

**SCIENTIFIC COMMISSION OF THE INTERNATIONAL
HOP GROWERS´ CONVENTION**

**COMMISSION SCIENTIFIQUE DU COMITE INTERNATIONAL
DE LA CULTURE DU HOUBLON**

**WISSENSCHAFTLICHE KOMMISSION DES INTERNATIONALEN
HOPFENBAUBÜROS**



**Report on the meeting of the
Scientific Commission of the I.H.G.C.
in Kiev, Ukraine,
from 04 - 09 June 2013
by Elisabeth Seigner**

From 04 -09 June 2013 the Scientific Commission (SC) of the International Growers` Convention held its meeting in the Ukraine for the very first time. 49 scientists and experts from the hop and the brewing industry came at the invitation of the National University of Life and Environmental Sciences of the Ukraine and its vice-rector for scientific, innovative and international activities Prof. Dr Maksym Melnychuk. He and his team had organized the meeting on-site. Dr. Elisabeth Seigner from the Hop Research Center Huell of the Bavarian State Research Center for Agriculture was in charge of the scientific part and of the coordination of the whole meeting.



First, the center of attention were the 22 oral presentations and 13 posters in which hop researchers from 12 hop growing nations presented their work. As already in recent years, also this time the whole spectrum of hop research was covered:

- hop breeding (classical breeding and biotechnological work)
- hop diseases and pests and strategies on integrated pest management
- chemical analysis of hop compounds and their influence on beer aroma
- improvements in hop production and production techniques

- physiology of hops
- alternative applications of hops beyond the brewing industry

In developing new hop varieties beside high alpha varieties emphasis is currently put on aroma hops with fruity, citrusy, exotic, strongly differentiating aroma characteristics for the craft beer market. But also hops adapted to the growth on low trellis systems, hops with enhanced disease resistance as well as polyphenol- and flavonoid-rich hop cultivars for the pharmaceutical and medicinal field are the objectives of the breeding programs presented in that session. Biotechnological, biochemical and molecular methods which are assisting the breeding work are gaining in importance, e.g. to accelerate and improve the assessment of breeding material. Furthermore, studies on the expression of genes help to comprehend the complex processes involved e.g. in the biosynthesis of lupulin compounds and in dwarfness of specifically developed hops.

Hop chemists with their analyses of hop compounds try to improve the characterization of hop cultivars. In addition, they addressed the question which is most interesting for the brewing world: Which hop-derived substances really affect aroma and flavor in beer? Thereby the whole complexity of the brewing process has to be considered and certainly also the secrets of dry hopping have to be elucidated. One speaker commented critically the relationship of high cohumulone contents and beer bitterness which have had negative connotations for years. All new insights into value-adding compounds of hop are interesting for brewers and breeders, but also for the pharmaceutical and medicinal field. Hop varieties which are rich in polyphenols and flavonoids were discussed in the context of health-promoting and anticarcinogenic effects and thus should pave the way towards alternative applications of hops.



Papers and posters presented in the field of integrated pest management, hop diseases and pests, clearly showed the various efforts to increase the portfolio of pesticides available for hop production as it is the aim of the newly established EU Commodity Expert Group „Minor Uses Hop“. At the same time, especially in recent years comprehensive analyses of pesticide residues assured that hops were free of residues or that residues detected were consistently below the MLRs (maximum residue levels) whereas the methods of detection were constantly improved. In addition, very promising approaches to reduce the application of pesticides with focus on integrated pest management and organic hop production have been presented: e.g. the application of new copper formulations to control downy mildew or the release of predators to control two spotted red spider mite.

To cope with problems caused by *Verticillium* wilt, virus and viroid infections as well, at current research groups in Germany and Slovenia are providing comprehensive studies and strategies. Newly developed, highly efficient molecular detection systems are used to identify various sources of infection. In addition, agricultural measures and the application of bio-antagonists should help to cope with *Verticillium* wilt.



