



Original article

## Documentation of Sweet Cherry (*Prunus avium* L.) Samples According to the International Descriptors

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### Abstract

In the research, seventy-four sweet cherry varieties and forms collected from the Guba, Khachmaz, Sheki, Tartar, and Agdash districts of Azerbaijan were characterized and evaluated. International standards were used as the basis for entering the obtained data into the Cherry Characterization Database created as part of the Central Database (CDB). The characterizations were carried out following those standards and compiled in MS Excel tables for eventual integration into regional and global databases. International descriptors were thus used to gather characterization and assessment data (phenological observations, morphological analyses, quality indicators, and physiological analyses) for the research that was carried out between 2017 and 2020 years. The data were also processed for future use in breeding and other plant research. A sweet cherry plant characterization database was created in the structure of the Central Database of the plant collection of the National Genbank under the Institute of Genetic Resources of the Ministry of Science and Education of the Republic of Azerbaijan. The characterization data we provided were included in the respective trait fields (for 22 traits) under the created characterization database. Currently, the established characterization databases contain information on seventy-four sweet cherry samples.

**Keywords:** Plant Genetic Resources, Morphological, Phenological, Quality Indicators, Characterization, Sweet Cherry, Database.

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## **INTRODUCTION**

Throughout the 10,000-year agricultural history of Azerbaijan, the cultivation of fruit plants has played an important role in meeting the population's needs for food and other products. In the territories occupied by Armenia, fruit plants belonging to the *Prunus* genus were widely distributed and used by the population (Akparov et al., 2018). To prevent the appropriation of the rich and valuable folk selection varieties of our people by other countries, it is important to provide substantiated information about these varieties to the international scientific community.

Important steps have been taken in the selection and evaluation of fruit plants in numerous studies conducted around the world. Thus, the use of plant genetic resources preserved in genebank collections depends on the extent and quality of available data (Rubenstein et al., 2006). Frankel and Soule summarized the goals of conservation and use of genebank collection centers as follows: "The goals are to assemble plants, then to see that they are preserved against loss and deterioration, to make them generally available to those who can evaluate and use them, and to process and publish all available evaluation records for the benefit of all users" (Frankel et al., 1981). Characterization and evaluation of plant genetic resources, and creation and maintenance of databases summarizing descriptor data provided by Bioversity International (formerly IPGRI) and FAO are key to their utilization (Archaka et al., 2016; Roy et al., 2017; Watkins et al., 1983; [Link,2024a](#); [Link,2024b](#)). Identification of varieties with potential for further improvement by breeders and farmers, as well as traits that are directly used by farmers for production and marketing, is a way to promote more efficient use of PGRFA (Plant Genetic Resources for Food and Agriculture) (Mirzaliyeva et al., 2022). The *Prunus* WG (*Prunus* Working Group) was established in 1983 at the *Prunus* Genetic Resource Center near Bordeaux, France, and now includes an organization of 87 plant specialists, curators, and breeders from 39 countries.

Studies were conducted by researchers and breeders on fruit plants in numerous Support Stations of the Institute of Genetic Resources of the Republic of Azerbaijan and a lot of information was gathered. Unfortunately, such information was not electronically integrated into a single database and was left out of the use of breeders and researchers and turned into an archive of useless information (I National Report, 2004).

## **MATERIALS and METHODS**

To characterize the varieties and forms of the sweet cherry plant distributed in the Guba, Khachmaz, Sheki, Tartar, and Agdash districts of Azerbaijan according to their biological diversity and morphological characteristics, plant height, trunk diameter, and the diameter of the canopy were measured, and the shape of the canopy was visually evaluated. Determination of morphological characteristics and economic indicators of the sweet cherry plant was carried out on the basis of a "Program and methodology for studying varieties of fruit, berry, and nut crops" (Michurin, 1973). Fruit

width (mm) and height (mm) were measured using digital calipers. Fruit and stone weight (g) were measured by precision scales (0,01), and flesh/stone ratio was calculated according to these values. Total sugar (%) was measured by hand refractometer (Brix, 20<sup>0</sup>,0-32%). Phenological observations were performed on cherry varieties and forms. The opening of buds, germination, flowering, fruit ripening , as well as the leaf opening and defoliation processes were observed in the stationary stations and semi-stationary areas during the all vegetation period and records were regularly made (Karimova Kh.I, 2020).

In order to create an information system consisting of characterization and evaluation data of 74 varieties and forms of sweet cherry, international systems were applied and examples were taken from the formats used globally in this field. International plant descriptors recognized by Europe and other countries according to world standards were used to evaluate this study. Thus, 22 traits included in the database were studied for each cherry sample. In the research, parameters consisting of characterization and evaluation data such as external and internal quality and phenology of the tree, leaf, flower, and fruit were prepared in MS Excel tables. To transfer the data into MS Excel tables, international standards were applied and formats recognized globally in this field were used.

For this purpose, initially, passport descriptor data of 74 varieties and forms of sweet cherry plants distributed in the Guba, Khachmaz, Sheki, Tartar, and Agdash districts of Azerbaijan were compiled in MS Excel tables according to the MCPD (Multi-crop Passport Descriptors) list (Figure 1.). At the next stage, the characterization data of the genotypes were prepared following international standards and submitted to the CDB.

