

Taxonomic composition and distribution of oat (*Avena* L.) species in Azerbaijan

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The article provides information on the taxonomic composition, distribution, and importance of the species of oat (*Avena* L.) in Azerbaijan. Currently, the distribution of 9 oat species (*A.eriantha*, *A.clauda*, *A.strigosa*, *A.barbata*, *A.ventricosa*, *A.fatua*, *A.sterilis* subsp. *ludoviciana*, *A.byzantina*, *A.sativa*) in our republic has been confirmed based on literary sources, fund and expedition materials. Seven species were collected out of nine species. During the expedition, new distribution areas of 4 species collected (*A.eriantha*, *A.clauda*, *A.barbata*, *A.fatua*) were discovered. The data on the priority names of species, major synonyms, distribution, main bioecological features, and was given. The status of a number of species has also been clarified in the article. The article also presents the research results on the biomorphological assessment of species based on descriptor data. Species distribution was mapped using the DIVA-GIS computer program.

Keywords: Azerbaijan, oat, area, biotope, species, genus, systematics

INTRODUCTION

Currently, 25 species of oat (*Avena* L.) are distributed mainly in the ancient Mediterranean countries (Loskutov, 2007). 12 species of oat have been recorded in the Caucasus (Grossheim, 1939), 18 in the former USSR (Rozhevitz, 1934), 10 in Eastern Europe (Tsvelev, 1976), 8 in Armenia (Gabrielyan, 2009), and 7 in the flora of Iran (Sheidai et al., 2002). "Flora of Azerbaijan" (Karyagin, 1950) provides information about 11 species and 17 genotypes of the genus *Avena* L. Subsequently, S. Musaev (Musaev, 1971, 1991) and other botanists identified several additional oat species (*A.strigosa*, *A.hirtula*, *A.ventricosa*, *A.byzantina*, *A.orientalis*, *A.sterilis*) in Azerbaijan. Recent studies have identified the distribution of 15 oat species in Azerbaijan (Asgarov, 2016).

There are differing opinions among scientists regarding the macrotaxonomic classification of

the genus, specifically its division into subgenera and sections. Some botanists have divided the genus into subgenera and sections (Malzew, 1930; Loskutov, 2007; Fu Y.-B., 2018).

A review of the literature reveals that oat species identification has been based on various approaches, including biochemical (Shelukhina et al., 2008), karyological (Rajhathy and Morrison, 1959), palynological (Ladizinsky and Zohary, 1971; Coffman, 1977), anatomical (Seyfi and Zarinkamar, 2007), molecular-genetic (Kubiak, 2009; Peng et al., 2010), micromorphological studies of seeds (Baum and Hadland, 1975), and macromorphological studies (Ladizinsky, 2012).

The main purpose of this study is to determine the taxonomic composition of oat species (*Avena* L.) distributed in Azerbaijan, study their botanical and geographical positions, and investigate their potential uses based on fund and expedition data.

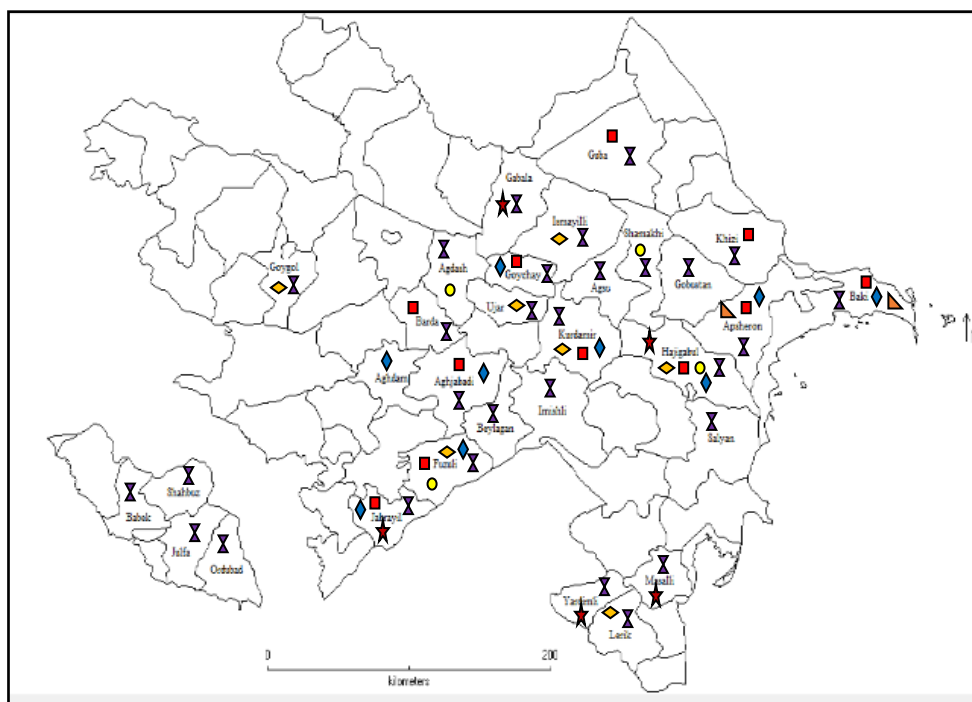


Fig. 1. Distribution map of collected species:

