

PLUM GERMPLASM RESOURCES AND BREEDING IN ROMANIA

**Butac Madalina, Botu Mihai, Militaru Madalina,
Mazilu Craisor, Dutu Ion, Nicolae Silvia**



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PLUM CULTURE IN EUROPE AND ROMANIA (FAO data, 2018)

	Surface (ha)	Crop (to)	(to/ha)
Europa	391 469	2 636 221	6.7
Serbia	77 949	463 115	5.9
Romania	65 114	512 975	7.9

10.8 %	17.5 %
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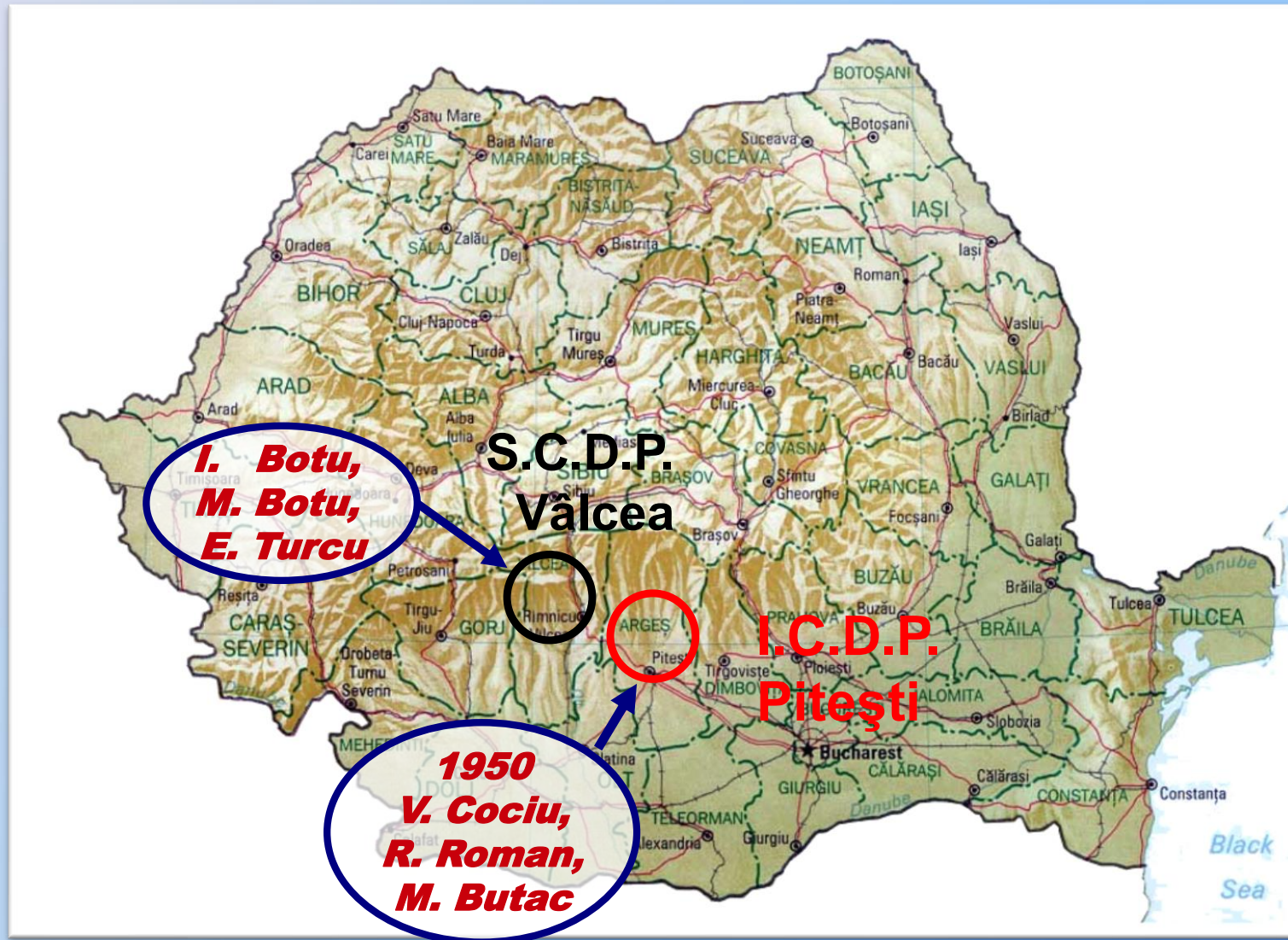
I. INTRODUCTION

