



STABILITY AND CROP PRODUCTIVITY OF PISTACHIO TO EXTERNAL FACTORS

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**УСТОЙЧИВОСТЬ И УРОЖАЙНОСТЬ СОРТОВ ФИСТАШКИ К ВНЕШНИМ
ФАКТОРАМ**

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Abstract

Pistachio tree in Uzbekistan is naturally distributed in rainfed lands within 400-1200 m above sea level and annually bear fruit. In dry lands, summer period there is a sharp decrease in soil moisture, in consequence of which some phenotypes of pistachio trees are damaged by drought, i.e. 20-80% of the leaves fall off. As a result of this undesirable phenomenon, the processes of photosynthesis and synthesis of organic substances, as well as the harvest of the next year, sharply decrease. Resistant to the summer drought were varieties of "Albina" (productivity 2.0 c/ha), "Mountain Pearl" (2.6 c/ha), forms 518-G and 521-G (1.7 c/ha). These varieties and forms have a high index of resistance to vegetative and generative organ for summer drought.

Keywords: pistachio, drought, productivity, transpiration, selection assessment.

Аннотация

Фисташка настоящая в Узбекистане естественно распространен в богарных землях в пределах 400-1200 м над уровнем моря и ежегодно плодоносить. В богарных землях летний период наблюдается резкое уменьшение почвенной влаги, в последствие которого некоторые фенотипы деревьев фисташки повреждается засухой, т.е. 20-80% листьев опадают. В результате этого нежелательного явления процессы фотосинтеза и синтеза органических веществ, также урожай следующего года резко уменьшаются. Устойчивыми к летней засухе оказались сорта «Альбина» (урожайность 2,0 ц/га), «Горная жемчужина» (2,6 ц/га), формы 518-Г и 521-Г (1,7 ц/га). У этих сортов и форм высокий показатель устойчивости вегетативных и генеративных орган к летней засухе.

Ключевые слова: фисташка настоящая, засуха, урожайность, транспирация, селекционная оценка.

Introduction

Today, it is important to make the most of all the land resources of our republic and increase their efficiency. A large part of the country's territory is made up of non-irrigated rain field lands. In these areas, in addition to rain field farming, it is advisable to build fertile plantations using certain types of



nut trees. A high-quality fruit-bearing tree species that grows under non-irrigated conditions is the pistachio (*Pistacia vera* L.) . It is a two-roomed, valuable nut-bearing tree, the fruits of which (pistachios) are a hearty food product. Pistachio corn nut is 45-55% of its weight and contains 60% fat, 15-20% protein, up to 13% carbohydrates, 3-8% sugar and many trace elements. Pistachio nuts are very highly valued in the domestic and foreign market, and for the countries of the middle and Middle East, they are a high-performance export product [1, 2, 5].

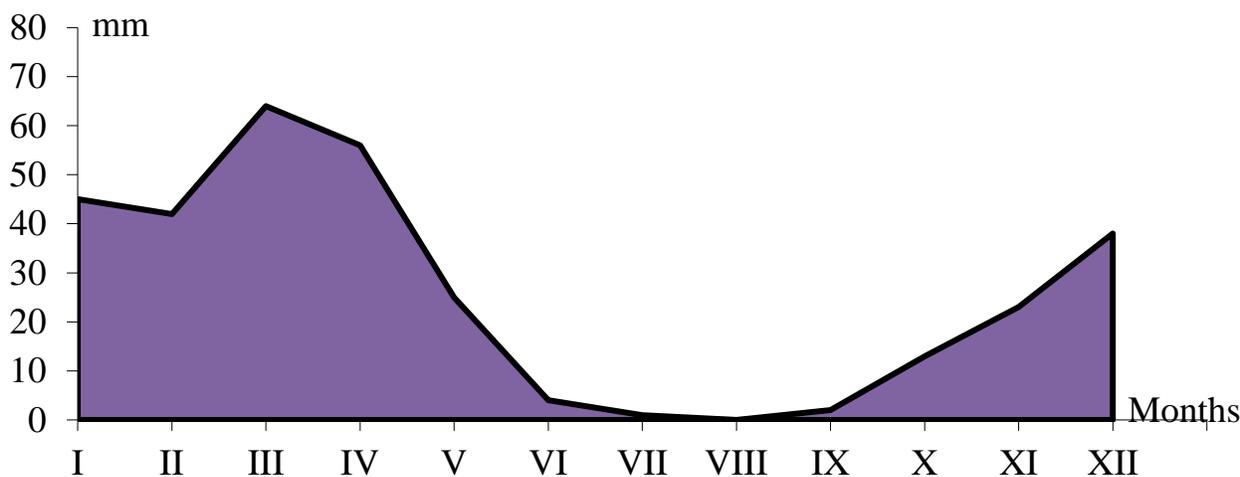
Styles and Materials

Gallaorol Experimental Station is located in the part of the Nurota mountain range 730 meters above sea level. The height of the palace Forestry of Saraykurgan above sea level is 530 m.