	A	B	C	D	J	K	L	M	O	P	Ç	R	S	U	W	AA	AB	AC	AE	AI	AG
1	NICOL	INSTC	ACCENUMH	GENUS	SPECIE	SP	CROPN	ACCENAME	ORI	COLLSITE	LATITUDE	LONGITU	ELEI	COLLDA	SAJ	COI	OTHERNUMB				
14966	AZE	AZE015	AZGR-14969	Prunus	avium	L.	cherry	Agh gilas	AZE	Sheky Supporting Point	4113-N	04718-E	377	2010	300	40	AZE015	KhK-Sb/12			
14967	AZE	AZE015	AZGR-14970	Prunus	avium	L.	cherry	Krim	UKR	Sheky Supporting Point	4112-N	04715-E	313	2006	300	40	AZE015	KhK-Sb/13			
14968	AZE	AZE015	AZGR-14971	Prunus	avium	L.	cherry	Napoleon- Sheki	RUS	Sheky Supporting Point	4112-N	04715-E	313	2000	300	40	AZE015	KhK-Sb/14			
14969	AZE	AZE015	AZGR-14972	Prunus	avium	L.	cherry	Bali gilas	AZE	Sheky Supporting Point	4112-N	04715-E	314	1985	300	40	AZE015	KhK-Sb/15			
14970	AZE	AZE015	AZGR-14973	Prunus	avium	L.	cherry	Jir gilas aji	AZE	Sheky Supporting Point	4112-N	04715-E	312	1980	120	40	AZE015	KhK-Sb/16			
14971	AZE	AZE015	AZGR-14974	Prunus	avium	L.	cherry	Jir gilas-2	AZE	Sheky Supporting Point	4112-N	04715-E	312	1990	120	40	AZE015	KhK-Sb/17			
14972	AZE	AZE015	AZGR-14975	Prunus	avium	L.	cherry	Mayovka girmizi	UKR	Sheky Supporting Point	4113-N	04715-E	318	2016	300	40	AZE015	KhK-Sb/18			
14973	AZE	AZE015	AZGR-14976	Prunus	avium	L.	cherry	Dum agh gilas	AZE	Sheky Supporting Point	4113-N	04715-E	318	2003	300	40	AZE015	KhK-Sb/19			
14974	AZE	AZE015	AZGR-14977	Prunus	avium	L.	cherry	Albali gilas yumru	AZE	Sheky Supporting Point	4113-N	04715-E	314	2000	300	40	AZE015	KhK-Sb/20			
14975	AZE	AZE015	AZGR-14978	Prunus	avium	L.	cherry	Mayovka chil-chil	UKR	Sheky Supporting Point	4113-N	04715-E	313	2010	300	40	AZE015	KhK-Sb/21			
14976	AZE	AZE015	AZGR-14979	Prunus	avium	L.	cherry	Gara Mayovka	UKR	Sheky Supporting Point	4113-N	04715-E	322	2012	300	40	AZE015	KhK-Sb/22			
14977	AZE	AZE015	AZGR-14980	Prunus	avium	L.	cherry	Sari gilas	AZE	Sheky Supporting Point	4113-N	04715-E	322	2002	300	40	AZE015	KhK-Sb/23			
14978	AZE	AZE015	AZGR-14981	Prunus	avium	L.	cherry	Albali gilas agh	AZE	Sheky Supporting Point	4113-N	04715-E	318	2005	300	40	AZE015	KhK-Sb/24			
14979	AZE	AZE015	AZGR-14982	Prunus	avium	L.	cherry	Sari uzun gilas	AZE	Sheky Supporting Point	4113-N	04714-E	322	2000	300	40	AZE015	KhK-Sb/25			
14980	AZE	AZE015	AZGR-14983	Prunus	avium	L.	cherry	Guzugoren	AZE	Sheky Supporting Point	4113-N	04714-E	321	1985	300	40	AZE015	KhK-Sb/26			
14981	AZE	AZE015	AZGR-14984	Prunus	avium	L.	cherry	Gara okuzureyi	AZE	Terter, Alasgarli village	4033-N	04697-E	197	2003	300	40	AZE015	KhK-T1			
14982	AZE	AZE015	AZGR-14985	Prunus	avium	L.	cherry	Zoghali	AZE	Terter, Alasgarli village	4033-N	04697-E	200	2005	300	40	AZE015	KhK-T2			
14983	AZE	AZE015	AZGR-14986	Prunus	avium	L.	cherry	Chal Krim	UKR	Terter, Alasgarli village	4033-N	04697-E	196	2008	300	40	AZE015	KhK-T3			
14984	AZE	AZE015	AZGR-14987	Prunus	avium	L.	cherry	Gejvelishen okuzure	AZE	Terter, Alasgarli village	4033-N	04697-E	197	2000	300	40	AZE015	KhK-T4			
14985	AZE	AZE015	AZGR-14988	Prunus	avium	L.	cherry	Jyr gilas	AZE	Terter, Alasgarli village	4033-N	04697-E	199	2002	120	40	AZE015	KhK-T5			
14986	AZE	AZE015	AZGR-14989	Prunus	avium	L.	cherry	Napoleon	RUS	Terter, Alasgarli village	4033-N	04697-E	210	1998	300	40	AZE015	KhK-T6			
14987	AZE	AZE015	AZGR-14990	Prunus	avium	L.	cherry	Stampan gilas	AZE	Terter, Alasgarli village	4033-N	04697-E	197	2010	300	40	AZE015	KhK-T7			
14988	AZE	AZE015	AZGR-14991	Prunus	avium	L.	cherry	Agh Krim	UKR	Sheky Supporting Point	4033-N	04697-E	197	2000	300	40	AZE015	KhK-T8			
14989	AZE	AZE015	AZGR-14992	Prunus	avium	L.	cherry	May gilasi agh	AZE	Aghdash, Yukhari Gasli village	4064-N	04751-E	43	1995	300	40	AZE015	KhK-A1			
14990	AZE	AZE015	AZGR-14993	Prunus	avium	L.	cherry	Agh gilas	AZE	Aghdash, Yukhari Gasli village	4064-N	04751-E	44	2003	300	40	AZE015	KhK-A2			
14991	AZE	AZE015	AZGR-14994	Prunus	avium	L.	cherry	Ala gilas	AZE	Aghdash, Yukhari Gasli village	4064-N	04751-E	43	2010	300	40	AZE015	KhK-A3			
14992	AZE	AZE015	AZGR-14995	Prunus	avium	L.	cherry	Gara okuzureyi	AZE	Aghdash, Yukhari Gasli village	4064-N	04751-E	41	2005	300	40	AZE015	KhK-A4			
14993	AZE	AZE015	AZGR-14996	Prunus	avium	L.	cherry	Tezyetishen Krim	UKR	Khachmaz, Gochagli village, y/a	4155-N	04863-E	151	2008	300	20	AZE015	KhK-Kb/1			
14994	AZE	AZE015	AZGR-14997	Prunus	avium	L.	cherry	Napoleon	RUS	Khachmaz, Gochagli village, y/a	4155-N	04863-E	142	1998	300	20	AZE015	KhK-Kb/2			
14995	AZE	AZE015	AZGR-14998	Prunus	avium	L.	cherry	Krim gejvelishen	UKR	Khachmaz, Gochagli village, y/a	4155-N	04864-E	141	2010	300	20	AZE015	KhK-Kb/3			
14996	AZE	AZE015	AZGR-14999	Prunus	avium	L.	cherry	Agh gilas	AZE	Khachmaz, Gochagli village, y/a	4155-N	04863-E	140	1995	300	20	AZE015	KhK-Kb/4			
14997	AZE	AZE015	AZGR-15000	Prunus	avium	L.	cherry	Xrustal	AZE	Khachmaz, Gochagli village, y/a	4155-N	04863-E	141	2005	300	20	AZE015	KhK-Kb/5			
14998	AZE	AZE015	AZGR-15001	Prunus	avium	L.	cherry	Ramon Oliva	FRA	Khachmaz, Gochagli village, y/a	4155-N	04863-E	143	2008	300	20	AZE015	KhK-Kb/6			
14999	AZE	AZE015	AZGR-15002	Prunus	avium	L.	cherry	Tezyetishen Krim	UKR	Khachmaz, Gochagli village, y/a	4156-N	04863-E	134	2005	300	20	AZE015	KhK-Kb/7			
15000	AZE	AZE015	AZGR-15003	Prunus	avium	L.	cherry	Eren Krasnodar	RUS	Khachmaz, Gochagli village, y/a	4155-N	04864-E	137	1992	300	20	AZE015	KhK-Kb/8			