- Romania is a country located in South East Europe which has good environmental conditions for many fruit species in the wild or cultivated status. Numerous genetic resources of plum, apple, pear, sweet and sour cherry, peach, apricot, walnut, hazelnut, sweet chestnut, berries are present (Botu et. al., 2017).
- In Romania, after 1970, identification, conservation and evaluation of fruit genetic resources activities were started in order to limit the loss of the biodiversity due to erosion and genetic vulnerability.
- The genetic resources preserved by *ex situ* and *in situ* methods are very important value and can be use for breeding new cultivars and rootstocks.
- The success of any breeding program depends on the existence of a rich and valuable germplasm fund.

I. INTRODUCTION



- Presently, in Romania there are plum collections in two centers: RIFG Pitesti and UCv-SCDP Vâlcea.



**I. Botu,
M. Botu,
E. Turcu**

**S.C.D.P.
Vâlcea**

**I.C.D.P.
Pitești**

**1950
V. Cociu,
R. Roman,
M. Butac**



SITUATION OF *EX SITU* PLUM COLLECTIONS

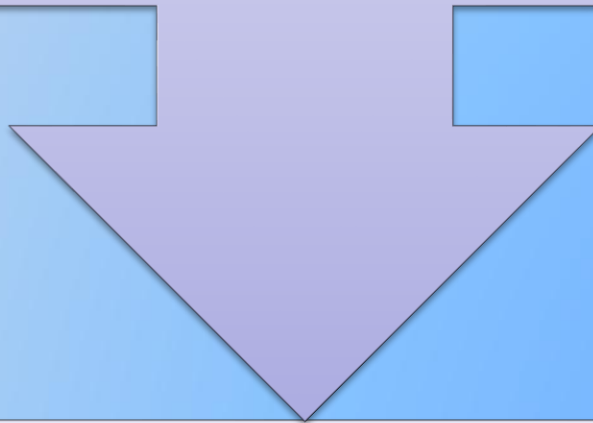
No.	Center	Type of collections	Species and intersp. hybrids	Local accessions	Foreign accessions	Other (biotypes, hybrids, mutants)	Total no. of accessions
1	RIFG Pitesti	Cultivars	7	183	320	40	550
		Rootstocks	0	82	10	0	92
	TOTAL RIFG		7	265	330	40	642
2	UCv-SCDP Vâlcea	Cultivars	27	56	125	35	216
		Rootstocks		86	21	11	118
	TOTAL ECv-SCDP		27	142	146	46	361
	TOTAL GENERAL		34	407	476	86	1,003



● In these collections of cultivars and rootstocks, have been made observations and determinations regarding:

- phenology,
- productivity,
- vigor,
- fruit quality,
- resistance/tolerance to diseases and pests,
- resistance to low temperatures,
- resistance to frost.

● The observations and measurements were done according to the IBPGR *Prunus* descriptors updated by the ECP/GR *Prunus* Working Group members within the Genres CT95 No 61 project in titled "*International network on Prunus genetic resources*".



in order to select genitors for breeding works.

THE MAIN OBJECTIVES IN PLUM BREEDING IN ROMANIA

CULTIVARS

1960 – 1980

- Improvement of old cvs. Tuleu Gras
Vinete Romanesti
Grase Romanesti
- Selection inside of wild population

1980 – 2000

- Fruit quality for fresh market
- Ripening season extension
- Tolerance to PPV

2000 – present

- Tolerance to PPV
- Fruit quality
- Yielding capacity
- Self fertility

ROOTSTOCKS

- ✚ low to medium induced vigour
- ✚ tolerance to PPV and foliar diseases
- ✚ easy prpagation
- ✚ adaptability to heavy soil
- ✚ good anchorage in the soil

