Sweet cherry breeding program in Fruitgrowing Institute - Plovdiv
Svetoslav Malchev and Argir Zhivondov

- Apples: 24%
- Apricots: 8%
- Cherries: 15%
- Cherries, sour: 3%
- Plums and sloes: 24%
- Peaches and nectarines: 14%
- Pears: 1%
- Raspberries: 7%
- Strawberries: 3%
- Quinces: 1%
- Cherries, sour: 3%
- Raspberries: 7%
- Plums and sloes: 24%
Sweet cherry production in Bulgaria

- Area (Ha)
- Production (tonnes)
- Yield (kg/ha)
- Price (USD/tonnes)
The sweet cherry breeding program in the institute was launched in 1987 by prof. Zhivondov.

- Developing self-fertile cultivars;
- Developing self-fertile cultivars with compact crowns;
- Developing self-fertile, early ripening cultivars bearing large sized fruit.

The cultivars ‘Van’, ‘Stella’, ‘Compact Van’, ‘Compact Stella’, ‘Rivan’ and ‘Sunburst’ were chosen for creating F1 hybrid generation.
The first breeding achievements of the programme came between 2008 and 2009:

- ‘Kossara’
- ‘Rosita’
- ‘Rozalina’
- ‘Trakiiska hruushyalka’
‘Kossara’

‘Ranna Cherna’ × ‘Bigarreau Burlat’

• obtained by the in vitro method – embryorescue;
• officially recognized in March 2008;
• ripens very early – 5-10 May, 10 days before the standard ‘Bigarreau Burlat’;
• fruits are very large – 8 g, i.e. as large as those of ‘Bigarreau Burlat’, however ‘Kossara’ ripens 10 days before the standard;
• fruit shape is cordate; dark red, juicy, with a deep sweet-sour taste and a dark red juice.
‘Rosita’
open pollination of ‘Bigarreau Burlat’
• obtained by the in vitro method – embryorescue;
• officially recognized in February 2009;
• ripens very early – 3-4 days after ‘Kossara’ and a week before ‘Bigarreau Burlat’;
• fruits are very large – 7.5 g;
• kidney-shaped; light yellow in colour, with light red blush covering up to 50% of the fruit surface. The taste qualities are very good.
‘Rozalina’

- open pollination of ‘Van’
- obtained by conventional breeding;
- ripens about 5 June, i.e. a week before those of ‘Van’;
- fruits are very large—9-10 g;
- kidney-shaped; creamy yellow as a basic colour, mottled with light red blush covering about 60-70% of the fruit surface; with a very dense texture and an excellent unique taste.
‘Trakiiska hrushtyalka’

open pollination of ‘Van’

- obtained by conventional breeding;
- ripens 3-4 days before those of ‘Van’ and 3-4 days after those of ‘Rosalina’, partially filling the interval between the ripening periods of ‘Bigarreau Burlat’ and ‘Bing’ and ‘Van’;
- fruits are very large – about 10 g;
- kidney-shaped; dark red; with a very dense texture and an excellent taste.
Adding new objectives to the selection program in 2010 complies with the market trends and the changing consumer preferences:

- Early and very early varieties with larger fruits;
- Late varieties ripening after the usual season;
- Varieties ripening after Bigarreau Burlat - before Bing;
- Self-fertile varieties with intense red and bright colored fruits;
- Varieties with firm texture of the fruits, resistant to cracking;
- Varieties and rootstocks resistant to biotic and abiotic stress factors;
- Varieties and rootstocks with weak and moderate growth;
- Genotypes with low susceptibility to attack by the black cherry aphid *Myzus cerasi* Fab.

Important activity is the introduction of new and promising varieties and rootstocks for inclusion in the hybridization program.
Promising hybrids

- Elite 17-37
- Elite 28-208
- Elite 20-47
- Elite 17-90
- Elite 28-209
- Elite 20-31
- Elite 20-77
Elite 20-31
open pollination of ‘Van’
• ripening period precedes that of the standard ‘Bigarreau Burlat’ by 6 days
• it is a good alternative to ‘Nalina’ cultivar thanks to its better taste qualities and dark red colour of the fruit flesh, juice and skin.
Elite 20-77
open pollination of ‘Starkrimson’ cherry,
from which it inherited the typical colour and mottling of the fruit skin.
• ripening is medium early (8 days before ‘Van’)
• important advantages are its self-fertility and late period of flowering
Elite 17-90
open pollination of ‘Van’

- ripening precedes the new cultivar ‘Trakiiska Hrushtyalka’ by a day or two and the standard ‘Van’ by 4-6 days
- very good fertility and very large fruits of over 8 g.
Elite 20-47
open pollination of ‘Compact Van’
• fruits have excellent taste qualities and an attractive appearance
• ripen 6 days before those of ‘Van’
• very weak growth vigour, compact habit, high and regular fertility and marked frost
Elite 28-208

