



NEWSLETTER 2016-17



Selection 19/6 on farm

Fuggle brews - one step forward, one step sideways!

When Wye Hops was created in 2007 following the closure of Wye College, one of the primary aims of the new venture was to develop a wilt resistant hop which could substitute for Fuggle in brews. At that time, no wilt resistance had been successfully bred into seedlings of Fuggle. But crosses made with Fuggle since 2007 have taken a big step forward, yielding for the first time several selections with strong wilt resistance, including the semi-dwarf selection 19/6 now growing in farm trials. Although there are more selections to follow from harvests in 2017 and 2018, the three most advanced trials provided hops from the 2016 harvest which were used in comparative brews kindly carried out by St Austell Brewery, with additional taste tests at Westerham Brewery. Disappointingly, none of these three were found to substitute well for Fuggle but 19/6 was thought to be a very interesting hop in its own right - 13 of the 15 assessors preferred it against the true Fuggle reference brew!

Aphid resistance effective

The early migration of aphids into hops during 2017 provided a strong test for the resistance of selection 37/15 in its first season in farm trials at an organic hop farm. This variety is a seedling of Boadicea but does not carry the distinctive aroma of its mother which has characterised so many Boadicea seedlings to date. By July, the resistance to aphids was clearly effective and the selection had very few aphids, especially in comparison with the other varieties being grown on the same farm without use of insecticides.

Wild about USA flavour

Wye Hops maintains an extensive germplasm collection which includes many examples of wild hops collected from the USA. These were used in crosses in 2013 to see if any produced varieties with intense and unusual flavours (or should it be flavors!). To date, 14 selections have progressed to yield plots with diverse aromas such as cherry, mint, rose and raspberry as well as the citrus and blackcurrant often associated with USA germplasm. Despite the range of flavours, many of the selections have come from just a few specific crosses and these particular parents have been used again more extensively as the basis of the 2017 crossing programme. What will they give us this time?

Clean elite stocks - an essential foundation

Wye Hops now maintains stocks of all the commercial British varieties in isolation at Stockbridge Technology Centre in Yorkshire. Cuttings from these elite nuclear stocks are supplied to ministry-certified propagation nurseries who, in turn, supply growers with cuttings and rootstocks for planting. This voluntary scheme has been running since 1968, helping avoid unwitting on-farm propagation of infected materials or the unseen transfer of diseases between farms. It forms the foundation of a strong and healthy British hop industry and Wye Hops encourages growers to obtain their stocks through this route. To ensure British hop growers receive the highest quality planting materials, these elite stocks are tested every two years to check that they remain free of any deleterious viruses or viroids. Tests in June 2017 revealed no new infections and, most importantly, the continued complete absence of Hop Stunt Viroid.

Climate changing?

Spring dormancy in response to climate change poses an increasing threat to British hop production. Spring 2017 at China Farm was so unusually dry and warm that extreme symptoms of spring dormancy were observed with stark differences between varieties as shown in the photo below. This presented an ideal opportunity to record the whole of the germplasm and parental collections to highlight those varieties prone to this condition. We now have useful information about which parents to choose or avoid for the future breeding programme to counter some of the adverse effects of climate change.



Spring dormancy
at China Farm 2017

Selecting male parents for more predictability

Hops, just like people, are outbreeding and no two hop seedlings are genetically the same. This variability has made hop breeding much less predictable and progress much slower than for an inbreeding, homozygous species such as barley or peas. Many of the seedling progenies assessed during 2017 derived from crosses with much greater levels of inbreeding than usual resulting in increased homozygosity for some traits. This will translate into increased predictability and consistency for transmitting these specific traits to offspring - a very desirable attribute for male parents in particular. Therefore, selection in these progenies has been primarily to find new male parents.

Have we got a genetic map?

Papers presented at the international IHGC Scientific Commission meeting in Austria in June 2017 clearly indicated that genetic maps of hops will undoubtedly form the basis of future scientific advances, most particularly in hop breeding. As reported in last year's newsletter, four large segregating seedling progenies, known as mapping populations, have been established at Wye Hops as the necessary resource to develop these maps and recording of the field populations began in 2017. The start of a new era in British hop breeding!

.... starting with aphid resistance

Two of these mapping populations were left unsprayed with insecticides during late spring 2017. Unusually dry and hot weather prompted the aphid migration from hedgerows to hops almost a month ahead of usual. They built up on these progenies which were ready to record by mid-June. Over 600 individual hop plants were assessed for the presence and numbers of aphids. But only just in time - predatory insects were rapidly cleaning them up and the weather at China Farm the following week turned so hot that the few remaining aphids curled up and died!

Germplasm still giving new surprises

Each season since 2011, members of the BHA and visitors have walked the germplasm collection and selected accessions for their interesting fresh aromas. And each season, accessions have been highlighted which have not been recognised in any of the previous years! The 2016 season was no different and two further accessions were noted. The aromas of the dried samples were described as lavender and violets, and lemon spice. Both are now being propagated for further trials. What waits to be discovered in the collection in 2017?

Contacts

If you would like more detailed information about the articles in this newsletter, please contact Peter Darby or the Directors of Wye Hops Ltd - Ali Capper, Clive Edmed, Andrew Hoad and Simon Parker who would be pleased to give you further information about the work.

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