THE INTERACTION OF GENOTYPE AND ENVIRONMENTAL FACTORS FOR ALMOND SPECIES CULTIVATED ON SANDS IN OLTENIA REGION

INTERACȚIUNEA GENOTIP FACTORI DE MEDIU LA SPECIA MIGDAL CULTIVATĂ PE NISIPURI IN REGIUNEA OLTENIA

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Abstract. *The specific climate conditions for the sandy soils in the South Oltenia are favorable for almond cultivation. For the experiment the zoning of the varieties is as important as the zoning of the rootstocks. These constituents variety x rootstock, becomes an independent entity with mutual influence in the growth and fructification of the tree. The Preanîi, Primorski, Sudak, Tohani 3/7, Nikitski with late blossom varieties have late blossom and present a superior quality of the fruit, expressed in the content of seeds core and fats. Some varieties have a good rezistance in the repose period and even at the reversion temperature, such as: Nikitski with late blossom, Preanîi, Primorski, Sudak, Greats of steppa.*

Rezumat. *Condițiile climatice specifice zonei nisipurilor din sudul Olteniei sunt prielnice culturii speciei migdal. În cadrul unei experiențe zonarea soiurilor este la fel de importantă ca şi zonarea portaltoilor. Aceste părți componente soi x portaltoi, se constituie ca un tot unitar de sine stătător cu influențe reciproce în creşterea şi fructificarea pomului. Soiurile Preanîi, Primorski, Sudak, Tohani 3/7, Nikitski cu înflorire târzie, prezintă o calitate a fructelor superioară, exprimată prin conținutul de miez şi grăsimi. Rezistență bună în perioada de repaus şi chiar la temperaturile de revenire o au soiurile: Nikitski cu înflorire târzie, Preanîi, Primorski, Sudak, Mari de stepă.*

INTRODUCTION

Owing to its specific characteristics such as: a low content in fertile elements and reduced cohesion, this type of soil (sands) demands the cultivation of a proper assortment of almond varieties and, at the same time, demands the application of agrotechnics for the varieties, according to their biological particularities.

For this purpose we have been proposed the study of 10 varieties, from among we would remark the most precocious, most productive and with the best rezistance of frost, disease and pest.

MATERIALS AND METHODS

The experiment was placed in Tâmbureşti area, where it is located the most important sandy soils areas in the South Oltenia. In this zone the sand hills are rounded and in some areas, the surface is lightly unevenly.

With a view to establishing the agrobiological characteristics of the varieties cultivated on sands, which leads to specification of the proper assortment for this area, we establish the following objectives:

- To examine the growth process of the varieties;
- To examine the fructification process of the varieties;
- To examine the frost rezistance of the studied varieties;
- To examine the precocity and productivity of the varieties;
- To examine the rezistance of diseases and specific pests for the varieties.
- Respectively the architectonics and the maximum zone of horizontal spreading for roots.

The studied almond varieties on sands were as follows: Nikitski with late blossom, Nikitski 62, Preanîi, Primorski, Sudak, De Ialta, Tohani 3/7, Ardechoisse, Greats of steppa and Y x L grafted on Frank peach tree.

RESULTS AND DISCUSSIONS

The start in vegetation, marked by the blowing out of the gemmas, takes place in the first decade or in the third decade of March, depending on the climate conditions. Among the studied varieties, some have an early start: Greats of steppa, Ardechoisse (4-24.03.).

On the same conditions, De Ialta, Primorski, Nikitski with late blossom varieties achieve a late start in vegetation, with 4-5 days delay, in comparison with the first varieties.

Depending on the same factor, temperature, at 22-28 days take place the start of intensive growth of the offsprings, firstly for the Ardechoisse, Greats of steppa varieties.

As regards the sum of vegetation growth, in the 7^{th} year from planting it was recorded an average of 130.8 metres per tree. It is to be remarked that the Sudak, Nikitski with late blossom, Tohani 3/7 varieties have significant growth in all of the experimental years.

An important growth in height it was realized by the Sudak, Tohani 3/7 varieties: in the 7^{th} year they exceeded 3 metres in height.

A lower height have Nikitski 62, De Ialta varieties (2.4 and 2.36 metres per tree).

The Greats of steppa, YxL, Sudak varieties have a compact top crown (2.25 – 2.60 metres per tree), so these varieties permit a shorter planting distance.

A great efficiency in thickness growth it was noticed at Sudak, Nikitski with late blossom, Nikitski 62 (98.0; 94.0; 92.0 mm per tree).

The start of blossom is in between 22.03. – 12.04.; this phenological phase opens with Greats of steppa variety.

De Ialta, Primorski, Nikitski with late blossom varieties produce a late blossom, following the first ones with 4-6 days delay.

The fruit ripening takes place generally in the third decade of August, but mainly in September. It is to be noticed: Ardechoisse, Preanîi varieties (24 – 28.06.; 6 – 12.09.)

A good rezistance of Corineum beyjerinki have: Ardechoisse, YxL, Tohani 3/7, Primorski, Sudak varieties.

At the reverse temperature of -1.3^{o}C, in April, it was noticed a very good rezistance from the varieties with late blossom (Greats of steppa, De Ialta).

The fact that, in the 7th year from planting, it was obtained an average yield of 7.8 Kg per tree in endocarp, proves the favourability of this area for the culture of the almond tree.

Significant values, over 3000 – 4000 Kg per ha of fruit in endocarp, produce the Nikitski late in blossom, Primorski, Sudak, Tohani 3/7 varieties.

An important weight rating it was emphasized to Greats of steppa and Nikitski with late blossom varieties (7.9; 6.8).

The content of core seeds varying in between 20.5% – 51.5%; the Preanîi, Primorski, Ardechoisse varieties, followed by Nikitski have an important percentage of core seeds.

On the depth of 40 -60 cm, the soil is penetrated only of 2.1% of the total number of roots for the Sudak variety and of 21.0% of the total number of roots for the De Ialta variety.

Further on, at the depth of 60 -70 cm and beyond, it does not find any root (figures 1-2 and 3).

Fig. 1 , 2 and 3

Analysing all these aspects of the matter, it results the different characteristics of growing and fructification for several almond tree varieties, on sands, and the necessity of applying differentiated agrotechnics.

CONCLUSIONS

1. The specific climate conditions for the sands in South Oltenia (Romania) are proper for the cultivation of almond tree species.

2. Some varieties develop a good rezistance during the repose period and even at the reversion temperature: Nikitski with late blossom, Preanîi, Primorski, Sudak, Greats of steppa.

3. The degree of root penetration depends also on the grains of sand mobility.

4. The following varieties could be remarked for the expansion in this area: Preanîi, Primorski, Sudak, Nikitski with late blossom, Nikitski 62, Tohani 3/7, Greats of steppa.

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