In the field of hop production and production techniques a sensor based sprayer and an improved mulching machine were presented as new developments for an integrated environmentally beneficial, but also economically efficient hop production. Furthermore, strategies to maintain and improve soil fertility in conventional and organic hop production were discussed such as permanent greening of the interspace between rows or the application of manure with basalt powder and probiotic microorganisms.



In addition to this lecture and poster presentations, current research topics were discussed and extended in “workgroups”.

Visit of a brewery and excursion

To supplement the scientific program Prof. Melnychuk organized the visit of a brewery for the conference attendees. During the 2-hour guided tour at Obolon, the largest beverage producer of the Ukraine, the hop experts could get an idea of these state-of-the-art brewing and bottling facilities. A beer tasting of the various beers produced by Obolon was the final highlight of this visit.

The last day during the excursion the group visited the rural region surrounding Kiev within a distance of 100 km. About 20 km west of Kiev on a 1 ha trial plot the university is growing three hop cultivars under organic conditions. Beside the aroma cultivar “National” developed by Prof. Melnychuk the two US bitter cvs. “Nugget” and “Newport” are tested in this high trellis hop garden. Knowledge gained in these trial plots under organic growing conditions should be utilized to establish commercial organic hop production in this region with sandy light soils.



Photo: NULES

The primary focus is to create important jobs for the population in this rural area with low income-structure. At the same time this project provides the option for Ukrainian breweries to buy organic hops from regional production in the near future.

The excursion led the conference attendees to a farm in the south-west of Kiev in the region of Uman, where a small hop pelleting facility could be seen developed by scientists of the Technical Institute of the university around Prof. Dubrovin in collaboration with Prof. Melnychuk. In addition, at this research station Prof. Dubrovin demonstrated the devices and innovative technologies for the production of cold-extracted oil of sun-flower and generation of biodiesel.

With all research activities and the technical innovations presented, the National University showed its efforts to enhance crop production and to improve the current technological structures of this region. In the end, all projects are supporting the same objectives to establish an efficient agriculture in order to generate new sources of income in this rural region.

Prof. Maksym Melnychuk provided excellent conditions for the successful outcome of this hop conference. With the evening events Prof. Melnychuk and his team from the National University created highlights which will be kept in mind by all participants. Especially the visit of the Ukrainian Parliament was a unique experience for all attendees of the meeting. The guided tour of Kiev revealed the beauty of the city with its ancient picturesque monuments, buildings and churches and its new metropolitan style.

In closing, I can say that with this meeting in Kiev the Scientific Commission has successfully continued its mission. The scientific meeting as well as the excursion and the guided tours provided the option for each participant to take home an abundance of information and new ideas. I also hope that this meeting has been used for a fruitful exchange and collaboration among hop scientists and hop experts for the sake of the hop growers, traders and brewers as well.

Dr. Elisabeth Seigner
Scientific Commission, I.H.G.C.

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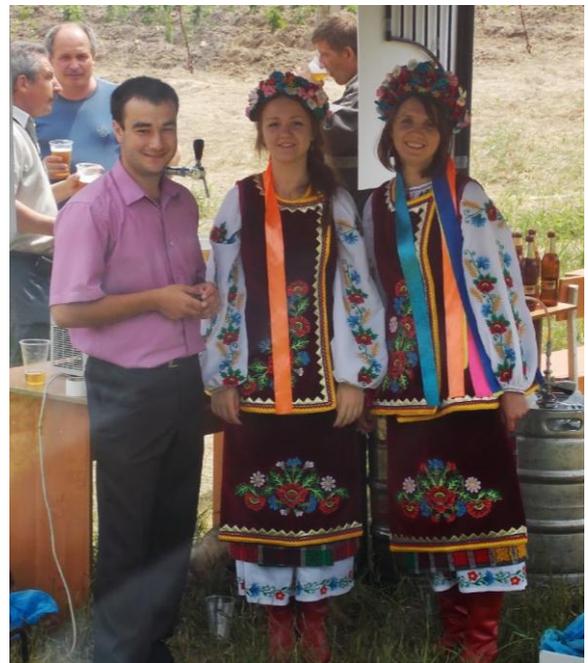
Photo: NULES



