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REGIONAL AND PERSPECTIVE SELECTION OF APPLE VARIETIES POMOLOGICAL CHARACTERISTICS

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Introduction. Azerbaijan is very diverse due to its location, height above sea level, soil, and climate conditions. The climate of our republic is warm and very dry, moderately warm, continental, and subtropical [1, 3]. In the course of research, it was established that the history of fruit growing in Azerbaijan dates back to the "Bronze" period. In our country, due to wild forms of local fruit (apple) plants and varieties introduced since the 20th century, the extensive type of food area was 10 x 10 m, 110 x 8 m, Gardens of 10 x 8 m (with 100-125 trees per hectare) are planted. After the 1920s, horticulture developed more and more. In those years, academician B.B. Pashkevich reported about 280 local varieties of apples and pears while on an expedition in the Guba-Khachmaz economic district [2, 4]. Currently, there are 223,000 hectares of orchards in Azerbaijan, of which 32,000 hectares (15%) are apple orchards. More than 400 locally, introduced varieties of the Scientific Research Institute of Fruit and Tea Cultivation are cultivated in those apple orchards. Pomological characteristics of those varieties have been studied by us since 1982, and about 30 high-quality, quick-harvesting, "Spur"-type new apple varieties have been obtained by using the varieties in donor lines for soil and climate conditions, most of which have been submitted to the State Variety Trial. Autumn Guba, Winter Guba, Sevinj, Elvin, and Emerald varieties are regionalized. Sadaf, Ziya, and Zirva varieties are included in the group of promising varieties [5]. The economic-biological characteristics of those varieties have been studied for a long time us, and it is considered appropriate to apply them in industrial-type gardens that will be built in the coming years.

The material of the study. Folk selection, introduced in various economic regions of Azerbaijan, including Guba-Khachmaz, Sheki-Zagatala, Ganja-Gazakh regions, were introduced and varieties of the Fruit and Tea Cultivation Scientific Research Institute were used as breeding materials in breeding research.

Methods used. Generally accepted methods in fruit growing were used for the study of the gene pool of the apple plant and the purchase of feed selection varieties with high efficiency V. V. Volkodav end S. O. Tanchyk [6, 7].

Results and their discussion. In modern times, to use the land area per population living in the conditions of the market economy, it is advisable to plant and cultivate high-quality, quick-harvesting "Spur" apple varieties in industrial orchards for fodder.

In this regard, as a result of our long-term research work, about 30 selection varieties were obtained through hybridization, 5 varieties of them were regionalized, and 3 varieties were registered in the State register as prospective varieties. Among those varieties, the Ziya and Zirva varieties belong to the summer group, and other varieties belong to the winter group. In the MM-106 cultivar, the Winter Guba, Paizlıg Guba, Sevinj, Elvin, and Sadaf varieties are harvested in the 4th-5th year, and the other varieties are harvested in the 5th-6th year. The average yield per hectare in winter varieties is 25-40 t, and in summer varieties 20-40 t. High productivity winter varieties

Table 1

Pomological characteristics of regionalized and prospective selection apple varieties (2010-2023)

Sort	Ripening period	Under hood	Full harvest	Year	Productivity t/ ha	Average weight of one fruit, g	Tasting price Vitamin "C" mg%	Yield of commercial variety	Storage period, days	Duration of vegetation, days
Zoned varieties										
Autumn Quba	Winter	MM-106	4-5	25	130	4.4	5.5	75	150	231
Winter Quba	Winter	MM-106	4-5	25	128	4.5	5.6	75	150	228
Sevinj	Winter	MM-106	4-5	35	140	4.4	6.1	81	160	230
Elvin	Winter	MM-106	4-5	35	140	4.4	6.2	85	160	230
Zumrud	Winter	MM-106	5-6	25	130	4.4	5.3	75	130	233
Perspective variets										
Zia	Summer	MM-106	5-6	20	125	4.5	5.0	75	25	231
Zirva	Summer	MM-106	5-6	20	125	4.5	5.0	76	25	234
Sadaf	Winter	MM-106	4-5	40	135	4.7	5.4	79	160	235

Sadaf – 40 t, Sevinc – 35 t, and Elvin – 35 t; the average mass of one fruit is 128-140 g in winter varieties, 125 g in summer varieties, the tasting values of varieties belonging to both groups are 4.4-4.7 points, the amount of vitamin "C" is 5.0-6.1 mg%, the yield of commercial varieties is 75-79%, the duration of stay is 130-160 days in winter varieties and 25 days in summer varieties. In general, the continuation of the active development phases in varieties lasted 228-235 days. Thus, the positive pomological characteristics of regionalized and perspective selection apple varieties allow these varieties can be effectively used in the development of horticulture (table 1).

