

AGROBIOLOGICAL CHARACTERISTICS OF SOME NEW ALMOND TREES VARIETIES IN THE SOUTHERN AREA OF THE COUNTRY

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ABSTRACT

Although widely spread and appreciated in many countries for its many uses, this species is unknown to the population of the country. Due to its specific characteristics, it is necessary to cultivate a suitable variety of almond varieties but at the same time to apply modern agrotechnics according to their biological particularities.

A large vigour of almond trees varieties showed the varieties Pomorie, Primorski and Retsou, the rest of the varieties falling into the lower varieties category. The almond varieties behave practically autosterile, with entomophilous

pollination, which makes it necessary to provide pollinators. All almond varieties showed a domination of the short fruit formation with different values.

Varieties that recorded higher production values were Pomorie, Primorski and Retsou.

From these main analyzed elements it results that in the southern part of the country, fruits with a special commercial aspect and chemical components specific to the superior valorification, both fresh and industrialized, are obtained.

INTRODUCTION

In recent years, our country has focused on establishing favorable areas for almond trees culture, selection of the most valuable types in the country, introduction and study of the best varieties in the world assortment. Cociu Vasile (2003), in his paper, presents the importance of almond tree culture, anatomo-morphological peculiarities of almond tree, almond tree culture technology, harvesting, preservation and utilization of almonds.

Popescu M. et al. (1992), state in their book aspects of the spreading area of the almond tree species, important aspects of the biological particularities and technological aspects of this culture.

Brașiște N. et al. (2007): the almond trees varieties created by Pitesti Mărăcineni Research Institute have been classified and described over time with the important characteristics of these

varieties, the characteristics of the trees, the fruits and the resistance or sensitivity to diseases and pests.

Felipe A. et al. (1994), state in their paper that the population of local Pollizo plums developed in southeastern Spain can be used as rootstocks for almond trees varieties. Where soil conditions are not recommended for peach rootstocks, this population may be used as rootstocks for those areas.

Cordeiro V. et al. (2002), studied the culture in that area, the production practices of the Tras-os-Montes area in Portugal. In that area the rootstock GF 677 is the most widely used and the most valuable almond trees varieties are Ferragnes, Ferrastar, Ferraduel and Guara.

Navarro V.B. et al. (2002), study the oxidative stability of almond oil from six varieties under two different

conditions, namely: at 120°C and under irradiation at an ultraviolet source at room temperature. Significant differences in

Gavăț Corina et al. (2015), studied some almond trees varieties that were not affected by the spring return temperatures, and maturation took place between 25 August and the 1st of October.

Cichi Daniela, (2005) presented in the doctoral thesis the climatic conditions

oxidative induction periods and in the amount of representative volatile substances appear in the experiment.

in the southern part of the country, the behavior of perennial plants to thermal stress.

Bounous G. et al. (1994), study the almond trees varieties in Piemonte, and this paper sheds light on useful genetic traits, but also in identifying valuable, interesting clones.

MATERIAL AND METHOD

The experience that is the object of this paper was located in Dolj county. The plantation was established in the autumn of the year 2010 with a number of 7 varieties. The planting distance is 5/6 m, and the trees are driven as an improved vessel. Rootstock for all varieties is frank.

The placement of varieties and variants was done according to the randomized block method in 3 repetitions

with 4 trees in repetition, respectively 12 trees per variant.

The following observations and determinations were made in the almond trees varieties studied: vegetation buds phenology, tree vigor by height, crown diameter, tree trunk thickness, floral bud phenology, production and main physical and chemical characteristics of the fruits, quality of production.

RESULTS AND DISCUSSIONS

Among the studied almond trees varieties, the varieties which are distinguished by an early start are as follows: Texas - 23 II - 25 III, Retsou variety - 25 II - 25 III, followed by Mărculești 2/1 and Supernova varieties which start vegetation between 26 II and 25 III. The varieties of almond trees Retsou and Texas - 25 III - 1 IV, followed by Bruantine, Mărculești 2/1 and Supernova - 26 III - 2 IV are revealed with an early bursting of buds.

The first varieties ending vegetation are Mărculești 2/1 and

Supernova in the period 26-28 X, followed by Bruantine, Texas and Pomorie between 26-28 X. The latest varieties are Primorski and Retsou which end their vegetation between 27 and 3 XI.