‘Lambert’ × ‘Badacsony’

- fruit weight is about 9 g
- ripens 5 days before ‘Van’
- frost resistant
- the mass flowering is about a week later compared to the group of the late flowering cultivars.
Elite 28-209

‘Lambert’ × ‘Badacsony’

• well-defined cordate fruit shape
• average fruit weight is 8.86 g
• dark coloured, with a long pedicel (40 mm) and well-balanced taste
Elite 17-37

- open pollination of ‘Van’
- fruits are very large
- well-balanced taste
- late ripening – 2-3 days after ‘Van’
Sensitivity of promising cherry hybrids and new cultivars to causers of economically important fungal diseases

Malchev, S., K. Vasileva, A. Zhivondov and P. Gercheva

• The degree of infestation under field conditions is reported by determining the index of attack on leaves and fruit, using the formula of McKinney.

• As the most sensitive elites are outlined elite 17-31 (to Cocomycosis) and elite 17-136 (to shothole blight).

• The cultivars 'Kossara' and 'Trakiiska hrushtyalka' exhibit an average resistance to the three diseases, as the values for the index of infestation are lower or similar to those of standard varieties 'Van' and 'Bing', while 'Rozalina' demonstrated sensitivity to shothole blight and brown rot.

• Interesting is the elite 17-37 demonstrating the least infestation of Blumeriella jaapii - 7.33% and Monilinia fructigena - 6.67%. The same has a set of valuable qualities as late maturing date and very large fruits with excellent sensory profile, making it a potential candidate variety.
New hopes 😊

Hybrid 7-177

- Picture taken on 8-May

‘Bigarreau Burlat’

- Picture taken on 10-May
Number of created cultivars in FGI-Plovdiv
‘Flavia’
Hybrid No.127 x ‘Earlycrest’

‘Filina’
‘July Lady’ × ‘Maycrest’

‘Puldin’
‘July Lady’ × ‘July Lady’

‘Laskava’
‘J. H. Hale’ × (‘Elberta’ × ‘Ferganskiy zholtiy’).
'Ulpia'
open pollination of 'President'

'Ostromila'
'Pacific' x 'Serdika 2'

'Sineva'
open pollination of 'Stanley'

'Stendesto'
'Stanley' x 'Modesto'
• Hibridization;
• Evaluation of hybrids;
• Suitable polinators;
• Chemical composition and organoleptic properties
• Introduction of new and promising varieties and rootstocks;
• Maintaining the Institute germ-plasma collection.
Updating the methods and techniques used in FGI-Plovdiv

- Nedev, N., J. Grigorov, Hr. Baev, S. Serafimov Al. Strandjev, L. Kavardjikov (1979). Methodology for the study of plant resources in fruit plants. Plovdiv (in Bulgarian);

- EAVTFISC (2004). Criteria and indicators for complex evaluation of the cherry varieties for their entry in the list A of varietal list. (in Bulgarian);

- IBPGR (1985). Cherry Descriptors, AGPG: IBPGR/85/37, Rome;

Sustainable production of high-quality cherries for the European market – COST FA 1104

Genders:

- Female
- Male

Age:

- ≤ 20
- 20 – 30
- 30 – 50
- ≥ 50

What do you look for in a cherry when you are buying at the hypermarket?

1. Do you prefer:
   - early ripening cherries
   - middle ripening
   - late ripening
   - the ripening time is not important

2. Colour of skin:

   - Yellow (1)
   - Yellow with blush (2)
   - Brown Red (6)
   - Dark Red (7)
   - Orange Red (3)
   - Blackish (8)
   - Light Red (4)
   - Red (5)

3. Shape:

   - Reniform (1)
   - Elliptic (2)
   - Cordate (3)
   - Oblate (4)
   - Circular (5)

4. Size:

   - Very small (< 19 mm)
   - Small (19.1-25.4 mm)
   - Medium (25.4-29.8 mm)
   - Large (25.4-29.8 mm)
   - Very large (> 25.8 mm)

5. Taste:

   - Very sweet
   - Sweet
   - Medium
   - Acid (Sour)
   - Very acid (sour)

6. Firmness:

   - Soft
   - Medium
   - Firm
   - Very Firm

7. Fruit (flesh) juiciness:

   - Weak
   - Medium
   - Strong

8. Stalk:

   - Present
   - Absent
   - If present:
     - Short
     - Medium
     - Long

Which one of the eight characteristics is the most important to you ... ... ?
Time for questions