Conclusion. As a result of our long-term selection scientific research work on the apple plant, about 30 high-efficiency F_2 fodder varieties adapted to the soil and climate conditions of the Guba-Khachmaz economic region, which is considered the main fruit-growing region of the country, were created. Most of those varieties have been submitted to the Agrarian Services Agency, Paizlıg Guba, Winter Guba, Sevinj, Elvin, and Zumrud varieties have been regionalized from the winter varieties. Ziya, Zirve, and Sadaf varieties are included in the group of perspective varieties in the State register. Taking into account the fact that the indicated varieties have high efficiency, it is recommended to be applied in peasant (farmer) and state institutions.

BIBLIOGRAPHY

1. Əliyev C. A. Bioloji müxtəliflik. Bakı, 2008. 232 səh.
2. Ərəbzadə A. A. Abşeronda alma sortlarının introduksiyası. Bakı, 2021. 192 səh.
3. Nərmanov A. S. Azərbaycanda meyvəçiliyin tarixi, müasir vəziyyəti və gələcək inkişafı. Bakı, 1961. səh. 3-7.
4. Кондратенко Т. Є. Яблуня в Україні. Сорти. К.: Світ, 2001. 296 с.
5. Kənd Təsərrüfatı Nazirliyi yanında Aqrar Xidmətlər Agentliyi. Dövlət reyestri. Bakı, 2022. səh. 121-136.
6. Методика державного сортовипробування сільськогосподарських структур. Вип. 1. Загальна частина / ред.: В. В. Волкодав; Держ. коміс. України по випробуванню та охороні сортів рослин. К., 2000. 100 с.
7. Методика проведення експертизи сортів рослин групи плодових, ягідних, горіхоплідних та винограду на відмінність, однорідність і стабільність / За ред. Ткачик С. О. 2-ге вид., випр. і доп. Вінниця: ФОП Корзун Д. Ю., 2016. 850 с.

REFERENCES

1. Əliyev, C.A. (2008). *Bioloji müxtəliflik [Biological diversity].* Bakı, 232 səh. [in Azerbaijani].
2. Ərəbzadə, A.A. (2021). *Abşeronda alma sortlarının introduksiyası [Introduction of apple varieties in Absheron].* Bakı, 192 səh. [in Azerbaijani].
3. Nərmanov, A.S. (1961). *Azərbaycanda meyvəçiliyin tarixi, müasir vəziyyəti və gələcək inkişafı [History, modern situation and future development of fruit growing in Azerbaijan].* Bakı, səh. 3-7 [in Azerbaijani].
4. Kondratenko, T.Ye. (2001). *Yablunia v Ukraini. Sorty [Apple in Ukraine. Varieties]*. Kyiv: Svit, 296 [in Ukrainian].
5. Kənd Təsərrüfatı Nazirliyi yanında Aqrar Xidmətlər Agentliyi [Agrarian Services Agency Under the Ministry of Agriculture]. (2022). *Dövlət reyestri – State Register.* Bakı, səh. 121-136 [in Azerbaijani].
6. Volkodav, V.V. (Ed.). (2000). *Metodyka derzhavnoho sortovyprobuvannia silskohospodarskykh struktur. Vyp. 1. Zahalna chastyna [Methodology of state sorting and testing of agricultural structures. Vip. 1. General part].* Derzh. komis. Ukrainy po vyprobuvanniu ta okhoroni sortiv roslyn [State Commission of Ukraine for testing and protection of plant varieties]. Kyiv, 100 [in Ukrainian].
7. Tkachyk, S.O. (2016). Metodyka provedennia ekspertyzy sortiv roslyn hrupy plodovykh, yahidnykh, horikhoplidnykh ta vynohradu na vidminnist, odnoridnist i stabilnist [Methodology for the examination of varieties of fruit, berry, nut, and grape varieties for diversity, homogeneity, and stability]. Vinnytsia: FOP Korzun D.Yu., 850 [in Ukrainian].

