Sour cherry breeding in Hungary
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Abstract
The sour cherry breeding has been started for 64 years in Hungary. Our breeding work is aiming to get new self fertile, disease resistant or tolerant varieties with excellent fruit quality and to extend the harvest period. As results of the Hungarian breeding work 21 sour cherry varieties were registered into the Hungarian List of Variety in 2014. Now we have three novel bred and disease resistant sour cherry candidate variety as well. Each variety is under examination by The National Food Chain Office in order to be approved by the state.
The Hungarian sour cherry breeding was started by three different ways. The first way was the clone selection of the self sterile ‘Pándy‘ and it’s pollinator varieties, the ‘Cigány’ sour cherry types. This work was done by Sándor Brózik from 1950 till 1969. The results of successful clone selection work are the following clonal varieties: ‘Pándy 48’, ‘Pándy 279’, and ‘Cigány 7’, ‘Cigány 59’, ‘Cigány 404’ sour cherries.

The second way was the cross breeding. It was started by Pál Maliga and it has been going on by János Apostol since 1976. Until 1976 the breeding program focused on the crossings by variety ‘Pándy’ using 10 different male parents in order to get new self fertile varieties with excellent fruit quality and to extend the harvest period.
The third way was the landscape selection. It was started by Ferenc Pethő in the North-East part of Hungary, and has been going on by Tibor Szabó for decades. The results of this breeding work are the following landscape selected varieties: ‘Újfehértói fürtös’, ‘Kántorjánosi’, ‘Debreceni bőtermő’, ‘Erika’ ‘Petri’ and ‘Éva’. Furthermore Sándor Kovács is selected the ‘Kőrösi korai’ and ‘Pipacs 1’ varieties in the middle of Hungary and János Apostol is selected the ‘Csengődi’ and ‘Ducat’ varieties.
As a result of the cross breeding program the following sour cherry varieties were invented until 1980: ‘Meteor korai‘, ‘Favorit‘, ‘Érdi nagygyümölcsû‘, ‘Korai pipacs meggy‘, ‘Érdi jubileum‘, ‘Érdi bőtermõ‘, ‘Maliga emléke‘. Among these varieties the ‘Érdi bőtermõ‘ became one of the most important variety in Hungary and it gives approximately the 35 % of the total annual yield of the country (Apostol, 2011).
• A new cross breeding program has been started in 1976. This program lays emphasis to extend the maturity time and to add new top quality varieties to the National Variety List. The results of this program are the following varieties: ‘Piramis’, and ‘Érdi ipari’ and numerous seedlings are under selection.

• Originally the harvesting period of sour cherry took 15 to 30 of June in Hungary. As result of our breeding work we could extend the ripening period from 15 May to 15 July.

• Because of diseases of cherries we started a joint breeding programme for disease resistant sour cherry varieties with the Michigan State University in 1991.
The breeding work based on the native disease resistant variety called ‘Csengődi’. This variety is self fertile and it has good tolerance against the most important sour cherry diseases such as cherry leaf spot (*Blumeriella jaapii* (Rehm) Arx) (Apostol et al., 1995), cytospora cancer (*Cytospora cincta* Sacc. and *Cytospora leucostoma* (Pers.) Sacc.) (Rozsnyay & Apostol, 2005) and brown rot (*Monilia laxa* (Ehrenb.ex Pers.) Sacc. & Vogl. / *Monilinia laxa* (Aderhold & Ruhl.) Honey ex Dennis) (Sződi et al., 2008). This work is currently being continued.
• After determination of resistance genetic capacity of ‘Csengődi’ (Apostol & Véghelyi, 1994) great number of crossings has been made with this variety since 1995. The selection of the progenies is started by artificial and spontaneous Blumeriella jaapii and Monilinia laxa infections (Apostol, 2000).

• The first results of this work are 3 candidate sour cherry varieties: ‘Érdi korai’, ‘Érdi kedves’, and ‘Érdi bíbor’. Each variety have high level of resistance against Monilinia laxa, Blumeriella jaapii and Cytospora cincta. They have earlier maturity times compared to Érdi bőtermő (from 5 June to 12 June) and have the same quality as Érdi bőtermő variety. They are autofertile as well. Now more than 1 000 bearing sour cherry hybrids are under selection at our experimental field.

• Novel sour cherry varieties and candidate varieties since 2000.
Érdi ipari: Ripening time: 20-22 May. Fruit size: 20-22 mm, 3-4 g. Round shape. Skin colour is deep red, glittery. The flesh is firm and red. Juice is red. Taste is delightfully sour-sweet. Very good for fresh consumption too. Stalk is short. Tree habit is moderate with globe form crone, and suits for mechanical harvesting. It bears fruits on the spurs mainly. Early blooming. Autofertile
Piramis®: Ripening time 2-5 June. The fruit size is 25-28 mm, 8-9 g. Fruit shape is flatted round. Colour is deep red, glittery. The flesh is firm like a sweet cherry, and red. Juice is red, and stainy. Taste is delightfully sour-sweet savoury. Very good for both fresh eating and processing. Extra quality early-season fruit. Stalk is medium long and flexible. Tree habit is upright and not too vigorous. It gives fruits on the spurs of branches older than 3. years only. Mid-early blooming. Partly autofertile, its autofertility is about 5-7%. Sweet cherries are good pollinators for this variety: Margit, Linda, Katalin, Carmen, Paulus, Aida. It has a low sensitivity to leaf spot and brown rot (Apostol, 2008).
**Ducat:** Ripening time: 20-22 May. Fruit size: 23-25 mm, 6-7 g. Fruit shape is flatted round. Skin colour is deep red, glittery. The flesh is firm and red. Juice is light red. Taste is delightfully sour-sweet. Very good for fresh consumption too. Stalk is medium long and flexible. Tree habit is a little upright and not too vigorous, and suits for mechanical harvesting. It bears fruits on the spurs mainly. Early blooming. Autosterile. Good pollinators for this variety: Margit, Linda, Katalin, Carmen, Paulus, Aida, and Van.
Érdi korai: Ripening time 2-5 June. The fruit size is 22-24 mm. Fruit quality like Érdi bőtermő. Colour is deep red, glittery. Juice is red, and stainy. Taste is delightfully sour-sweet. Very good for both fresh eating and processing. Stalk is medium long and flexible. Autofertile.
Érdi kedves: Ripening time is 5-7 June. The fruit size is 22-24 mm. Fruit quality like Érdi bőtermő. Colour is deep red, glittery. Juice is red, and stainy. Taste is sour-sweet. Very good for both fresh eating and processing. Stalk is medium long and flexible. Autofertile.
Érdi bíbor: Ripening time: 8-10 June. The fruit size is 22-24 mm. Fruit quality like Érdi bőtermő. Colour is deep red, glittery. Juice is red, and stainy. Taste is delightfully sour-sweet. Very good for both fresh eating and processing. Stalk is medium long and flexible. Autofertile.