GENITORS USED IN PLUM cvs. BREEDING

BASIC GENITORS

Tuleu gras
Centenar
Carpatin
Tuleu timpuriu
Tita
Alina
Record
Minerva
Pitestean
Valcean
Stanely
Renclod Althan
Anna Spath

CHARACTER GENITORS

TOLERANCE TO
PPV

FRUIT QUALITY

YIELDING
CAPACITY

SELF FERTILITY

EARLINESS

Oneida
Kirke
Grase de Becs
Jojo

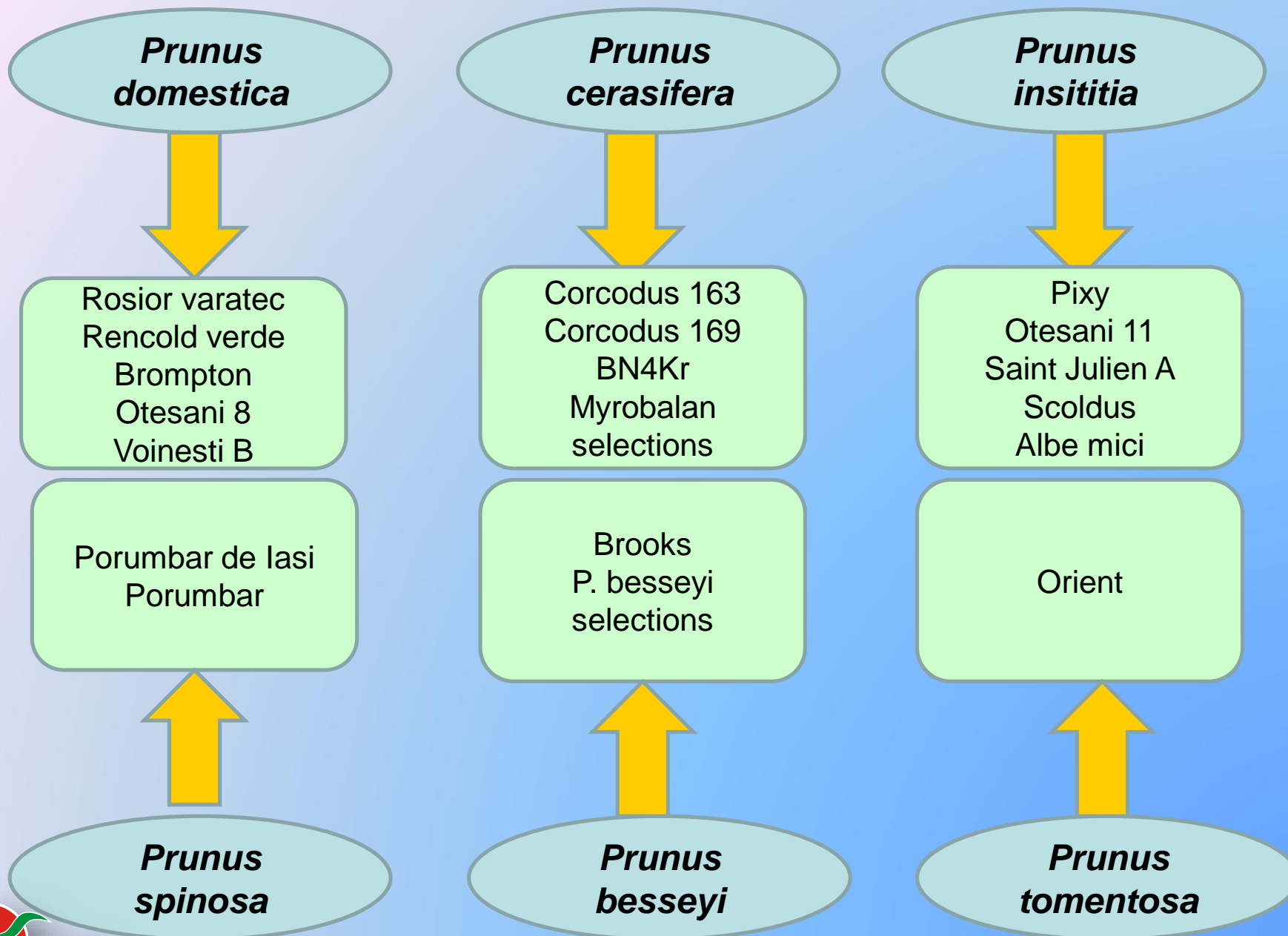
Grande Prize
Oneida
Vision
Romanta
Valcean

