

NOI REALIZĂRI ÎN AMELIORAREA SORTIMENTULUI POMICOL LA ICDP PITESTI NEW ACHIEVEMENTS IN FRUIT BREEDING AT RIFG PITESTI

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Abstract

Apple, pear, plum, cherries and ornamental dendrological plants breeding program, started in 1967 at the Research Institute for Fruit Growing, Pitesti has have constantly, as a main goal, releasing of new cultivars and varieties with superior characteristics than already existed ones, in the different periods of the fruit growing practices evolution. Certainly, during the time, for each particular species have been established specific objectives according with their agrobiological particularities, recorded technological progress and increasing of the genefound availability and knowledge accumulation. In the paper is presented a synthesized overview about objectives and breeding activities developed in the last years, which afforded a new cultivars registration as 'Rebra', 'Rustic', 'Nicol', 'Colmar' and 'Colonade' at apple, 'Ervină' and 'Paramis' at pear, 'Roman' and 'Agent' at plum, 'Spectral' at sweet cherry, 'Stelar' at sour cherry, generative rootstock for cherry 'Portavium' and ornamental peach variety, 'Rubin'. Also, descriptions of the main characteristics and biological and technological particularities as well as their possible utilization are made.

Cuvinte cheie: soiuri noi, măr, păr, prun, cireș, vișin, portaltoi de cireș, piersic,

Keywords: new cultivars, apple, pear, plum, cherries, ornamental peach, cherry rootstock ornamental

1. Introduction

Apple, pear, plum, cherries and ornamental dendrological plants breeding program, started in 1967 at the Research Institute for Fruit Growing, Pitesti has have constantly, as a main goal, releasing of new cultivars and varieties with superior characteristics than already existed ones, in the different periods of the fruit growing practices evolution.

Certainly, during the time, for each particular species have been established specific objectives according with their agrobiological particularities, recorded technological progress and increasing of the genefound availability and knowledge accumulation.

In the paper is presented a synthesized overview about objectives and breeding activities developed in the last years at our institute.

2. Material and methods

In the last years high cultivars productivity, high fruit quality, resistance or tolerance to diseases and pests, better adaptability to local environmental conditions (climate, soil), improving of natural tree vigor and habit have been as general fruit breeding objectives.

In particular, for each fruit species, according with their specific character have been stipulated specific breeding objectives as fruit quality (firmness, juicy, commercial appearance), combination of functional different major resistance genes to *Venturia inaequalis*, tolerance to *Podospaera leucotricha*, storage maintaining and shelf life extension as for apple, resistance to *Erwinia amylovora*, tolerance to *Psylla sp.*, late ripening season, fruit quality, high yield for pear, early and late fruit ripening season, high yield, higher fruit quality, designated for the fresh market and for processing (drying, compotes, jams), dwarf tree characteristics and spur fruiting, resistance or tolerance to Plum Pox Virus (Sharka), self fertility for plum, harvesting season extension (early and late ripening cultivars), tolerance to leaf spot and brown rot, self fertility, fruit quality improving, improving fruit cracking resistance, low vigor, high productivity for sweet cherry, self fertility, red colored fruit (skin, flesh, juice), tolerance to leaf spot and brown rot, upright or spreading tree habit, small and spherical stone shape, high yielding capacity for sour cherry, good seeds germination, good growing uniformity, good grafting compatibility with scions, good adaptability to local environmental condition for generative cherry rootstocks.

For apple, annual breeding activity has consisted in 7 cross pollinations made by conventional methods, 3,500 blossoms pollination, 1,000 seedlings obtaining, first evaluation of 8,000 seedlings, second evaluation of 50 selections; 5 cross pollinations, 2,000 blossoms pollination, 400 seedlings obtaining, first evaluation of 1,500 seedlings, second evaluation of 20 selections for pear; 20 cross pollinations, 4,000 flowers pollination, 400 seedlings obtaining, first evaluation of 5,000 seedlings, second evaluation of 60 selections for plum; 10 cross pollinations, 8,000 flowers pollination, 200 - 500 seedlings

obtaining, first evaluation of 3,000 seedlings, second evaluation of 40 selections for sweet cherry; 10 cross pollinations, 9,000 flowers pollination, 600 – 1,000 seedlings obtaining, first evaluation of 4,500 seedlings, second evaluation of 40 selections for sour cherry; selection from wild flora for generative cherry rootstocks.