Figure 1. Passport descriptor data of the cherry plant in the MCPD list

## RESULTS and DISCUSSION

In 2017-2020, the research was conducted on 74 varieties and forms of the sweet cherry plant common in the Guba, Khachmaz, Sheki, Tartar, and Aghdash districts of Azerbaijan. The research revealed that 23 sweet cherry varieties and forms are cultivated in Guba, 26 in Sheki, 13 in Khachmaz, 8 in Tartar, and 4 in the Aghdash district.

In our study, sweet cherry (*Prunus avium* L.) samples were evaluated by 22 traits (tree height, trunk diameter (cm), canopy diameter (cm), canopy volume (m<sup>3</sup>), canopy shape, flowering, tree productivity, leaf length, leaf width, leaf petiole length, fruit length, fruit width, stem length, stone mass, pulp mass, stone length, stone width, fruit mass, fruit shape, fruit color, tasting score, and shelf life).

Besides being a perennial tree plant, the varieties of the sweet cherry plant have the ability to produce high yields for 25-30 years, depending on their biological characteristics and rootstock. The indicators of the studied cherry trees are their ages, heights, and the height, diameter of the trunk, and the diameter of the canopy was measured, and the shape of the canopy was determined visually (Table 1). Passport descriptor data of cherry samples were included in the database according to the structure of CDB (Figure 2.).