Stanley
Anna Spath
Standard
Cacanska leptica
Romanta

Stanley
Anna Spath
Cacanska leptica
Ialomita

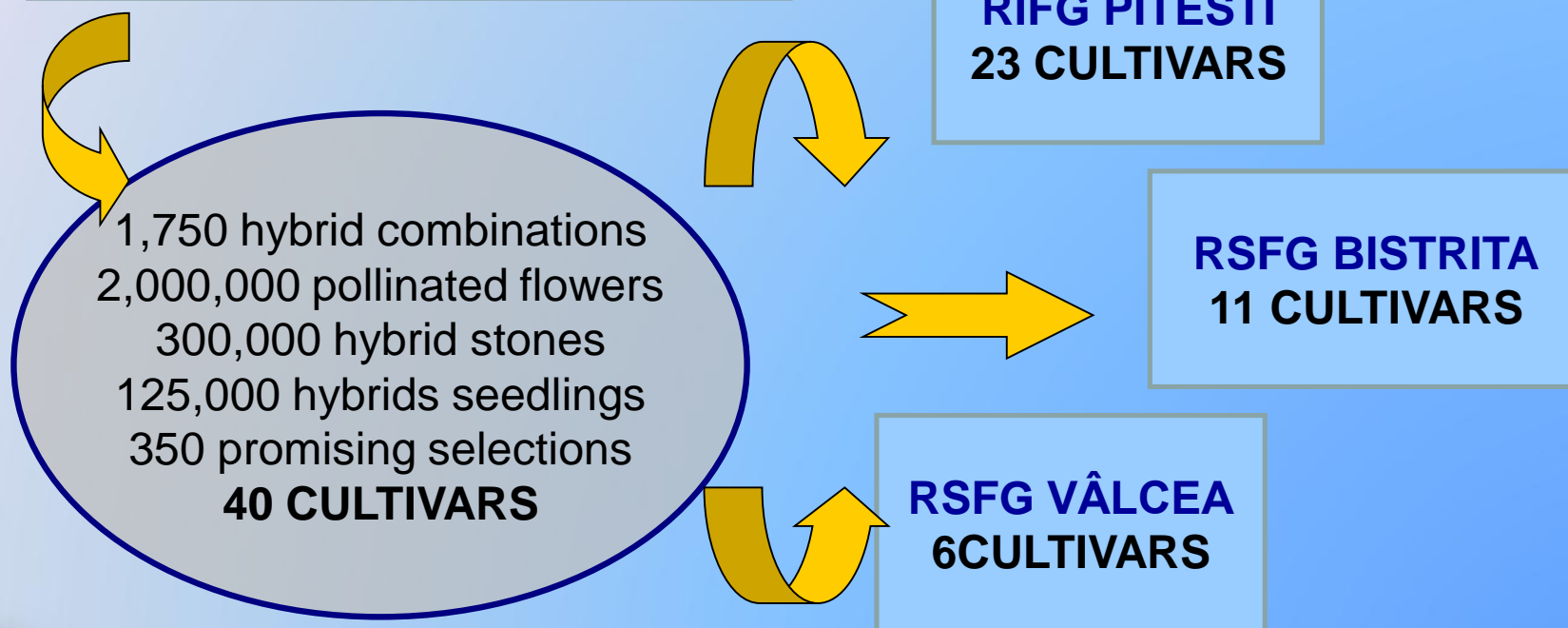
Early Rivers
Ruth Gerstetter
Ialomita
Diana

GENITORS USED IN PLUM ROORSTOCK BREEDING



BREEDING METHOD AND RESULTS FOR CVS.