For each species, the main cultivars used as genitors in cross combination, in relationship with breeding objectives, are showed in fig. 1, 2, 3, 4, 5.

3. Results and discussions

During the last 7 years, 4 new apple cultivars, 2 pear, 2 plum, 3 sweet cherry, 2 sour cherry, one generative cherry rootstock and one ornamental peach variety, presented below, have been registered.

'NICOL', columnar scab field resistant *tolerant* apple variety, with mid (138 g) red fruit, good testing quality (the flesh is moderately firm, juicy, with fine texture and yellowish coloured), storage in the first decade of September, can be conserved until January, low tree vigor, has been released in 2005, from a 'Mc. Intosh Wijcik' x 'Pionier' cross combination. (Fig. 6)

'COLMAR' columnar scab field resistant *tolerant* apple variety, with mid (135 g) red fruit, good testing quality, storage until January, low tree vigor, has been released in 2006, from a 'Mc. Intosh Wijcik' x 'Florina' cross combination (Fig. 7).

'COLONADE', columnar scab field resistant *tolerant* apple variety, with large (150 g) red fruit, good testing quality, low tree vigor, ripening time in second decade of September, storage until January, has been released in 2007, from a 'Florina' x 'Mc. Intosh Wijcik' cross combination. (Fig. 8)

'RUSTIC', scab and powdery mildew field resistant apple variety, has been released in 2008, from a 'Florina' x 'Pionier' cross combination. The fruit is attractive, mid sized (130 – 160 g), spheric, slight flat, similar to male variety ('Pionier'), green coloured skin, covered by red on the sunny side. The flesh is white, juicy, crispy, with good taste. The fruit ripening season is late September and the fruit can be stored until March. (Fig. 9)

'PARAMIS', pear winter variety, has been released in 2008, from a 'Monica' x 'Passe Crassane' cross combination. The tree has a mid vigour and good affinity with quince A rootstock; it comes into bearing in the 3rd year after planting. The fruit is largely sized (180 – 200 g), bergamotiform or globulose-conic shaped, yellowish-green colour, white flesh, buttery, good taste. The ripening season is the end of September and the fruits can be stored (at +2°C) until January. (Fig. 10)

'PARADOX', medium tolerance to *Erwinia* and *Psylla* sp. pear variety, has been released in 2009, from a 'Monica' x 'Pastravoare' cross combination. The fruit is medium sized (160 g), yellowish; the flesh is white, crisp, juicy, with good flavor. The ripening season is the end of September and the fruits can be stored until February. (Fig. 11)

'ROMAN', tolerant to *Sharka* plum variety, for fresh market uses, ripening season in the first decade of August, large fruit (65 g), ovoid shaped, reddish – blue colour, yellowish flesh, sweet – acid taste, semi clingstone, mid vigor tree, rare pyramidal canopy, with thick scaffold branches and fruiting on the medium and long branches has been released in 2004, from a 'Tuleu Gras' x 'Early Rivers' cross combination. (Fig. 12)

'AGENT', tolerant to *Sharka* plum variety, for fresh market and for dried uses, ripening season in the end of August, mid fruit (35 g), spheric-oval shaped, reddish – freckled colour, yellowish flesh, sweet taste, slightly astringent, small, free stone, mid vigor tree and mixed fruiting, has been released in 2004, from an individual positive selection in a seedlings population obtained by open pollination. (Fig. 13)