Аладдін Немет огли Садигов. Регіональна та перспективна селекція сортів яблун помологічна характеристика

Плодівництво завжди було однією з найдавніших галузей сільського господарства нашої країни, а сьогодні є однією з провідних галузей у розвитку економіки країни. У нашій державі, яка вступила на шлях незалежного розвитку, були проведені реформи як в аграрній галузі, так і в усіх сферах економіки. В даний час у світі і нашій республіці існує великий попит на створення шляхом штучної селекції нових сортів яблук з високою дієтичною і поживною цінністю, та якісними показниками у зв'язку з виробництвом якісних харчових продуктів. **Методи.** Для вивчення генофонду рослини яблуні та закупівлі кормових селекційних сортів з високою ефективністю використовували загальноприйняті в плодівництві методи (В.В. Волкодав, 2000; С. О. Танчик, 2016). В **результаті** ґрунтово-кліматичних умов Азербайджану це спричинило формування багатого генофонду плодової попелиці. З урахуванням цих цінних, аборигенних, раніше інтродукованих і використовуваних як донорські батьківські лінії сортів плодів Науково-дослідного інституту плодівництва і чаю створено близько 30 нових високоякісних селекційних сортів шпорцевого типу, швидкоплідних, що відповідають вимогам ринкової економіки. За позитивними господарсько-біологічними показниками ці сорти перевищують місцеві та інтродуковані приблизно на 10-12%. Більшість отриманих селекційним шляхом сортів передано на державне сортовипробування, районовано сорти Пайзлиг Губа, Зизилиг Губа, Севіндж, Ельвін, Зумруд, а сорти Садаф, Зія, Зірве віднесено до перспективних сортів. Деякі з цих сортів використовуються селянськими (фермерськими) господарствами при створенні садів промислового типу за новими інноваційними технологіями. **Висновок.** В результаті нашої багаторічної селекційної науково-дослідної роботи над яблунею створено близько 30 високопродуктивних кормових сортів F2, адаптованих до грунтово-кліматичних умов Губа-Хачмазького економічного району, який вважається основним плодівничим районом країни. Більшість із цих сортів було подано до Агентства аграрних послуг, сорти Пайзлиг Губа, Зимова Губа, Севіндж, Елвін та Зумруд були районовані з озимих сортів. До групи перспективних сортів Державного реєстру занесені сорти Зія, Зірве, Садаф.

Ключові слова: яблуня, генофонд, селекція, сорт, помологія, Азербайджан.

Aladdin Nemet oglu Sadigov. Regional and perspective selection of apple varieties pomological characteristics

Agrarian fruit growing has been one of the oldest agricultural fields in our country, and today it is one of the leading fields in the development of the country's economy. In our country, which started the path of independent development, reforms were carried out in the agrarian field as well as in all areas of the economy. Currently, in the world and our republic, there is a great demand for the creation of new apple varieties with high dietary and nutritional value and high-quality indicators through artificial selection in connection with the production of quality food products. **Methods.** Generally accepted methods in fruit growing were used for the study of the gene pool of the apple plant and the purchase of feed selection varieties with high efficiency (V. V. Volkodava, 2000; S. O. Tanchyk, 2016). As a **result** of the soil and climate conditions of Azerbaijan, it has caused the formation of a rich gene pool of fruit aphids. Taking these into account, valuable, aboriginal, previously introduced and used as donor parent lines of fruit varieties of the Research Institute of Fruit and Tea Cultivation, about 30 new high-quality selection varieties of spur-type, quick-yielding, meeting the requirements of the market economy were created. The positive economic-biological characteristics of those varieties exceed local and introduced varieties by about 10-12%. Most of the varieties obtained through selection were submitted to the State Variety Test, Paizlıg Guba, Zızılıg Guba, Sevinj, Elvin, Zumrüd varieties were regionalized, and Sadaf, Ziya, and Zirve varieties were classified as promising varieties. Some of those varieties are used by peasant (farmers) farms in the establishment of industrial-type gardens based on new innovative technologies. **Conclusion.** As a result of our long-term selection scientific research work on the apple plant, about 30 high-efficiency F2 fodder varieties adapted to the soil and climate conditions of the Guba-Khachmaz economic region, which is considered the main fruit-growing region of the country, were created. Most of those varieties have been submitted to the Agrarian Services Agency, Paizlıg Guba, Winter Guba, Sevinj, Elvin, and Zumrud varieties have been regionalized from the winter varieties. Ziya, Zirve, and Sadaf varieties are included in the group of perspective varieties in the State register.

Key words: apple, gene pool, selection, variety, pomology, Azerbaijan.