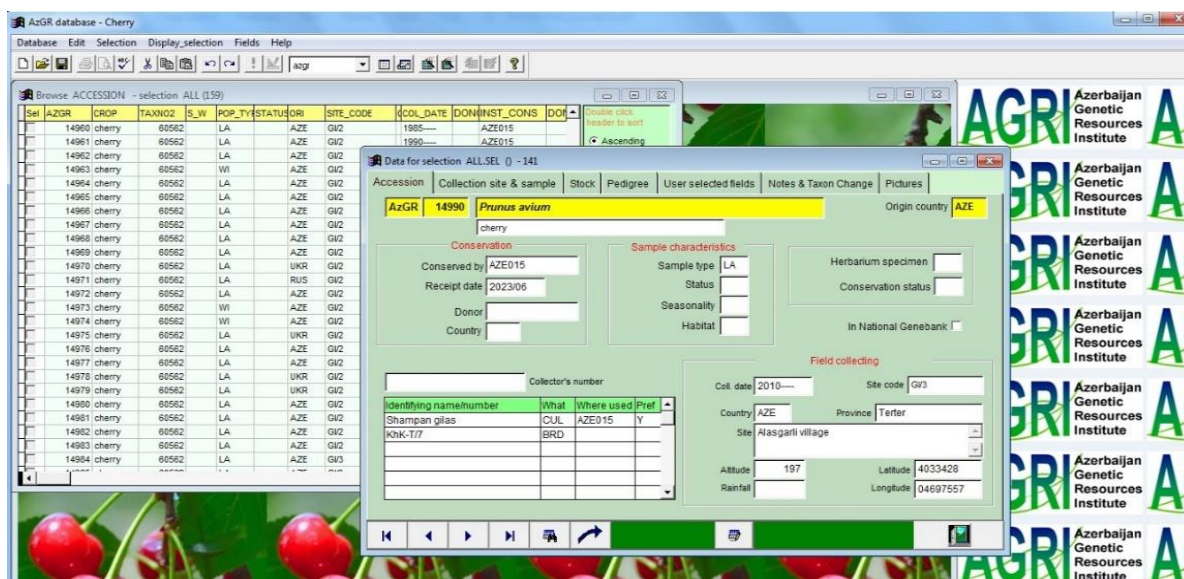


Figure 2. Passport descriptor data of the sweet cherry plant in CDB

Table 1. The main biometric indicators of the sweet cherry plant and the shape of the canopy.

Sweet samples	Tree age	Tree height, m	Trunk diameter, cm	Canopy diameter, cm	Canopy volume, m <sup>3</sup>	Canopy shape	Leaf stalk length (mm)	Leaf length (mm)	Leaf width (mm)
Samba (G1)	4	2.5	12	5.0	32.7	round	40	82.1	42.3
Ziraat009(G2)	4	2.0	10	4.6	22.1	round	39.8	85	41.6
Lapins(G3)	4	3.0	12	6.0	56.5	round	41.1	94.9	48.1
Jyr gilas(G4)	12	7.0	20	6.5	154.7	round	37.7	89.4	40.5
Chahrayi Napoleon(G5)	18	7.0	22	4.5	74.1	oval	44	91.7	45.4
Sary Draqona(G6)	15	6.0	15	6.0	113.0	weeping	39.7	90.2	43.5
Early Kassini(G7)	25	8.0	30	5.5	126.6	pyramid	41.15	81	33.1
Ramon Oliva(G8)	14	5.0	33	5.3	73.5	round	42.3	94.5	39.8
Regina(G9)	4	3.0	12	4.5	31.8	pyramid	42.1	95.2	40.1
Sweet Heart(G10)	3	25	10	4.5	26.5	round	32.9	74	41
Bianka gyozali(G11)	10	6.0	18	6.0	113.0	round	39.2	72.7	31.4
Yellow Denissema(G12)	40	10.0	60	5.8	175.9	round	42.6	99.7	45.1
Jyr gilas-2(G13)	8	3.0	10	4.2	27.7	oval	37.2	82.1	31.7
Bigarro Burlat(G14)	12	5.0	22	4.0	41.8	round	35.4	84	32
Agh gilas(G15)	6	4.0	10	4.2	47.5	round	49.3	90.1	32.4
Early Lory(G16)	5	3.5	12	4.4	36.9	round	40	80.6	33.1
North Vander(G17)	4	3.0	8	4.3	29.0	round	50.6	103.6	50.6
Gara gilas(G18)	20	3.0	30	5.0	39.2	round	37.1	79.5	31.9