'SUPERB', tolerant to *Blumeriella jaapii* sweet cherry variety, for fresh market uses, with ripening season in the middle of June, medium-large fruit size, cordate, smooth, symmetrical shape, suture shallow, firm, crisp in texture at optimum maturity, attractive purplish-red color, red flesh, good flavor and testing quality, semi freestone, medium stem length, vigorous spreading tree's habit of growth, very productive, has been released in 2004, from an Boambe de Cotnari x Thurn und Taxis cross combination. (Fig. 14)

'SUBLIM', tolerant to *Blumeriella jaapii* sweet cherry variety, for fresh market uses, with early ripening season in the end of May, medium fruit size, globose to slightly oblate, smooth, symmetrical shape, firmness similar to 'Bigarreau Moreau', crisp in texture at optimum maturity, attractive purple color, red meaty flesh, subacid good eating quality, semi freestone, susceptible to cracking after rain, vigorous, more upright than spreading tree's habit of growth, productive, has been released in 2006, from an 'Muncheberger fruhe' x 'Bigarreau Moreau' cross combination. (Fig. 15)

'SPECTRAL', tolerant to *Blumeriella jaapii* sweet cherry variety, for fresh market uses, with very early ripening season in the mid of May, medium fruit size, globose to slightly oblate, smooth, symmetrical shape, firmness similar to 'Bigarreau Burlat', crisp in texture at optimum maturity, attractive purple color, red flesh, subacid good eating quality, semi freestone, short stem, susceptible to cracking after rain, vigorous, spreading tree's habit of growth, has been released in 2008, from an 'Muncheberger fruhe' x 'Bigarreau Burlat' cross combination. (Fig. 16)

'RIVAL', self fruitful sour cherry variety, with ripening season at the end of the second decade of June, medium fruit size, roundish-oblate shape, dark red skin color, red flesh, red juice, acid, good processing quality for canning, jam and juice, semi-clingstone, pit size medium, medium-long stem, medium vigorous, upright to spreading but not weeping tree's habit of growth, very good fruiting system with good differentiation of leaf buds, very high yielding, moderate leaf spot (*Blumeriella jaapii*) susceptibility and slight high to brown rot fungus (*Monilia sp.*), has been released in 2004, from an 'Griot Moscovski' x 'Nana' cross combination. (Fig. 17)

'STELAR', partial self fruitful sour cherry variety, with early ripening season in the first decade of June, large fruit size, roundish-oblate shape, dark red skin color, pink-red flesh, pink-red juice, sub-acid, good processing quality for canning and jam, semi-clingstone, pit size medium, long stem, vigorous, upright tree's habit of growth, very good fruiting system with good differentiation of leaf buds, high yielding, moderate leaf spot (*Blumeriella jaapii*) susceptibility and slight light to brown rot fungus (*Monilia sp.*), has been released in 2008, from an 'Mocanesti 16' x 'Anglaise Hative' cross combination. (Fig. 18)

'PORTAVIUM', generative sweet cherry rootstock, released in 2009, selection from wild flora, with good seed's germination (85%), small seed size (4500 seeds/kg which can be obtained from 7 kg of fruit), good growing uniformity in the nursery (in jiffy-pots with neutral pH), short post maturation period, good grafting compatibility with 'Daria', 'Summit', 'Van', 'Rivan' and other commercial cherry cultivars. Original tree has a medium vigor, yellow colored fruit with medium to high blush, late ripening period at the end of July and light leaf spot (*Blumeriella jaapii*) susceptibility, very productive. (Fig. 19)

'RUBIN', ornamental peach variety, released in 2009, from a natural open pollinated inter-specific seedling of *Prunus cerasifera* x *Prunus persica*. Tree of week to medium vigor, upright to slightly spreading canopy and very decorative long, acuminate leaves, intense purple-red colored leaves and shoots, especially in the first period of vegetation. Commercial usefulness can be considered for hedges and solitary trees. (Fig. 20)

4. Conclusions

During the last 7 years, 4 new apple cultivars, 2 pear, 2 plum, 3 sweet cherry, 2 sour cherry, one generative cherry rootstock and one ornamental peach variety, presented below, have been registered.

