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PRODUCTIVITY OF CERTAIN VARIETIES OF APPLES AND IMPORTANCE OF THEIR GENE FORMATION

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ПРОДУКТИВНОСТЬ ОТДЕЛЬНЫХ СОРТОВ ЯБЛОК И ВАЖНОСТЬ ИХ ГЕНООБРАЗОВАНИЯ

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Abstract. Due to the diversity of its natural and historical conditions, Azerbaijan is one of the centers of the initial formation of many plants, having a great genetic richness of the plant world. A large number of valuable varieties and forms of food and agricultural plants have been created through folk selection and scientific selection, with the history of agriculture covering several millennia. However, massive and anthropogenic disturbances of all these natural and cultural heritage ecosystems, which are the irreplaceable wealth of the people, created a large number of valuable varieties and forms of ecological and agricultural plants. However, all this natural and cultural heritage, which is the irreplaceable wealth of the people, is threatened with destruction as a result of mass and anthropogenic disturbances of ecosystems, ecological and agricultural changes, and the wide application of modern breeding achievements. In addition to all this, the study, protection, and effective use of the gene pool of the apple plant in the country is one of the main factors. In this regard, based on our long-term research, with the efficient use of the gene pool of the apple plant in Azerbaijan, new “spur”-type selection varieties (Nigar, Ziya, Zirva, Marfa, Sulh, Gobustan, Zumrud, Kyzyld Taj, Khazar, Eldar, Ulvi, Nübar, Vatan, Makhmari, Nuran, Sarvan, Chiraggala, Davamli, Emil, Elvin, Paizliq Guba, Zizliq Guba, Shabran, Sadaf and Sevinj) were created by us. In the article, the parental pairs of those cultivars are reflected in the ripening period, ripening, fruiting periods, tree parameters (height, diameter of the umbel, circumference of the stem), productivity indicators, leaf surface, infection rates of scab disease, average mass of fruits and tasting prices. At the same time, the article contains the introduction, research conditions, methodology, material, results, discussion, recommendations, and used literature sources.

Аннотация. Благодаря разнообразию своих природных и исторических условий Азербайджан является одним из центров первоначального формирования многих растений, обладая большим генетическим богатством растительного мира. Путем народной селекции и научной селекции создано большое количество ценных сортов и форм пищевых и сельскохозяйственных растений, история земледелия которых насчитывает несколько тысячелетий. Однако массовые и антропогенные нарушения всех этих экосистем природного и культурного наследия, составляющих невосполнимое богатство народа, создали большое количество ценных сортов и форм экологических и сельскохозяйственных растений. Однако всему этому природному и культурному наследию, являющемуся невосполнимым богатством народа, грозит уничтожение в результате массовых и антропогенных нарушений экосистем, экологических и сельскохозяйственных изменений, широкого применения современных достижений селекции. Помимо всего этого, одним из основных факторов является изучение,

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охрана и эффективное использование генофонда растения яблони в стране. В связи с этим, на основе наших многолетних исследований, с эффективным использованием генофонда растений яблони в Азербайджане, созданы новые сорта селекции типа «шпорец» (Нигяр, Зия, Зирва, Марфа, Сулх, Гобустан, Зумруд, Кызылд Тадж, Хазар, Эльдар, Ульви, Нубар, Ватан, Махмари, Нуран, Сарван, Чираггала, Давамли, Эмиль, Эльвин, Пайзлик Губа, Зизлик Губа, Шабран, Садаф и Севиндж) были созданы нами. В статье у родительских пар этих сортов отражены сроки созревания, созревания, плодоношения, параметры дерева (высота, диаметр зонтика, окружность стебля), показатели продуктивности, листовая поверхность, заболеваемость паршой, средняя масса плодов и дегустационные цены. При этом статья содержит введение, условия исследования, методологию, материал, результаты, обсуждение, рекомендации и использованные литературные источники.

Keywords: apple, selection, variety, productivity, quality, active phases.

