



## NEWSLETTER 2008-9

### Back up to speed

During 2008, a full crossing programme was undertaken by Wye Hops Ltd with the germplasm relocated from Wye College providing all the parent plants. Crosses were made for resistance to aphids (12 crosses) and to allow progeny testing of untried male parents (21 crosses). From the first crosses to be made by Wye Hops in 2007, seedlings were raised in a glasshouse and planted out at China Farm in May 2008. Furthermore, a full harvest of 330 selected individual female seedlings was made in September and 49 were noted for propagation for further trials or germplasm improvement. So, in all aspects, the English hop breeding programme has recovered from the interruptions and is back up and running!

### IHGC Science

The Scientific Commission meeting of the IHGC was held in Leon, Spain at the end of June 2009. Peter Darby presented the opening talk of the conference with an account of the IBD-funded work on the inheritance of resistance to aphids found in 'Boadicea', the first, and so far only, commercial variety with such resistance. Several papers described work on wilt which recently has become a greater problem in several European counties. A molecular analysis of the DNA of the wilt pathogen in Slovenia has confirmed that the virulent strains found in that country are from a distinct and different source to those found in England. New more virulent strains in Germany were shown to be similar to the disease in Poland and the presenter suggested that they might have been introduced by their migrant casual workers!

### Climate change and challenge

Despite a relatively normal winter over this last year, the problems of spring dormancy associated with a warm and dry spring remain potentially damaging, as seen in 2007. Whilst some of the challenges of climate change such as hot and dry summers can be addressed by technical solutions like irrigation, it is not feasible to make the spring colder! In South African hop areas, the winter rarely falls below 5°C and the local germplasm can tolerate a lack of winter cold. To develop English hop germplasm with similar abilities, crosses were made with pollen obtained from South Africa and 'Pilgrim'. The resulting seedlings were assessed for the first time at harvest 2008. The majority of these were not adapted to UK latitudes and flowered much too late to be harvested. However, 10 seedlings produced cones for harvest during September and gave normal resin analyses. These have been selected to be tested in glasshouse trials to see if any have also inherited the resistance to spring dormancy.



### Boadicea joins Herkules

Having completed 3 years of official testing, The Community Plant Variety Rights Office granted registration to 'Boadicea' on 25<sup>th</sup> August 2008. This is an important milestone for Wye Hops Ltd because it is the first variety registered in the name of the new company and with Wye Hops on the certificate. All the other varieties held by Wye Hops Ltd have been obtained by transfer of the rights from the original owners. The newly registered German variety 'Herkules' was obtained under licence at Wye Hops in Spring 2009. It will be assessed in scientific trials for its resistance to UK diseases and its analysis under UK growing conditions.

### Connections

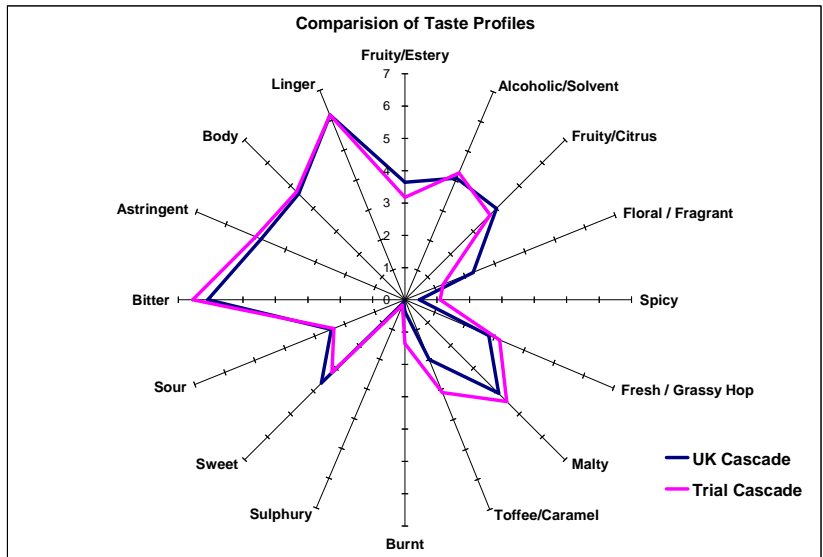
For those who like obscure quiz questions – what links a dead man with a queen and a noble?  
*Answer overleaf.*

## A dwarf 'Cascade'?

A dwarf seedling of 'Cascade' showed promise in the advanced trials in Herefordshire during 2008. With funding from the BBPA, pilot brewing trials using this selection were conducted through the IBD Hop Industry Committee. Brews were presented to the hop and brewing industries at the IBD Hop Competition held at Marstons Brewery, Wolverhampton on 6<sup>th</sup> February 2009. The trial beers were almost identical in taste and aroma to a control brew of UK-grown 'Cascade' and differed only in the non-hop flavours (see diagram). Results from wilt tests are now awaited before the decision is made whether to release the selection to farm trials.

## Bigger by association

Promotion and publication of the work of Wye Hops Ltd remains a key objective to secure its scientific reputation. To add to this during the last year, industrial accreditation is being developed through the IBD Hop Industry Committee and work is underway to build a relationship with the Brewing Science section of the University of Nottingham towards gaining academic recognition.



## Wilt tests ready to resume

One of the problems for the new company was to find a site and the resources to run the testing of new selections for resistance to wilt disease. The deliberate introduction of wilt to hop farms in England clearly could not be considered! Fortunately, the Slovenian Hop Research Institute is investigating a serious wilt outbreak in that country and they were happy to introduce virulent wilt isolates from England as part of their research. To test the system, six reference varieties were supplied to them under anonymous code numbers for testing during Spring 2008. The wilt scores obtained agreed very closely with the historic averages from UK tests, giving confidence in the procedures. All is now set for the testing of new selections to resume.

## Cold storage

Without the dedicated growth rooms and glasshouses which were available previously at Wye College, the maintenance of downy mildew for seedling disease screens is proving difficult. One possible solution is to use cryopreservation to store the spores. This technique, best known for the storage of human sperm and eggs for *in vitro* fertilisation, involves controlled temperature reduction to  $-180^{\circ}\text{C}$ . Initial trials with CABI Bioscience, Egham indicated that the technique could work for this disease although further refinement will be needed.

## Contact

If you have any comments or questions about the articles in this newsletter, or for more detailed information, please contact Peter Darby (01227 781056), email: [peter.darby@wyehops.co.uk](mailto:peter.darby@wyehops.co.uk)

The Directors of Wye Hops Ltd. are Tony Redsell, John Andrews, Stuart Highwood, Thomas Hawkins and Bobby Neame, and they would also be pleased to give you more information about the project.

## What links? (answer to question)

The connection is funding to Wye Hops Ltd from the grants committee of the IBD. The deadman is a colloquial term for an anchor block used in hop garden wirework construction, and the 2006/7 IBD grant was for a new hop garden for breeding work at China Farm. The queen is 'Boadicea' and the 2007/9 IBD grant was for development of the aphid resistance found in this new variety. Noble is the term used to describe the aroma of 'Fuggle' and, for 2009, the IBD have awarded a grant to develop new hop materials combining this aroma with desirable pest and disease resistance.