May gilasy(G19)	50	11	60	6.2	221.1	round	29.7	64.4	27.8
Crimea(G20)	15	6.0	33	5.8	105.6	pyramid	34.7	76.7	34.2
Gara Napoleon(G21)	20	8.0	22	6.4	171.4	round	36.2	90.7	38.2
Frans Iosif(G22)	8	3.0	15	4.5	31.8	weeping	37	104.3	34.6
Jyr gilasy gara(G23)	10	9.0	20	5.5	142.4	round	37.8	76.5	32.3
Murebbe agh gilasy(Sh1)	15	8.0	32	6.5	176.8	round	37.4	63.7	44.7
Jyr gilasy agh(Sh2)	28	8.5	40	6.2	171.0	pyramid	37.2	75.2	33.6
Gara shabalydy gilasy(Sh3)	35	5.0	40	6.0	94.1	round	40.6	94	46.6
Gara gilasy (Sh4)	30	5.5	72	6.4	117.8	round	42	120	51.5
Ala gilasy(Sh5)	20	7.0	15	4.5	74.1	weeping	44	98.5	49.9
Jyr gilasy kesikli(Sh6)	25	6.0	20	6.0	113.0	round	32.8	86	54.3
Okuzureyi agh(Sh7)	30	4.0	38	6.0	75.3	oval	36.88	85.1	44
Okuzureyi gara(Sh8)	33	5.0	70	5.8	88.0	round	46	122	60
Gyzyl gilasy(Sh9)	33	8.0	75	4.5	84.7	round	37	110.5	49.5
Kahraba gilasy(Sh10)	20	10	20	5.2	141.4	pyramid	38.5	108	40
Alyj gilasy(Sh11)	18	4.5	35	4.8	54.2	round	39	114	55
Agh gilasy(Sh12)	10	4.0	30	6.0	75.3	pyramid	38.7	114.5	63.5
Crimea(Sh13)	4	2.5	25	5.4	38.1	round	33.4	109	42
Napoleon(Sh14)	20	10	30	6.1	194.6	round	41.5	121	68.3
Bally gilasy(Sh15)	35	6.0	72	6.0	113.0	round	30.4	87.9	44.1
Jyr gilasy ajy(Sh16)	40	7.0	45	6.3	145.3	weeping	52	121	51.5
Jyr gilasy-2(Sh17)	30	6.5	40	6.0	122.4	round	37.5	71	42.5
Mayovka gyrgyzy(Sh18)	4	1.5	30	4.8	18.1	oval	31	98.5	52.8
Dumagh gilasy(Sh19)	17	8.0	75	6.0	150.6	round	36.5	81.8	41.4
Albaly gilasy(Sh20)	20	5.0	45	5.8	88.0	round	33.8	79	52
Mayovka chil-chil(Sh21)	10	6.0	30	6.0	113.0	pyramid	43.8	119	65.5
Gara Mayovka(Sh22)	8	7.0	24	5.8	123.2	pyramid	30	107.5	48.5
Sary gilasy(Sh23)	18	8.0	45	6.3	166.1	oval	34.7	77.9	41.9
Albaly gilasy agh(Sh24)	15	6.0	32	6.0	113.0	round	37.9	90.4	41.2
Sary uzun gilasy(Sh25)	20	8.0	45	5.8	140.7	pyramid	33.5	81.4	40.2
Guzugyoran gilasy(Sh26)	35	7.5	50	6.2	150.8	round	38.5	98.5	51.5
Gara Okuzureyi(T1)	17	4.5	35	5.8	79.2	round	42.1	91.8	33.5
Zoghaly(T2)	15	5.0	35	6.0	94.1	round	36.5	75.8	40.1
Chal Crimea(T3)	12	8.0	25	5.7	135.9	oval	33.1	89.8	32.1
Gara Okuzureyi(T4)	20	6.0	40	5.4	91.5	round	33.5	90.3	38.6
Jyr gilasy(T5)	18	7.0	36	6.0	131.8	round	33.8	80.9	37.7

Chahrayi Napoleon(T6)	22	90	50	6.2	180.9	round	37.5	80.6	35.3
Shampan gilasi(T7)	10	5.5	30	5.0	71.9	pyramid	30	86.7	34.1
Agh Crimea(T8)	20	6.0	32	5.8	105.6	round	33.6	80.6	36.5
May gilasi agh(A1)	25	55	40	5.5	87.0	oval	33	85	37.6
Agh gilasi(A2)	17	65	25	5.5	102.8	round	37.2	88.5	37.9
Ala gilasi(A3)	10	45	15	4.4	45.6	round	38.2	80.4	39.3
Gara Okuzureyi(A4)	15	7.0	20	5.2	99.0	round	39.2	95.7	51.3
Crimea gyrgyzy(Kh1)	12	6.5	15	6.0	122.4	round	33.8	82.7	38.7
Napoleon(Kh2)	22	5.5	38	6.3	114.2	round	34.9	93.3	43.7
Crimea gejyetishen(Kh3)	10	5.0	18	4.8	60.2	round	38.1	98.6	42.7
Agh gilasi(Kh4)	25	4.0	44	4.2	36.9	round	40.6	97.3	42.7
Khrustal(Kh5)	15	7.0	20	5.4	106.8	weeping	36.8	92.2	43.4
Ramon Oliva(Kh6)	12	6.5	18	6.2	130.7	pyramid	42	92.7	46
Crimea tezyetishen(Kh7)	15	7.0	25	5.3	102.8	round	39.6	92.1	47.9
Erkan Krasnodar(Kh8)	28	10.0	90	5.3	146.9	round	40.2	90.2	41.8
Jyr gilasi(Kh9)	35	9.0	95	6.2	180.9	round	33.7	71.6	38.1
Alyanag(Kh10)	30	11.0	100	6.1	214.0	round	33.4	91	47.3
En gejyetishen Crimea(Kh11)	20	9.0	38	5.9	163.9	round	39.8	85.7	45.1
Gara Krymson(Kh12)	15	8.0	20	6.0	150.6	round	42.9	88	50.4
Regina(Kh13)	8	6.0	15	6.0	113.0	pyramid	36	86.3	46.2