Among the almond trees varieties researched we can see varieties with high growth, namely Retsou variety with 201,0 m/tree and Pomorie variety with 167,5 m/tree, whose values are very significant positive and significantly positive compared to the average X, (figure 1).

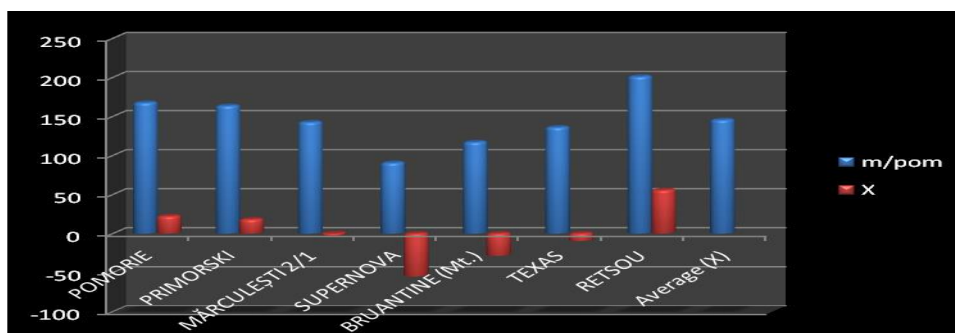


Fig. 1 - The amount of vegetative growth to several varieties of almond

With the high values of the height of the trees, we have a higher vigour in the varieties of almond trees Pomorie - 3,10 m/tree, in Primorski variety - 3,00 m/tree and in the Retsou variety - 3,20 m/tree whose values are significantly positive towards the X average.

With large values of the diameter of the crown, Pomorie and Primorski varieties are emphasised with 3.50 m/tree and the Retsou variety with an extension in diameter of 3.55 m/tree, the values being significantly positive compared to the average X. Mărculești 2/1 variety with 2.45 m/tree and the Supernova variety with 2.35 m/tree shows significantly negative values compared to the average. And Bruantine varieties with 2.60 m/tree and Texas with 2.65 m/tree show low values compared to average, but are not statistically recorded.

The fructification process marked by the differentiation of buds from the previous summer is made in the spring by special phenophases, four phenophases, respectively, namely the beginning of budding, bursting of buds, flowering and fruit maturation. The beginning of the budding takes place between March 22 - 27, April 6 - 11, respectively. The first almond trees varieties that flourish are Texas and Retsou - March 22 - April 6, 7 and the last is the Primorski variety - March 27 - April 11.

Late flowering had Primorski, Pomorie and Bruantine varieties.

Almond trees varieties behave practically autosterile, with entomophilous pollination, which makes it necessary to

provide pollinators, respectively 2-4 hives per hectare.

Among the pests, only the aphids attacked Mărculești 2/1 varieties and Supernova - note 2. For the rest, the scale insects did not attack almond trees varieties, proving a very good resistance. In conclusion, almond tree can be affected by different diseases and different pests that influence the good assimilation of the leaves, respectively the production.

Significant values above the average X and fruit in the endocarp are Primorski varieties - 10.0 kg/tree, Retsou - 9.00 kg/tree, the values being significantly positive compared to the average X. Differentiated production reflects the need to check the varieties in the production process, retaining in assortment new constantly productive varieties.

Analyzing in this case the quality of the experimented fruits with the physical attributes, we find that not only the weight index but also the fragility of the endocarp and the core content are of particular importance.

A large index of almonds of studied varieties, we meet at Retsou - 31 mm/fruit, Pomorie - 28.5 mm/fruit, Primorski - 27.0 mm/fruit. The core content ranges from 21.0% to 51.4%.

It is marked by a significant percentage of core in Primorski varieties - 51.4%, Pomorie - 45.1%. A medium core content was encountered in Retsou varieties - 34%, Bruantine - 30.5%, (Figure 2).

