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, ‘Ervina’ 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.

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 Podosphaera 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 2009, from a ‘Mc. Intosh Wijcik’ x ‘Florina’ cross combination. (Fig. 9)

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

‘ROMAN’, tolerant to Sharka plum variety, for fresh market uses, ripening season in the first decade of August, mid 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. 11)

‘SPECTRAL’, tolerant to Blumeriella jaapii sweet cherry variety, for fresh market uses, with early 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 2009, from an Boambe de Cotnari x Thurm und Taxis cross combination. (Fig. 12)
‘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), shot 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 leafs, intense purple-red colored leafs 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.

References

Resistance to Erwinia amylovora
Pyrus serotina Kieffer Seedling H 20-5-70 Pitesti (Pyrus serotina x Williams) Euras

Fruit quality
Beurre Bosc
Buerre Hardy
Williams
Abate Fetel
Monica
Argessis

Tolerance to Psylla sp.
Honeysweet Imperiale
Severianka
Tse Li
Chang Pa Li

Late ripening and self life
Napoca
Haydeea
Abate Fetel
Packham’s Triumph

High productivity
Passe Crassane
Comtesse de Paris
Cure
Doyenne d’hiver
Euras

Fig. 2. Genitors used in the pear breeding

Tolerance to PPV
High yield
Good quality
Early ripening

Grase de Becz
Kirke
Boambe de Leordeni
Ontario
Wilhelmina Spath
Stanley
Anna Spath
Grase de Becz
Tuleu gras
Centenar
Ontario
Vision
Early Rivers
Ruth Gerstetter
Diana
Ialomita

Anna Spath
Vineti romanesti
Valor
President
Stanley
Anna Spath
Ialomita
Cacanska Lepotica
Stanley
Bluefree
Wilhelmina Spath

Late ripening
Self fertility
Low vigour

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.