Ключевые слова: яблоко, селекция, сорт, урожайность, качество, активные фазы

The vegetation of Azerbaijan is approximately 62% of the entire Caucasian flora, and 11.2% of the world's flora [7]. However, the forms and varieties of local fruit plants, including apples, existing in the republic have not been thoroughly studied and have not been included in the selection program. Since 1982, we have taken into account the high genetic characteristics of the local populations of the existing wild ancestors of the apple plant, and they are an invaluable source for selecting them as starting parent pairs in breeding work. Locally chosen by the people, Cir Haji, Yellow sour, Ayyubi, Black sour, Winter red jibir, Golden Ahmadi, Shikhi cani, Zagatala saffron; introduced Champagne rennet, Simirenko rennet, Papirovka, Welsi, Wagner prizovoy, Jonathan, Delishes, Nopaleon, etc. Fahima, Naila, Arzu, Guba rent, Kamshirin, Guba saffron, Anatolu, Sharq, Shafaq, Nail varieties and forms purchased from the first (F1) generation on the existing stock were used in hybridization as starting material in breeding work, highly productive, "spur" type, quick-yielding, resistant to diseases and pests Paping, Fahima, Nigar, Zaka, Zafar, Azerbaijan, Peace, Marfa, Champagne rennet, Ulvi, Vatan, Nubar, Chiraggala, Continuous, Emil, Elvin, Autumn Guba, Winter Guba, Sevinj, Gobustan, Zumrud, Gizil Taj, Eldar, Makhmari, Nuran, Sarvan, Sadaf, Sahil, Shabran, Ziya, Zirva varieties have been created [1].

The conditions of the study. The research work was mainly carried out in the territory of the Guba-Khachmaz economic region of Azerbaijan. That area is located at an altitude of 750 m above sea level, and the active temperature is only 2600-4100℃. The number of frost-free days is 186-234 days. The average monthly temperature of the coldest month (January) is 2-3℃ frost in the mountainous area, and about 1℃ hot in the plain. The average daily temperature is 13-18 ℃, and the maximum temperature is mainly between 28-38℃. The average amount of rain varies between 386-613 mm.

Materials and metodys

In the hybridization of selected apple varieties, local, introduced, and selection varieties of the Research Institute of Fruit and Tea Cultivation were used in Azerbaijan [2].

Research methodology. N.I. Methodology of [3] University of Applied Sciences, "Program on introduction and breeding of fruit plants" [4], and others. "The program and methodology of fruit, berry and berry plants" [5], "Selection and varietal study of fruit and berry plants" [6], et al "Selection of apples" and using other methods research has been carried out [7].

Table

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AGROBIOLOGICAL CHARACTERISTICS OF SELECTED APPLE VARIETIES (2019-2023)

Sort	*Maturity period*	*Calagalti*	*Tree parameters*								
			Time to fall into the product	*Height, m*	*Diameters, m*	*The circle of the stamp, cm*	*yield, t/ha*	*Leaf surface area, m^2*	*Resistance to stamp disease, 5 points*	*The average weight of the fruit, g*	*Tasting slope price, 5 points*
Fahima x Papirovka											
Nigar	summer	MM 106	3-4	2.8	2.6	26	15	7.5	1.2	13	4.4
Shahdag x Uttared											
Ziya	summer	MM 106	4-5	2.7	2.5	25	17	7.4	1.3	135	4.6
Nigar x Uttared											
Summit	summer	MM 106	4-5	2.6	2.4	28	17	7.3	1.0	135	4.5
Gift to the Oilers x Scarlet staymared											
Marfa	autumnal	MM 106	4-5	2.5	2.4	27	13	7.3	1.4	150	4.3
Winter red Parmen x Champagne rennet											
Peace	winter	MM 106	4-5	2.8	2.7	26	14	7.5	1.4	165	4.4
Naila x Cır Haji, Yellow Sour											
Gobustan	winter	MM 106	3-4	2.7	2.5	26	15	7.5	1.2	130	4.5
Arzu x Wagner Prize											
Emerald	winter	MM 106	3-4	2.6	2.5	25	14	7.5	1.3	125	4.4
S. Vurgun x Cir Haji											
Golden crown	winter	MM 106	3-4	2.8	2.7	27	16	7.5	1.2	140	4.7
Azerbaijan x Yellow sour											
Caspian	winter	MM 106	3-4	2.7	2.5	27	15	7.4	0.9	140	4.4
Naila x Cir Haji											
Eldar	winter	MM 106	4-5	2.8	2.4	28	13	7.6	1.4	120	4.3
Sona apple x Yellow sour											
Sublime	winter	MM 106	4-5	2.7	2.5	28	14	7.7	0.8	145	4.7
Naila x Cir Haji											
Nubar	winter	MM 106	4-5	2.6	2.4	27	15	7.5	1.4	120	4.3
Eastern x Cir Haji											
Homeland	winter	MM 106	4-5	2.7	2.6	27	18	7.5	1.5	130	4.4
Taravatli x Kizil Ahmadi											
Velvet	winter	MM 106	4-5	2.8	2.5	28	18	7.7	1.4	135	4.7
Azerbaijan x Cir Haji											
Nuran	winter	MM 106	4-5	2.7	2.6	27	16	7.6	1.3	125	4.7
Refreshing x Champagne rennet											
Sarvan	winter	MM 106	4-5	2.7	2.5	28	14	7.6	1.2	130	4.3
Naila x Cir Haji											
Chiraggala	winter	MM 106	3-4	2.6	2.5	27	16	7.7	1.0	135	4.7
Naila x Cır Haji, Champagne rennet											
Continuous	winter	MM 106	4-5	2.6	2.5	28	15	7.6	0.9	130	4.3
Naila x Cır Haji, Yellow Sour, Cır Haji											
Emil	winter	MM 106	4-5	2.8	2.7	27	18	7.7	0.9	145	4.8
Guba rennet x Yellow sour											
Elvin	winter	MM 106	4-5	2.7	2.6	28	18	7.7	0.9	145	4.8

