

## BEHAVIOR OF SOME APRICOT CULTIVARS GRAFTED ON NEW VEGETATIVE ROOTSTOCKS

Vlăduț Alexandru OPRIȚĂ, Corina GAVĂȚ

Research Station for Fruit Growing Constanța, No. 25, Pepinierei Street,  
907300, Valu lui Traian, Constanța, Romania

Corresponding author email: olaviani@yahoo.co.uk

### Abstract

*In the Dobrogea area an important component in obtaining orchards with notable economic performances is the finding of the best variety-rootstock combinations. The different physical and chemical structure and composition of soil in Dobrogea obliges to find scientific solutions that will come to the future farmers. At RSFG Constanta in the period 2013-2018, the compatibility and development of a large apricot species grafted on different rootstocks originating in the Mediterranean area was assessed. Thus, the 'Amiral' apricot variety was grafted on the following rootstocks: Adesoto, Myrobolan 29 C, Weiwa, Ishtara. As a result of the measurements and the analyzed data, it was noticed that the Ishtara rootstock shows an increased compatibility and, once again, imparts a medium vigour, which means that by introducing the multiplication of this rootstock we have high-density orchards, so the fruit growing in the Dobrogea area a model to be followed for other apricot-favorable areas.*

**Key words:** *Prunus armeniaca (L.), compatibility, orchard systems.*

### INTRODUCTION

The used rootstocks for apricot are originated from six species of *Prunus* genus: *P. armeniaca* L., *P. cerasifera* Ehrh., *P. domestica* L., *P. insititia* Jussl., *P. persica* Stock., *P. amygdalus* L. (Cociu et al., 1993). All over the world the apricot rootstocks are used according to the pedoclimatic conditions, affinity, cropping systems, etc. Among the most frequently used are small apricot, franc apricot, Manicot (GF 1236), cherry plum, myrobolan plum, franc plum (Bălan et al., 2008).

### MATERIALS AND METHODS

The study was carried out in apricot demonstrative lots at Research Station for Fruit Growing Constanta, located in south-eastern Romania, near the Black Sea.

The site is located at 44°10' Northern latitude and 28°29' Eastern longitude, and 70 m above sea level. Climate is continental with warm and droughty summers, frequent dry winds all the year round and temperate winter generally without snow.

The mean annual temperature is 12.0°C and the total active temperature is 3988°C, out of which 3170°C during the growing season; the

annual precipitation amount is 400 mm, out of which during the growing season (April 1 to September 30), 240.7 mm. The lowest winter temperatures below -20°C are not very often: 1 out of 10-15 years and so are the spring frosts susceptible to cause apricot yield damage.

The climatic water deficit reaches as much as 400 mm/year, so irrigation application is needed for apricot. The zonal soil type is a calcaro-calcic chernozem formed on loess, with loam texture and a proper capacity of water preserving, holding and circulation. The humus content ranges between 2.5 and 4%; pH of the soil is poor alkaline (7.0-8.1).

Observations and determinations were observed in Field I and II within the RSFG fruit tree nursery. In the third year (2017) fifty fruit trees of 'Amiral' cv. grafted on each mentioned vegetative rootstocks were planted in an experimental field. The planting scheme was chosen 4/4 m, the orientation of the rows was from North to South and the shape of the crown was improved vase.

### RESULTS AND DISCUSSIONS

All four rootstocks come from the Mediterranean, are used in countries like Italy, France, Spain, Turkey.

Ishtara - is a French rootstock that has medium-to-small vigour, it ensures precocity and good fruit quality; it does not ensure proper tree anchoring and has no affinity with all apricot cultivars.

Weiwa - *Prunus domestica* rootstock obtained from the cultivar 'Wangenheims'. This rootstock is very resistant to "apricot and plum decline" and is tolerant to phytoplasma disease. Trees grafted onto Weiwa rootstock have 30% less vigour compared to Myrobolan 29 C (<http://www.vitroplant.it/weiwa/?lang=en>).

It has great affinity with all apricots and plums. Weiwa has a very positive impact on both cropping efficiency and fruit size. The rootstock is not suckering.

Adesoto - Selection of Pollizo de Murcia obtained in Spain. Interesting for the positive grafting affinity and adaptability to very calcareous and dry soils. Tolerates to *Armillaria* root-sucking.

Myrobolan 29 C - Clone selected from a progeny of *Prunus cerasifera* in California. Rootstock for plums and most apricot cultivars. Suitable for all soil types, adapts well to dry soils and heavy soils with low permeability.

Moderately resistant to *Agrobacterium tumefaciens*, *Verticillium* and *Leptonectrosis*,

susceptible to *Pseudomonas syringae* and resistant to root-knot nematodes (*Meloidogyne* spp).

Resistant to calcareous soils (8-9% active lime). Suitable for replanting. All plum cultivars shows perfect grafting compatibility and high yield efficiency. With plum cultivars, this rootstock reduces vigour by 15-20% compared to 'Myrobalan B'. Many apricot cultivars rootstocks have been bred and are spread out without knocking their behaviour in fruit tree nursery (Field I and Field II) regarding the grafting compatibility, scion growing and the productivity.

The percentage of grafting was 62% at Adesoto up to 98% at Ishtara (Table 1).

Regarding the trunk diameter, the lowest value was recorded at Ishtara (11.85 mm) and the highest value (18.57) was found at Myrobolan 29 C cultivar (Table 2).

In Field II the height of the trees recorded was 146 cm at Ishtara and 180 cm at Myrobolan 29 C.

The number of anticipated shoots varies from 3 to the Weiwa cultivar up to 7 for the Ishtara cultivar. The number of fruit buds ranges from 4 to Adesoto and 9 up to Ishtara.

Table 1. Number of trapped eyes and percentage of grafting, RSFG Constanta

APRICOT					
No.	Rootstocks	Variety	The number of grafted seedlings (August 2015)	Nr. eyes caught in the first inventory (April 2016)	Percentage of grafting
1.	ADESOTO		50	31	62
2.	ISHTARA	'Amiral'	50	49	98
3.	MYROBOLAN 29 C		50	48	96
4.	WEIWA		50	42	84

\*The used grafting height was 5 cm above the soil.

Table 2. Behavior of some apricot rootstocks in field II of RSFG nursery Constanta, 2016

No.	Rootstocks	Cultivar	Ø (mm)	H (cm)	Number of anticipations (pieces)	Number of fruit buds (pieces)
1	ADESOTO	Amiral	16.02	163	4	4
2	ISHTARA		11.85	146	7	9
3	MYROBOLAN 29 C		18.57	180	5	5
4	WEIWA		17.56	171	3	6
Average			16.00	165	4.75	6.00



Figure 1. Diameter of trunk in second year at Myrobolan 29 C



Figure 4. Ishtara rootstock at the planting time



Figure 2. Tree height in second year at Adesoto rootstock



Figure 3. Adesoto rootstock at planting in nursery

## CONCLUSIONS

Grafting percentage was 98% for Ishtara variety.

The Ishtara cultivar shown the lowest value for the thickness of the trunk.

The number of anticipated shoots is higher for the Ishtara cultivars.

The number of fruit buds is higher for the Ishtara cultivars.

The lowest height compared to the other rootstocks was registered with the Ishtara variety.

## REFERENCES

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