- Controlled hybridization
- Open pollination
- Selection
- Mutagenesis



BREEDING METHOD AND RESULTS FOR ROOTSTOCKS

- Selections from wild and cultivated native flora (nursery seed beds included)

- Inter and intraspecific crosses

RIFG PITESTI

4 rootstocks:
2 generative
2 vegetative

RSFG BISTRITA

1 generative
rootstocks

RSFG VALCEA

7 rootstocks:
1 generative
6 vegetative

EVOLUTION OF PLUM ASSORTMENT

**Grase
romanesti**



**Gras
ameliorat**

**Vinete
românești**



**Vinete
românești 300**

1960 - 1980

Tuleu gras



Tuleu timpuriu

Superb
Tuleu dulce
Albatros
Centenar
Pitestean
Dambovita
Carpatin
Minerva
Flora
Sarmatic
Baragan 17
Tita
Alina
Iulia
Ivan
Jubileu 50
Roman
Romaner
Dani
Geta
Elena
Topval




































Other



Silvia
Pescarus
Ialomita
Diana
Record
Valcean
Rencloed de
Caransebes
Agent
Andreea
Delia
Doina
Matilda
Zamfira
Alutus
Romanța

1960 - prezent

RIPENING SEASON

Nr. crt.	Soiul	July			August			September		
1	Early Rivers									
3	Ialomita									
4	Vâlcean									
5	Piteștean									
6	Tita									
7	Tuleu timpuriu									
9	Carpatin									
10	Centenar									
11	Alina									
12	Doina									
14	Iulia									
16	Roman									
17	Romaner									
18	Sarmatic									
19	Andreea									
20	Agent									
21	Tuleu gras									
22	Stanley									
26	Jubileu 50									
27	Pescăruș									
30	Record									
31	Delia									
33	Zamfira									
34	Gras ameliorat									
35	Grase românești									
36	Anna Spath									



PITESTEAN

(Tuleu timpuriu x Early Rivers)

Earliness

Large fruit(50 g)

Good yielding capacity

CENTENAR

(Tuleu gras x Early Rivers)

Earliness

Good yielding capacity


Excelent taste





TITA
(Tuleu gras – irradiated stones)
 Earliness.
 Good yielding capacity
 Good quality fruit



CARPATIN 
(Tuleu gras x Early Rivers)
 Earliness.
 Good yielding capacity
 Large fruit (50 g)
 Tolerance to PPV.





ALBATROS
(Tuleu gras – Open pollination)
Excellent taste



PESCARUS
(R.C. Althan x Wilhelmina Spath)
High productivity.





AGENT

(Selection in wild population)

High content in sugar (over 25% soluble solids content)

Tolerance to PPV.



ROMAN

(Tuleu gras x Early Rivers)

Large fruit (> 45 g)

Tolerance to PPV.





ROMANȚA
Stanley x Vâlcean
High productivity
Large fruit (60 g)
Tolerance to PPV
Selffertility



ADAPTABIL

Named in 2000 year;

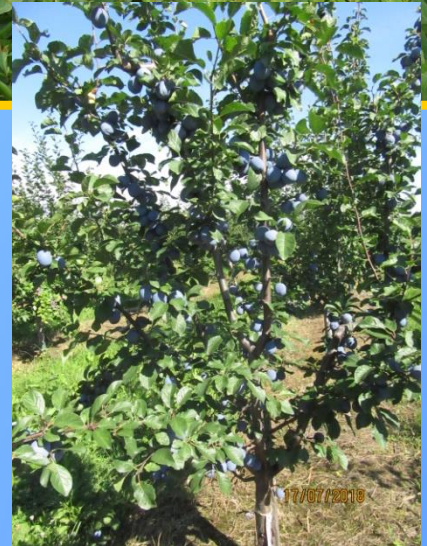
Origin: *Prunus besseyi* x mixed pollen from *Prunus* sp.; probably a *P. besseyi* x *P. persica* hybrid;

Vegetative rootstock for peach and nectarine cultivars and also for plum;

Tolerant to foliar diseases and to Plum-pox virus;

Very easy to propagate by softwood cuttings (over 90 % rooted cuttings);

Medium to low influence for vigor in orchard, and long life for the grafted trees (18-20 years).



MIRODAD 1

Mirobolan dwarf x Adaptabil

**Vegetative rootstock for high density
European PLUM orchards.**



CORVAL

Selection in *P. cerasifera*

Population

Generative rootstock for high density orchards



**THANK YOU FOR
ATTENTION!**