\*Guba-G; Sheki-Sh; Terter-T; Agdash-A; Khachmaz-Kh

As seen in Table 1, sweet cherry samples can be divided into 3 groups according to their age. The first group includes varieties aged between 4 and 20 years. They are Samba, Lapins, Ziraat 0900, Jyr gilasi (G), Chahrayi Napoleon (G), Sary Drogana, Ramon Oliva (G), Regina (G), Sweet Heart, Bianka gyozeleli, Jyr gilasi-2 (G), Bigarro Burlat, Agh gilasi (G), Early Lory, North Vander, Crimea (G), Frans Iosif, Jyr gilasi gara (G), Murebbe agh gilasi, Alyj gilasi, Agh gilasi (Sh), Crimea (Sh), Mayovka gyrgyzy (Sh), Dumagh gilasi, Mayovka chil-chil, Gara Mayovka, Sary gilasi, Albaly gilasi agh, Okuzureyi gara (T), Zoghaly, Chal Crimea, Jyr gilasi (T), Shampan gilasi, Agh gilasi (A), Ala gilasi (A), Okuzureyi gara (A), Crimea gyrgyzy (Kh), Crimea gejyetishen, Chrustal, Ramon Oliva (Kh), Crimea tezyetishen, Gara Krymson, and Regina (Kh).

Sweet cherry varieties aged from 20 to 30 years are included in the second group, which are Tezyetishen Kassini (G), Gara gilasi (G), Gara Napoleon (G), Jyr gilasi agh, Ala gilasi, Jyr gilasi kesikli, Kahraba gilasi, Napoleon (Sh), Albaly gilasi yumru, Sary Uzun gilasi, Okuzureyi gejyetishen gara, Chahrayi Napoleon (T), Agh Crimea (T), May gilasi (A), Napoleon (Kh), Agh gilasi (Kh), Erkan Krasnodar, En gejyetishen Crimea.

The third group includes 30-50-year-old sweet cherry varieties and forms, such as Yellow Denissema, Gara gilasy yerli, Okuzureyi agh (Sh), Okuzureyi gara, Gyzyl gilasy, Bally gilasy, Jyr gilasy aji, Jyr gilasy-2 (Sh), Guzuygoren gilasy, Jyr gilasy (Kh), and Alyanag gilasy.

The height of the tree varies from 1.5 to 11 m. May gilasy (G) and Alyanag varieties had a height of 11 m. The lowest indicator (1.5) was observed in the Mayovka gyrgyzy (Sheki) variety. This can be attributed to the fact that the tree is relatively young (about 4 years old).

The cherry varieties differed also in the diameter of the trunk and canopy. The trunk diameter varied between 8-100 cm. The North Vander variety showed the smallest size, while the Alyanag variety manifested the highest indicator.

The sun is known to be the source of light. Sunlight ensures the process of photosynthesis in plants. Different canopies of cherry cultivars have been formed to use the ambient light in a beneficial way (Khurt et al., 2006a). Other light-related factors also play a significant role. Kassini, Regina, Krim, Agh gilasy, Mayovka, Sary Uzun gilasy, Shampan gilasy, and Ramon Oliva which are fast-growing varieties with long trunks, formed pyramidal canopies using more sun.

Pyramid-shaped canopies were found in 12 samples, oval-shaped in 7 samples, weeping-shaped canopies in 5 samples, and round-shaped canopies in 50 samples.

To ensure normal fruit growth, it is necessary to perform agrotechnical works in time, taking into account soil and climatic conditions, and pomological features of the variety. During the period of growth and ripening of fruits, the demand for nutrients increases in trees. In this period, the timely application of feeding fertilizers causes a sufficient accumulation of biochemical substances thereby enabling the formation of high-quality fruits. In the study, the pomological and quality indicators of the fruits of 74 varieties and forms of cherries were evaluated and results are shown in Table 2.

**Table 2.** Pomological and quality indicators of sweet cherry fruit.

V	v1	v2	v3	v4	v5	v6	v7	v8	v9	v10	v11
G1	24.50	28.60	39.50	0.93	10.12	10.7	9.7	11.2	5	7	pitch black
G2	21.40	25	35.5	0.75	7.13	8.6	9.7	7.58	5	5	pitch red
G3	25.4	26.9	53.5	0.9	8.78	11.6	8.7	9.7	5	8	black
G4	18.3	19.8	44.6	0.56	3.6	9.4	8.4	4.18	4	5	blackish- red
G5	21.1	24.1	41.9	0.69	6.31	10	8.6	7.02	5	4	pink-yellow
G6	21.6	26.1	36	0.75	7.06	10.1	9.2	7.83	5	5	yellow
G7	20.15	22.7	41.5	0.48	5.77	9.8	8.8	6.25	4.5	4	pitch red
G8	26.6	24.7	35.8	0.49	6.39	10	9	6.94	5	7	blackish-red
G9	23.5	24.1	44.3	0.82	7.01	11.2	8.7	7.86	5	8	black-red
G10	21.4	25.2	31.4	0.5	6.78	8.2	8	7.27	5	6	red
G11	21.6	22.9	43.7	0.49	6.59	9	9	7.08	4	4	yellow with a golden hue on one side
G12	19.9	22.1	42.2	0.66	4.44	10.4	9.2	5.14	5	4	yellow