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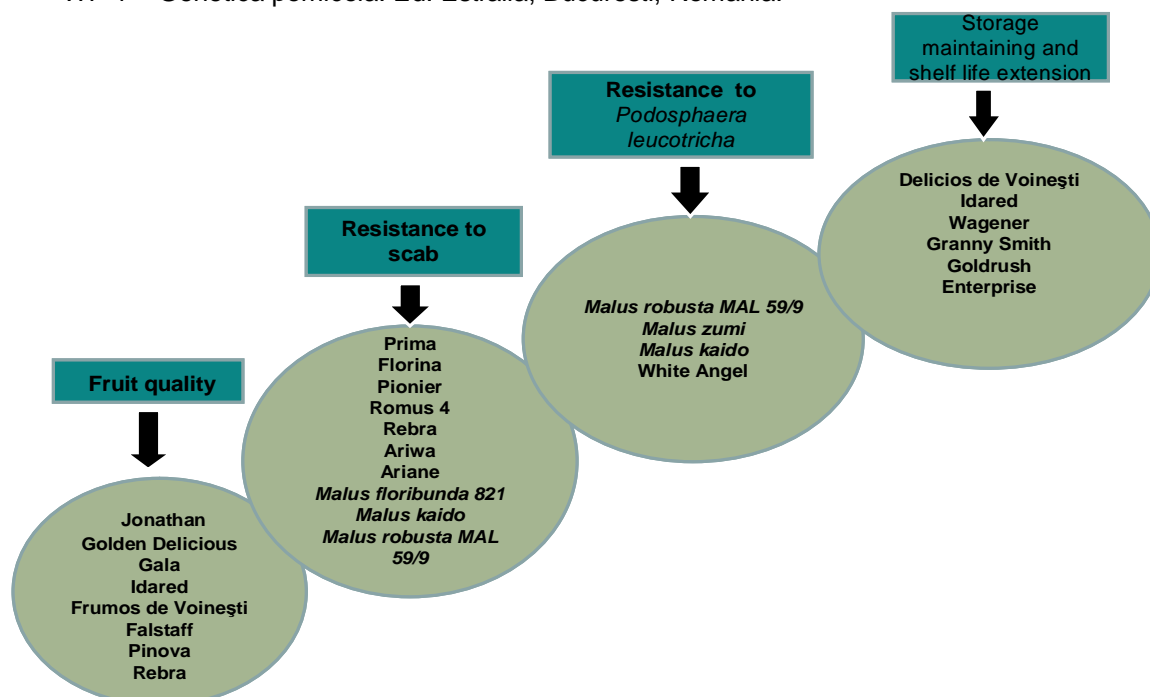


