

Research Update

Attendance at the 5th International Cherry Symposium, Bursa, Turkey, June, 2005.
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The 5th International Cherry Symposium held during June 2005 in Turkey attracted around 350 participants from 42 different countries. Oral and poster presentations were provided. Topics included breeding and genetics, physiology, culture, pests and diseases, self-incompatibility and fruit cracking.

Main points were as follows:

- During the period 1991-2004, 230 new cherry varieties were released worldwide.
- 78% of breeding programs were public and 22% private.
- Breeding programs produced a range of seedling numbers with most producing 500 seedlings per year, the smallest program produced 20 seedlings per year and the largest in the world based at Lenswood in South Australia produced 2-3,000 seedlings per year.
- The most important character selected for across all breeding programs was resistance to rain cracking. A program is in place at INRA, Bordeaux France to identify the genes controlling cracking in cherry, using molecular methods.
- Turkish cherry production was 40,000 tonnes in 2004 and will rise to 100,000 tonnes in the next 10 years.
- A virtual cherry tree program has been developed by Professor Greg Lang, Michigan State University, USA. Professor Lang demonstrated the software and showed how pruning cuts can be made and the resultant growth of the tree visualised. The program has great potential as a research and teaching tool.
- Cristobalina, a Spanish sweet cherry cultivar, carries the S₃S₆ self-incompatibility genotype and is self-fertile. This represents another source of self-fertility in cherry and is yet to be quantified.
- Photosynthesis occurs in leaves and produces carbohydrates that are used in the growth of leaves, shoots and fruit. Fruit takes priority in carbohydrate use and are supplied mainly by subtending spur leaves. Trees on Giesla 5 rootstock require 5 leaves per fruit for satisfactory growth according to Dr Matthew Whiting, Washington State University, USA.
- In Oregon, the most profitable cherry grown is the white variety Rainer returning \$3.28/kg while the most profitable red fleshed variety is Sweetheart.
- The Firmtech II[®] machine is becoming the standard for measuring firmness of cherries in grams per millimetre of deflection of the fruit surface. Categories are soft 0-190, caution 191-240, average 241-290 and firm 291 + g/mm.
- The sweet cherry varieties Kordia and Regina have excellent flavour. In a consumer based sensory evaluation conducted in a farmers market in Portland, Oregon, USA Regina was the most preferred variety based on taste.

- Turkish cherry production is spread throughout the country, little or no rainfall occurs during the cherry season. The main variety grown is 0900 Ziraat, thought to be synonymous with Nordwunder.
- Dr Gryzb, Poland stated that there has been a mix up in planting material of the PHL rootstocks and this is the cause of vastly different results from different locations.
- Chile produces 30,000 tonnes of cherries from 1000 hectares. The majority of production is exported.
- Poland produces 250,000 tonnes of sweet and sour cherries.
- Girdling of a shoot at phase I of fruit growth proved beneficial, probably because export of assimilates was prevented.
- Work in Portugal identified leaf mass area (density) as the best marker for water use efficiency.
- There are 58 member countries worldwide administering Plant Breeder's Rights under the UPOV convention. The EU covers 25 member countries requiring a single application; all other countries require a separate application. USA operates Plant Patents for clonally propagated species. US patents allow 1 year of prior sales inside USA compared to PBR which allows for 6 years of prior sales outside the country for trees and 4 years for vines and other species.
- Only 20-30% of fertilizer applied to the orchard floor is taken up by apples and pears and the same is thought to hold in cherries.
- Dr P.E. Lauri, INRA, Montpellier, France, recognised as the world expert in cherry tree architecture made the following points. Most of a cherry crop is borne on spurs. Bending of shoots increases fruiting efficiency. Opinion is divided on spur performance, some say spurs decline with age, others not. Well developed spurs and buds at the base of shoots produce the largest flowers and in turn fruit. Management of light interception is best achieved by removing whole branches and spur thinning cuts on the underside of branches. Shading has a greater effect on reducing yield than spur age.
- Prototype mechanical harvesters in the USA harvested 50 tonnes of fruit per day in 2004. The variety Skeena was most suited to mechanical harvesting while the Tatura Trellis was the growing system that gave the best results with mechanical harvesting.
- Turkish scientists have revealed that difference in cell size and orientation in the flesh of cherries determines if they are susceptible or resistant to cracking.

Expected outcomes and how they were achieved

Through interaction with 350 colleagues from 42 different countries

- Continued exchange of germplasm with breeding programs throughout the world.
- Scientific exchanges.
- Up to date information on cherry research from around the world.
- Application of molecular markers to the cherry breeding program.

- Opportunities for cherry as a functional food.
- Feedback on the performance of Australian bred varieties in different locations around the world.