G13	14	14.5	41.2	0.27	25.2	5.9	5.9	2.79	2	3	light pink
G14	20.9	18.8	35.9	0.57	5.68	7.9	7.9	6.24	3.5	5	light red
G15	20.6	18.1	54	0.55	6.46	8.3	7.5	6.99	4	6	white
G16	18.5	21.1	32.1	0.43	5.14	7.7	8	5.58	4.5	5	red
G17	21	22.3	45.2	0.66	5.5	10.3	8.7	6.2	5	4	dark blackish-red
G18	17.6	16.4	40.9	0.47	5.6	6.88	6.9	6.07	5	5	black
G19	17	19	37.4	0.41	4.95	7.4	6	5.36	4	6	scarlet
G20	18.4	20.8	38	0.55	6.29	8.8	8.5	6.82	5	7	light red
G21	21.5	24.3	34.8	0.6	6.39	9.7	9.5	6.97	5	6	pitch red
G22	17.8	21	31.7	0.44	5.19	7.9	7.9	5.62	4.5	5	yellowish-red
G23	11.5	11.9	51.5	0.3	1.58	6.8	6.9	1.88	2.5	4	black
Sh1	18.9	19.9	40.5	0.5	5.5	9.6	6.8	6	5	7	yellowish-white
Sh2	12.1	12.1	46.4	0.22	4.16	6.4	5.7	4.46	4	7	white
Sh3	19.7	20.6	50.6	0.6	6.05	9	6	6.5	4	6	chestnut red
Sh4	15.7	23.9	56	0.6	4.2	8.2	6.3	4.8	5	5	pitch black
Sh5	15.1	15.8	55.5	0.29	3.08	7.5	5.8	3.4	5	5	orange-yellow
Sh6	16.8	13.8	57.4	0.4	2	9.5	6	2.4	3.5	6	blackish-red
Sh7	20.7	20.6	37.1	0.68	8.3	10	9.6	8.98	5	7	white
Sh8	20.8	20.4	51.5	0.4	5.9	8.7	6.9	6.4	5	6	pitch black
Sh9	19.2	19.7	47.5	0.4	5.3	9.1	6	5.72	5	5	scarlet, yellow with a golden hue on one side
Sh10	15.6	16.5	52.5	0.43	3.14	7.9	6.9	3.9	4	7	golden yellow
Sh11	20.9	23.9	41	0.5	8.9	7	8.6	9.4	5	6	pitch red
Sh12	17.3	19.5	53	0.5	4.8	6.6	7.9	5.3	4	8	yellowish-white
Sh13	20.5	19.7	51.5	0.48	6.15	6.5	9.8	6.6	5	5	blackish-red
Sh14	15.5	18.6	56.8	0.36	3.9	8	6.3	4.27	4	6	pink
Sh15	18.2	18.4	31	0.5	6.85	7.9	7.75	7.35	5	6	blackish-red
Sh16	16.7	15.6	46.3	0.3	3.3	6	9.6	3.7	2.5	7	black
Sh17	15.6	16.4	51.2	0.4	3	7	8.8	3.27	3	6	red
Sh18	22	24.9	55.5	0.5	8.6	6.9	9.4	9.1	5	5	blackish-red
Sh19	15.2	15.1	52.2	0.42	6.15	6.19	6.17	6.57	5	7	white
Sh20	15.1	19.5	41	0.45	4.17	6.7	6.4	5.1	4	6	pitch red
Sh21	20.8	18.6	35.3	0.6	4.5	9.5	7.6	5.07	5	6	scarlet
Sh22	13.8	16	53	0.4	2.9	6.2	6.5	3.3	5	5	black
Sh23	14.2	14.4	48.2	0.35	5.62	66.3	6.2	5.97	4.5	7	yellow
Sh24	14.7	14.7	41.8	0.42	5.09	6.1	5.7	5.51	3	7	orange-red
Sh25	20.3	16.3	50.1	0.57	7.07	10.6	8.8	7.62	5	6	dark yellow
Sh26	18.3	18.2	63.3	0.4	4.4	6.5	8.5	4.8	5	5	pitch red
T1	25.3	27.3	32	0.66	7.62	9.3	9.7	8.28	5	7	blackish-red
T2	16.4	11.7	51.1	0.56	4.8	9.3	5.9	5.36	3.5	5	pitch red
T3	16.5	16.5	35.4	0.46	5.81	7.8	6.7	6.27	5	6	yellow with a golden tint on one side
T4	25.7	23.7	34.7	0.64	8.41	10.3	9.6	9.05	5	5	blackish-red
T5	7.6	7.3	30.2	0.28	1.54	5.6	5.9	1.82	3.5	7	black
T6	17.4	15.9	50.7	0.45	5.99	7.9	7.4	6.44	4	6	glowing orange- red
T7	19.9	21.2	40.4	0.64	6.98	8.5	8.8	7.6	5	6	pitch red
T8	15.9	15.4	45.8	0.48	6.18	7.9	7.5	6.7	5	6	white
A1	15.1	14.8	40.4	0.14	5.23	6.5	6.6	5.63	4	6	whitish-yellow
A2	18.4	17.7	51.9	0.56	6.85	8.1	8.1	7.4	5	5	pure white
A3	16.2	16.7	43.5	0.42	6.07	8.3	7.9	6.49	5	6	light yellow,
	20.5	23.8	29.9	0.63	8.87	10.4	9.7	9.5			