Fig. 1. Genitors used in the apple breeding

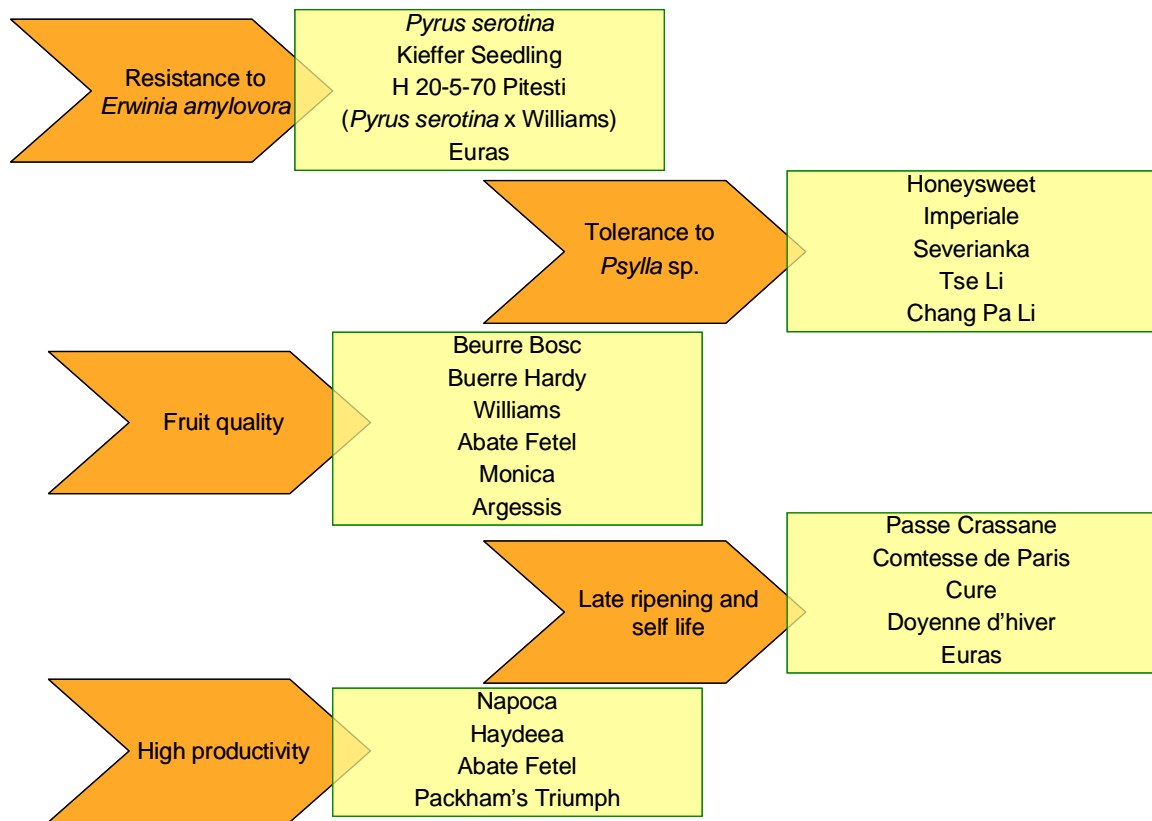


Fig. 2. Genitors used in the pear breeding

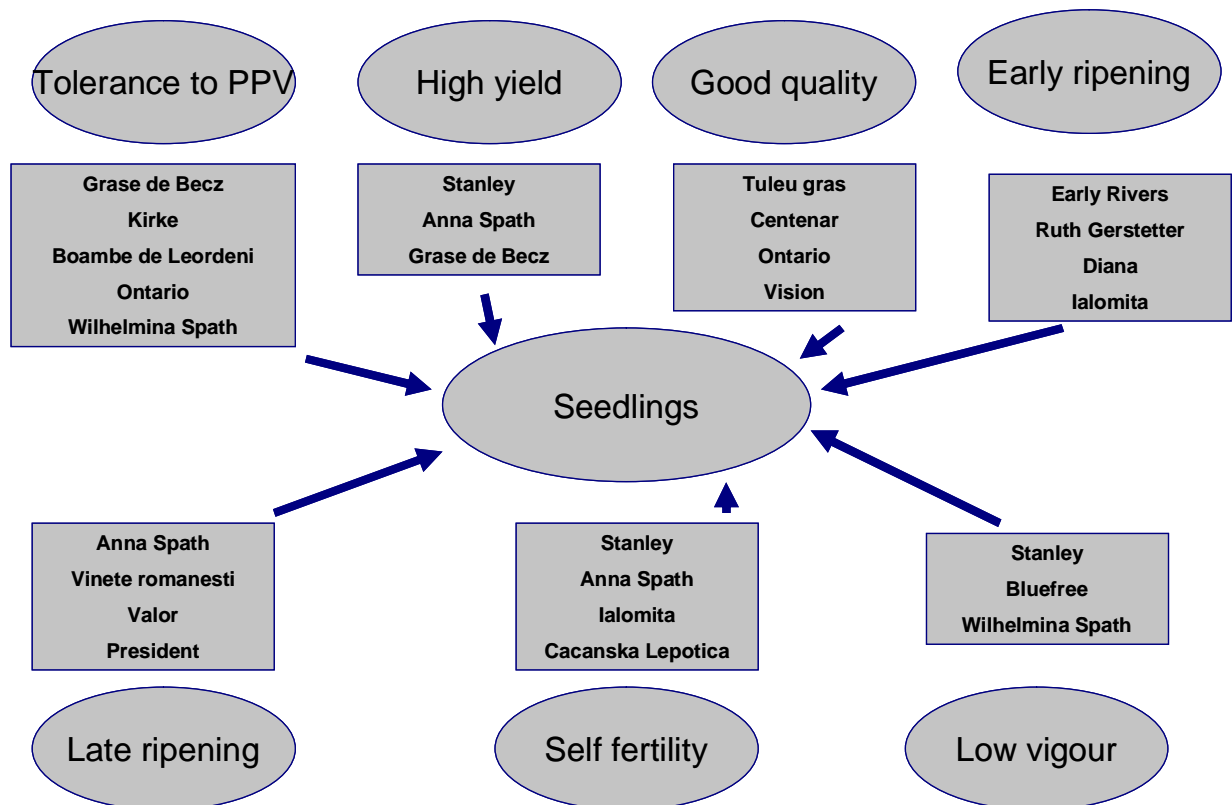


Fig. 3. Genitors used in the plum breeding

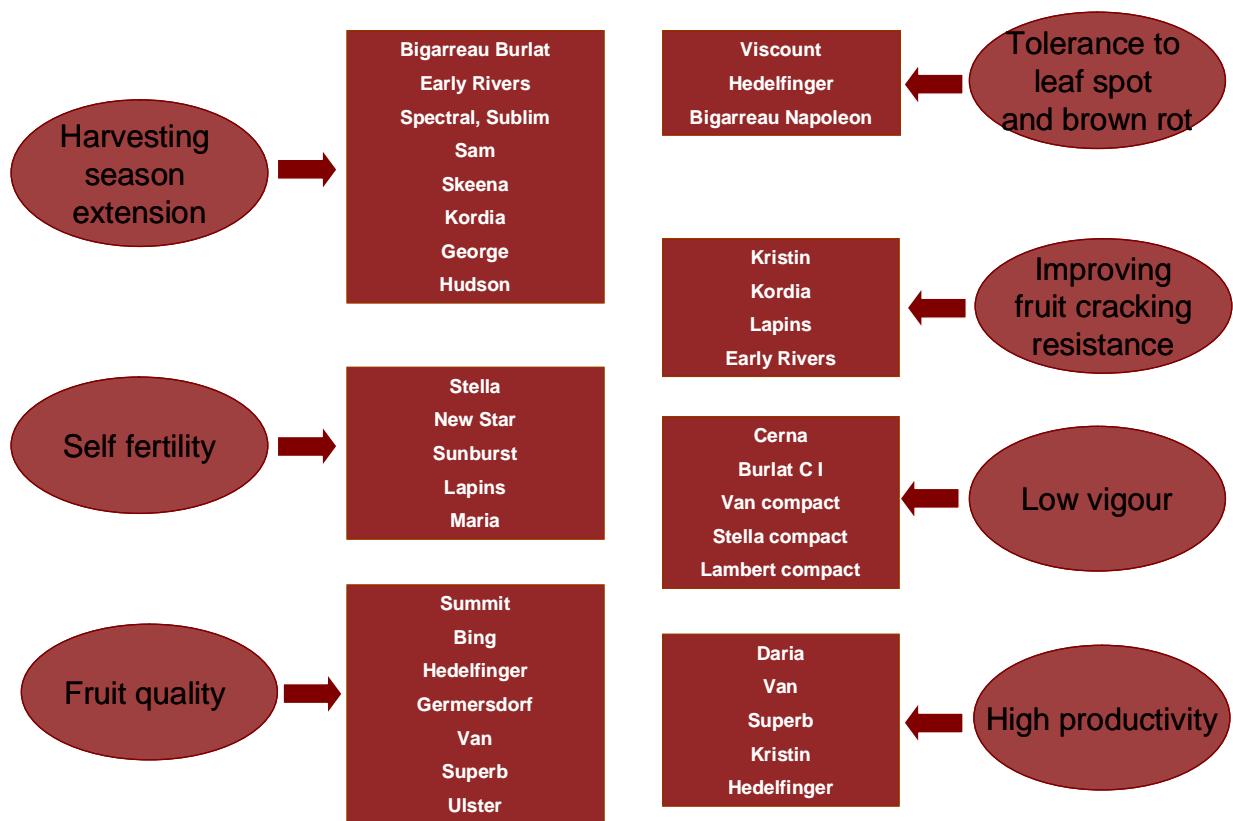