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Sort	*Maturity period*	*Calagalti*	*Time to fall into the product*	*Tree parameters*			*yield, t/ha*	*Leaf surface area, m^2*	*Resistance to stamp disease, 5 points*	*The average weight of the fruit, g*	*Tasting slope price, 5 points*
				Height, m	*Diameters, m*	*The circle of the stamp, cm*					
Naila x London Pepin											
Winter Guba	winter	MM 106	4-5	2.6	2.5	27	17	7.5	1.0	130	4.4
Oriental x Champagne rennet											
Autumn Guba	winter	MM 106	4-5	2.7	2.6	28	17	7.6	1.0	130	4.5
Arzu x Wagner Prize											
Shabran	winter	MM 106	3-4	2.8	2.6	26	18	7.8	1.1	140	4.6
Ayyubi x Red Jibir											
Mother of pearl	winter	MM 106	3-4	2.8	2.5	25	19	7.8	0.9	145	4.8
Naila x Yellow Sour											
Joy	winter	MM 106	3-4	2.6	2.5	27	19	7.6	0.9	145	4.9

Results and Disscusion

The protection and effective use of the gene pool of the apple plant is of sufficient importance in solving the selection problem.

Thus, by using the varieties belonging to the gene pool of the apple plant in Azerbaijan, it was possible to create new varieties adapted to the soil and climate conditions, ahead of the existing varieties by 10-12% due to their high characteristics. During the research years, the creation of new varieties was achieved through selection.

During the research years, new varieties were created through selection, Nigar, Ziya, Zirva varieties belong to the group of summer varieties due to their ripening period, Marfa variety belongs to autumn varieties, and other varieties belong to winter varieties. The agrobiological characteristics of the varieties were studied on the MM106 cultivar. Nigar, Gobustan, Zumrud, Kyzil Taj, Khazar, Chiraggala, Shabran, Sadaf and Sevinj varieties were harvested in 3-4 years, and other varieties in 4-5 years.

Most of the selection varieties obtained by hybridization were of the "spur" type, the parameters of which were the height of the trees 2.5-2.8 m, the diameter of the umbrella 2.4-2.7 m, and the circumference of the stem 2.5-2.8 m. The productivity of Sevinj, Sadaf, Elvin, Emil, Makhmari, Vatan, Zirva varieties is 18-19 t per hectare, Eldar, Zumrüd, Peace, Marfa, Ulvi, Sarvan varieties are 13-14 t per hectare, and the productivity of other varieties is 15-17 t. is distinguished between The leaf surface is 7.3-7.8 m3, depending on the pomological characteristics of the varieties, which has a positive effect on the growth, development and productivity of trees from a methodological point of view. Ulvi, Khazar, Davamli, Emil, Elvin, Sadaf and Sevinj varieties were resistant to scab disease (0.9 points), while other varieties were partially resistant (1.0-1.5). The average weight of the fruits is 120-165 g, and the tasting values are 4.3-4.9 points.

Thus, it is appropriate to plant new industrial-type orchards in the coming years, taking into account the positive agrobiological characteristics of newly created apple varieties through selection using the gene pool of the apple plant in Azerbaijan.

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Recommendation

New varieties with high efficiency were obtained, which were used in the study, protection and breeding research of the gene pool of the apple plant, and the varieties of Winter Guba, Paizlıg Guba, Sevinj, Elvin and Zumrüd were regionalized. In the development of horticulture in Azerbaijan, it was recommended to build new industrial-type gardens from those varieties.

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