A4									5	5	black
Kh1	22.7	23	44.6	0.73	6.68	11	8	7.41	5	5	red
Kh2	23.8	25.4	47.5	0.77	7.1	10.8	8.7	7.87	4	7	light-red
Kh3	21	24.1	43.5	0.73	5.18	11	8.4	5.91	5	6	pitch-red
Kh4	29.4	21.2	24.3	0.61	6.92	10.2	8.3	7.53	5	7	white
Kh5	20.8	24.7	55	0.77	7.37	11.1	9.8	7.99	4	6	red
Kh6	23.9	25.9	40.5	0.82	7.81	10.6	8.5	8.63	5	7	dark-blackish-red
Kh7	22	23	50	0.67	7.96	10	8	8	5	6	black
Kh8	21.7	22.5	48.1	0.67	8.43	10.2	9.7	9.1	5	7	black
Kh9	10.7	11.3	42.8	0.21	0.8	7.9	9.9	1.01	3.5	6	black
Kh10	28.8	18.2	41.1	0.66	3.22	10.9	7.8	3.85	5	4	yellow, golden tint
Kh11	23.51	22	48.2	0.65	6.25	12.6	8.5	6.9	4.5	7	red
Kh12	21	21	37	0.61	5.54	10	8	6	5	5	black
Kh13	20.2	22.4	54.6	0.74	5.24	11.7	8.9	5.96	4.5	6	yellow-orange

V-sweet cherry samples; v1- fruit length; v2-fruit width (mm); v3- stem length (mm); v4- stone mass (gr); v5- pulp mass (gr); v6-stone length (mm); v7-stone width (mm); v8- fruit mass (gr); v9- tasting score (points); v10- shelf life (days); v11- fruit colour

The length of the fruit varied between 7.6mm and 29.4 mm depending on the varieties. The highest indicator was observed in the Agh gilas (Kh) variety and the lowest in the Jyr gilas (T) form.

The width of the fruit was also different. Jyr gilas (Kh) form had the lowest index of 11.3 mm, and the Samba variety had the highest index of 28.6 mm.

Along with other parameters, the length of the fruit stalk was also studied. This size ranged from 30.2 to 63.3 mm, the shortest stalk was found in the Jyr gilas (T) form and the longest in the Guzugyoren gilas variety.

The mass of the fruit varied between 1.01g and 11.2 g. Thus, the fruit with the smallest mass was observed in the form of Jyr gilas (Kh), and the fruit with the highest mass was observed in the Samba variety.

Some quality indicators of the fruit, such as taste, color, and shape were also studied in the cherry samples (Table 2).

The passport descriptor and characterization data of 74 samples of sweet cherry (*Prunus avium* L.) were initially checked by us, brought to a standard format, and collected in Excel tables. These data were compiled in the tables under the same name of the characterization database created for cherry (name in the database *Prunus avium* L.) samples in order to be reflected in the CDB and to be integrated into international databases in the future (Kalantarova et al., 2023). The table showing the traits in the characterization base of the cherry plant is shown in Figure 3.

The screenshot displays the AzGR database interface. The main window shows a table titled 'CHARACTERIZATION - selection ALL (159)'. The table columns are: Sel, AZGR, H\_TREE, D\_TRUNK, D\_CANO, VOL\_CAN, T\_HAB, FLOW, HARVE, L\_FRUIT, W\_FRUIT, F\_SIZE, F\_SHA, L\_ST, F\_SK, TAST, EN. The table contains 159 rows of data. A context menu is open over the table, showing options: Double click header to sort, Ascending, Descending, Sort, Copy, Print preview, Statistics, Filter, Exit, and Select rows. The background of the software window shows a close-up of red sweet cherries.

**Figure 3.** Fields Of Sweet Cherry Plants In The Characterization Base And Their Explanations

Using the latest international specification standards, the field name indicating the characteristics in that data is recorded in the header parts of the table we created. Sometimes the names of the characteristic fields are shortened to fit less space in the database due to the fact that they contain many characters. The names of the characteristic fields of the characterization tables are written in English abbreviations. These abbreviations are also considered the code for that field. Sometimes these codes make it difficult to understand the meaning of many traits. Therefore, the explanation of abbreviated traits is placed in the area reserved for abbreviations in the database.

## CONCLUSIONS

As the carriers of genes and gene complexes resistant to stress factors, the genetic resources of plants, particularly those of wild species and their populations, folk selection varieties, and forms, can help solve problems in the present as well as the future. Plant genetic resources are characterized and databases are established for this purpose.

Thus, for the first time, the passport descriptor data of 74 varieties and forms of the sweet cherry plant were documented according to international standards and submitted to the Central Database (CDB) of the Institute of Genetic Resources of MSE AR. A collection of characteristics of the sweet cherry plant was also created according to 22 traits following the standard of "Descriptor lists", established by the International Institute of Biodiversity and included in the database for the sweet cherry samples of CDB.

Researching the data in the cherry sample characterization databases, finding important genes and creating reports using the database are all very useful. It makes sense to apply it to new variety development in the subsequent breeding programs.

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