The visit of the Ukrainian Parliament which had been arranged by Prof. Maksym Melnychuk (in the middle of the photo) was a great honor for all hop scientists.
Photo: NULES



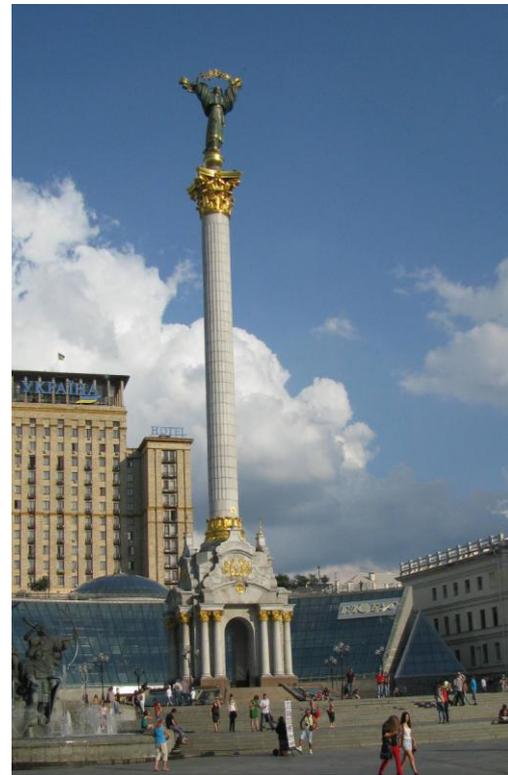
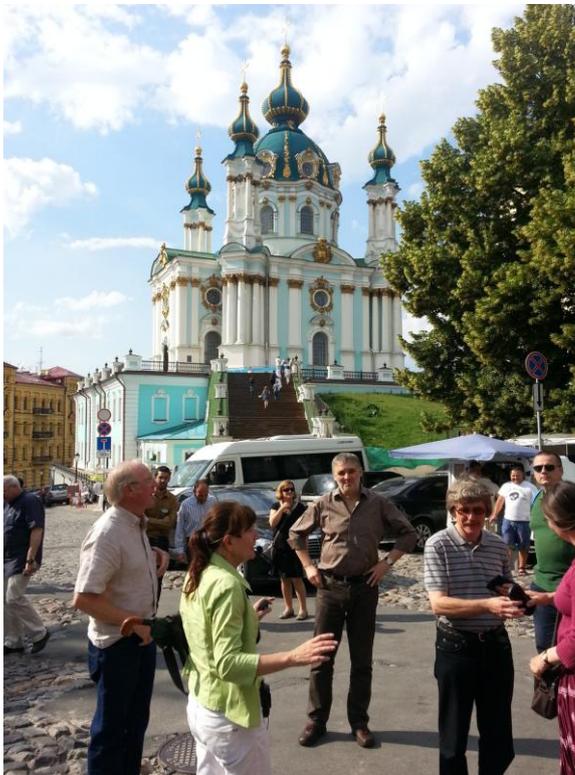
It was a great pleasure and honor for Dr Elisabeth Seigner when she received a watch by the Parliament's speaker Mr Voldymyr Rybak (on the right) as acknowledgement for her successful collaboration with Prof. Melnychuk in organizing this hop conference.
Photo: NULES



On the excursion and also during the whole meeting all participants could feel the warm hospitality of Prof. Melnychuk and his team.
Photo: NULES



During the excursion Prof. Melnychuk (left) explained the various objectives pursued by the university in establishing organic hop production in the rural region around Kiev. *Photo: NULES*



Impressions from the city tour. *Photos: W. Sichelstiel and Dr. F. Weihrauch*