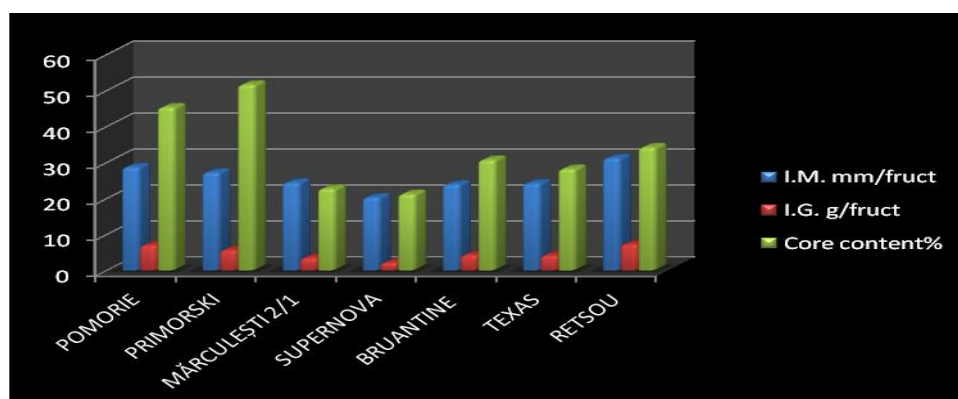


Fig. 2 - Physical attributes recorded in the varieties investigated

Under 55.0% of fatty substances we have in Mărculești 2/1 variety - 53.0%, Supernova 54.0% and Bruantine - 52.0%.

In conclusion, the almond trees varieties have over 50.0% fat, the fat content being particular in appreciating and retaining varieties in the assortment.

These values along with other ingredients give almonds a pleasant, balanced taste.

From these main analyzed elements it results that in the southern part of the country, fruits with a special commercial aspect and chemical components specific to the superior valorization, both fresh and industrialized, are obtained.

CONCLUSIONS

1. The blooming period of 14 to 19 days allows the pollination and fruit binding of all varieties.

2. Fruit maturation for studied varieties begins with the first decade of September, continuing with new varieties in the first decade of October, providing a consumption period of 39 to 40 days.

3. The majority of almond varieties have good resistance in the rest period but also at the return temperatures.

4. The main diseases showed good resistance to all varieties with a slight sensitivity to some diseases but without affecting the production.

5. The almond trees varieties showed a superior quality of fruits, expressed by the core and fat content.

6. In order to improve the current almond tree variety in southern Oltenia, there can be retained alongside the varieties of Primorski, Retsou, Pomorie and Texas varieties.

BIBLIOGRAPHY

1. **Bounous, G., Paglietta, R., Peano, C.**, 1994. *Collection and evaluation of almond germplasm in Piemonte*. *ISHS Acta Horticulturae 373: I International Congress on almond*, 119-124.

2. **Brașiște, N., Budan, S., Mădălina Butac, Mădălina Militaru**, 2007. "Soiuri de pomi, arbuști fructiferi și căpșuni create în România", lucrare elaborată de Institutul de Cercetare și dezvoltare pentru Pomicultură Pitești-Mărcăineni. Editura Paralela 45. ISBN 978-973-47-0177-3, 294 – 334.

3. **Cichi Daniela Doloris**, 2005. *Cercetări privind comportarea viței de vie la stres termic*, Universitatea din Craiova.

4. **Cociu, V.**, 2003. *Culturile nucifere*. Editura Ceres, București, 211-279.

5. **Cordeiro, V., Monteiro, A.**, 2002. *Almond growing in Tras-os-Montes region (Portugal)*. *ISHS Acta Horticulturae 591: III Symposium on pistachios and almonds*, 161 – 165.

6. **Felipe, A., Gomez, Aparisi, J., Socias, R.**, 1994. *Pollizo plum a rootstock for almond: preliminary results*. *ISHS Acta Horticulturae 373: I International Congress on almond*, 99-104.

7. **Gavăț Corina, Militaru Mădălina, Dumitru Liana Mădălina, Oprîță, A., Miron Liliana**, 2015. *Productivity of some almond varieties in Dobrogea*. *Fruit Growing Research, Vol. XXXI*, 58 - 64.

8. **Navarro, V.B., Teruel, N.G., Carratala, M.L.M.**, 2002. *Oxidation stability of almond oil*. *ISHS Acta Horticulturae 591: III Symposium on pistachios and almonds*, 125 – 131.

9. **Popescu, M., Milițiu I., Cireașă, V., Godeanu, I., Cepoiu, V., Drobotă, Gh., Ropan, G., Parnia, P.**, 1992. *Pomicultura generală și specială*. Edit. Didactică și Pedagogică, R.A. București, 333-337.