The climate of both regions is characterized by cold winters and hot summers. The coldest months are January and February. The average perennial temperature of January is -1.0°C in Gallaorol, the absolute low temperature is -25°C , and in the Palace it is -0.1°C and -30°C . The spring months are almost identical to desert conditions. In April, temperatures rise to 13.2°C and 14.8°C respectively. Spring frosts fall on decade III of March, sometimes April, or even on decade I of may. The summer months are considered extremely hot months. The high temperature is 27.4°C and 28.5°C on average as of July. The highest temperature was observed to reach 43°C and 46°C respectively. The annual fat content is 313 mm and its distribution by month is shown in Figure 1.

Pistachio forests were established in the early days for the purposes of soil resistance, and the planting scheme was very small (3x0.5 m, 3x1 m). In this scheme, pistachio trees practically did not yield. Since the 80s of the last century, due to the increased attention to the harvest of pistachio, scientific research has been carried out on the study of the optimal planting scheme of these groves, which has both a protective function and a high yield [3, 4].

Today, planting schemes of 8x8 m and 6x8 m are considered optimal, and in experimental pistachios, promising forms are propagated by grafting.



1-picture. The distribution of the average amount of annual rainfall in Saraykurgan experimental field by months (Nurabad met.s.)



Results and their Analysis

One of the distinctive features of the pistachio is the location of the root system, very deep and scattered next to it (up to 8-12 m). Therefore, the moisture on the top of the soil is quickly absorbed, leaving no other grass plants to grow. On the 1st decade of August, the fruits of pistachios ripen, and during this period, a state of drought damage is observed. In this case, up to 20-80% of the leaves of the tree are shed. As a result, the process of photosynthesis decreases, the synthesis of organic substances in the tree trunk decreases, leading to a decrease in yield next year.

Based on the results of the study conducted, it was found that the all of the varieties of pistachio are also not resistant to drought. Therefore, according to the experimental method, the drought resistance of pistachios forms was assessed on a 5-point scale. Trees are planted in an 8x8 m scheme. According to him, the experimental field saw the deposition of the leaves of the growing forms of pistachios during the drought period of the summer season. In most trees of the 518-G and 527-Sh forms and “Orzu” variety, the leaves were rated 4 for spilling up to 10% and above (Table 1). In the rest of the varieties and forms, however, more than 90% of the leaves were assessed at 5 for preservation during periods of drought (2-picture).



2-picture. Pistachio plantations:
a) 8x8 m; б) 8x4 m built in the scheme

1-table Drought resistance of pistachio forms

Forms name	Saraykurgan				Gallaorol			
	2007	2008	2009	average	2007	2008	2009	average
“Albina”	5	5	5	5	5	5	5	5
“Orzu”	5	4	4	4	4	4	5	4
“Gornaya Jemchujina”	5	5	4	5	5	5	5	5
518-G	5	4	4	4	4	5	5	5
521-G	5	5	5	5	5	5	5	5
527-Sh	4	4	4	4	4	4	5	4
528-G	5	5	5	5	5	5	5	5



According to the data presented in the 2-table, the highest yield was observed in the varieties "Gornaya Jemchujina" and "Albina" and in the forms 518-g and 527-g and yielded on average 1.3 kg to 1.0 kg from one tree. The minimum yield was observed in the form of 527-Sh, and an average yield of 0.8 kg was obtained from 1 tree. The yield of kkhandon pistachio varies within 5 years, that is, if a year yields 3 kg, then the next year can decrease by 1 kg or even more. These varieties and forms were considered an average value in relation to the number of trees, trees that did not produce at all by each variety and trees that yielded up to 3-4 kg were encountered.

2-table Yield of the studied promising forms

Form	1 m ³ on the branch, g	1 in the tree, kg	1 hectares, c	Ball
"Albina"	153	1,0	2,0	5
"Orzu"	126	0,8	1,6	4
"Gornaya Jemchujina"	196	1,3	2,6	5
518-G	114	1,0	1,7	4
521-G	116	1,0	1,7	4
527-Sh	102	0,8	1,3	3
528-G	77	0,9	1,5	2

Conclusion, Suggestions and Recommendations

Areas where the experimental fields are located, are considered favorable conditions for growing pistachios. Annual precipitation is above 300 mm. The highest yields were 2.0 c/ga in "Albina" variety, 2.6 c/ga in "Gornaya Jemchujina" variety, and 1.7 c/ga in 518-G, 521-G forms. In almost all varieties and forms, it was found that the vegetative and generative organs are not damaged by heat and are resistant to drought.

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