Fig. 4. Genitors used in the sweet cherry breeding

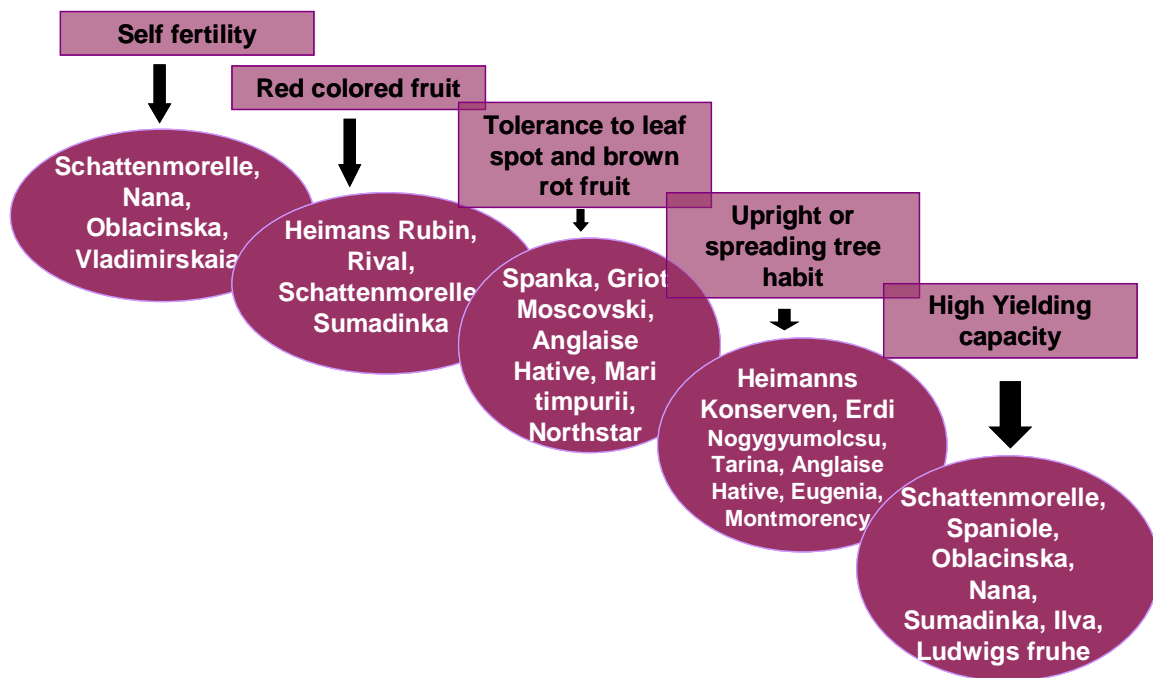


Fig. 5. Genitors used in the sour cherry breeding



Fig. 6. 'Nicol' cv.



Fig. 7. 'Colmar' cv.



Fig. 8. 'Colonade' cv.



Fig. 9. 'Rustic' cv.



Fig. 10. 'Paramis' cv.



Fig. 11. 'Paradox' cv.



Fig. 12. 'Roman' cv.



Fig. 13. 'Agent' cv.



Fig. 14. 'Superb' cv.



Fig. 15. 'Sublim' cv.



Fig. 16. 'Spectral' cv.



Fig. 17. 'Rival' cv.



Fig. 18. 'Stelar' cv.



Fig. 19. 'Portavium' – rootstock



Fig. 20. 'Rubin' cv.