole leaf hops						
Old beer, no-pasteur.; pellets						
fresh beer, no-pasteur.; whole leaf hops						
fresh beer, no-pasteur.; pellets						

The final results should be known in a couple of days. After that we will complete this report and tack it on our websites.



## TOUR OF UNESCO

After the educational and testing sessions, some participants made a sightseeing tour of a complex of old Saaz hop storage buildings that seek to be under the Protection of The World Culture and Natural Heritage (UNESCO). Their guide Mr. Bažant from the architectural office Huml& Vaníček delivered a lot of historical information about buildings and their developments. He also spoke about all terms and circumstances that are necessary for the application. The participants enjoyed his guiding and hope in successful appraisal of a registration.

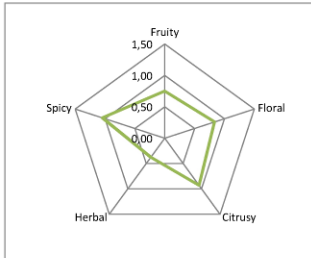
This successful and interesting day was traditionally concluded with a common dinner at the Hop and Beer Temple in Zatec.



**SENSORY PROFILE OF CZECH HOP VARIETIES**

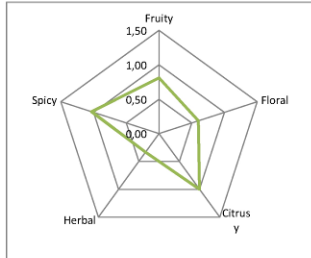
**SAAZ**

Fruity	Floral	Citrusy	Herbal	Spicy
0,75	0,84	0,93	0,38	1,05



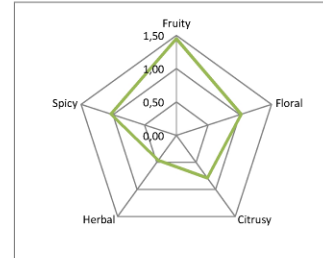
**SAAZ LATE**

Fruity	Floral	Citrusy	Herbal	Spicy
0,81	0,60	1,00	0,33	1,03



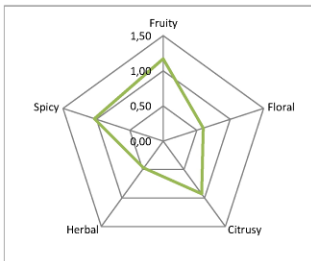
**PREMIANT**

Fruity	Floral	Citrusy	Herbal	Spicy
1,45	1,02	0,79	0,46	1,03



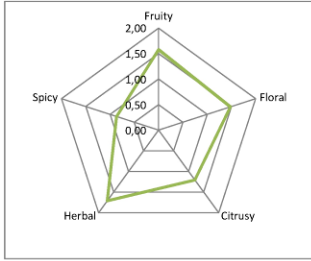
**SLADEK**

Fruity	Floral	Citrusy	Herbal	Spicy
1,17	0,60	0,93	0,48	1,03



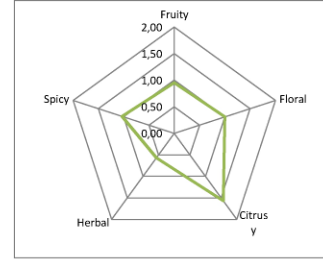
**HARMONIE**

Fruity	Floral	Citrusy	Herbal	Spicy
1,58	1,48	1,21	1,71	0,87



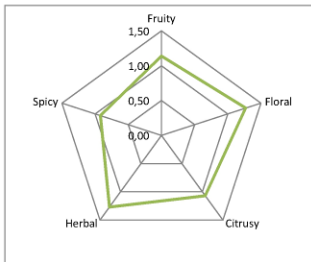
**AGNUS**

Fruity	Floral	Citrusy	Herbal	Spicy
0,95	1,00	1,57	0,57	1,03



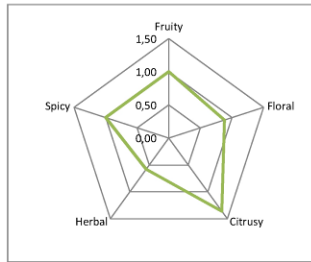
**BOHEMIE**

Fruity	Floral	Citrusy	Herbal	Spicy
1,14	1,27	1,07	1,27	0,92



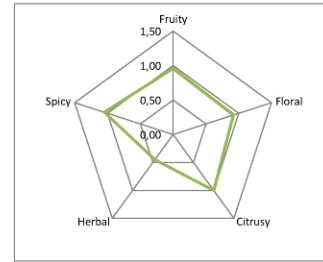
**KAZBEK**

Fruity	Floral	Citrusy	Herbal	Spicy
1,00	0,88	1,36	0,58	1,00



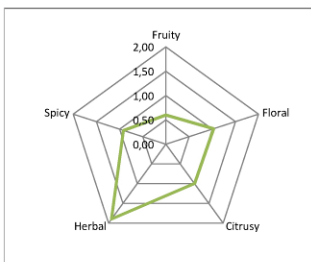
**BOR**

Fruity	Floral	Citrusy	Herbal	Spicy
0,96	0,92	1,00	0,45	1,05



**RUBIN**

Fruity	Floral	Citrusy	Herbal	Spicy
0,60	1,03	1,00	1,90	0,92



**VITAL**

Fruity	Floral	Citrusy	Herbal	Spicy
2,00	1,49	1,36	1,34	0,78