■ - *A. eriantha*, ● - *A. clauda*, ◆ - *A. barbata*, ▲ - *A. ventricosa*, ◇ - *A. fatua*, ✕ - *A. sterilis subsp. ludoviciana*, ★ - *A. sativa*

MATERIALS AND METHODS

Comparative morphological, floristic, biomorphological, systematic, phytocenological, and experimental methods were employed in this research.

During expeditions to various regions of Azerbaijan from 2019 to 2024, herbarium materials of oat species were collected, analyzed, and identified under controlled conditions. Herbarium samples stored in the Herbarium collections of the Institute of Botany of MSERA (BAK) and the Institute of Genetic Resources (AGRI) were analyzed.

The International Botanical Code (Austria, Vienna, 2005) and international databases (WFO, IPNI) were used as references for clarifying nomenclature issues. The works of Karyagin (Karyagin, 1950), A.Asgarov (Asgarov, 2016) and S.Musaev (Musaev, 1991) were consulted for species identification.

Species distribution was mapped using the DIVA-Gis computer program.

The distribution of species of the genus *Avena L.* in Azerbaijan is given in the botanical-geographical regions adopted by "Flora of Azerbaijan" (Prilipko, 1950) and A.M.Asgarov (Asgarov, 2016).

RESULTS AND DISCUSSION

In order to study the distribution and biocological characteristics of Oat species in Azerbaijan, monitoring was carried out in different areas distinguished by certain ecogeographical characteristics. Furthermore, recent studies have documented the distribution of 9 oat species in semi-desert regions, sandy soils, arid and rocky slopes, and areas up to the middle mountain range in the flora of Azerbaijan. A distribution map of collected species was given (Figure 1).

Genus *Avena L.* 1753, Sp.Pl. :79; id. 1754, Gen. Pl., ed. 5: 34

Lektotip: *A. sativa L.*

The inflorescence is a rather open panicle or

it is one-sided. Spikelets are large, 2-4-flowered, laterally compressed; on a long, often curved pedicle from the upper part. Glumes are large, 7-9-nerved, lemma lanceolate Lemma serrate at the summit, 2-toothed or 2-awned, with a stout awn from the back, more rarely awnless. Annual.

Subgenus Avena

I. Sect. Aristulatae

1. *A.eriantha* Durieu 1845, in Duchartre, Rev. Bot. 1: 360; Asgarov 2016, The plant world of Azerb. :116. - *A.pilosa* Bieb., 1819, Fl. Taur-cauc., III Suppl.: 84; Karyagin 1950, Fl. of Azerb., I:204; Loskutov 2007, Oat (*Avena* L.): 101. - Soft-flowered oat.

Typus: Algeria ("les memes lieux que *A.clauda*").

Annual. It is distributed in sub desert zones of Efemerli, dry grass, clay and stony, sandy places and in the slope, fields, roadsides. It blooms in April and bears seeds in May (Fig. 2).

Absheron, Samur-Shabran lowland, Gobustan, Bozqir plateau, Kur-Araz lowland, Kura plain.

Type in The Eastern Mediterranean. $2n=14$.

During the expedition, a new distribution area of this species was discovered: Guba distr., Dagli vill., roadside, N41°22'22", E48°30'05", H 651m.

The following populations of the *A.eriantha* species have been discovered in other areas of the republic: Absheron distr.: Digah vill., meadow, N40°29'52", E49°52'47", H 25 m; Mehdiabad road, N40°29'42", E49°52'42", H 30 m; Gala-Turkan road, roadside, N40°25'32", E50°13'50", H 8 m; Zira vill., roadside, N40°21'38", E50°16'33", H -14 m; Novkhani road, roadside, N40°31'10", E49°48'11", H 24 m.; Binagadi distr., around the Vegetable Institute, roadside, N40°31'06", E49°52'08", H 44 m.; Hajigabul distr.: Pirsaat vill., roadside, N40°02'.25", E49°02'27" H 76 m; Qizilburun vill., roadside, N39°59'18", E49°12.28", H 15 m; Navai vill., roadside, N40°02'01", E49°05'13", H 45m; Kurdamir road, roadside, N40°11'25", E48°35'30", H-12 m; Khizi distr., Bakhishli vill. surroundings, forest, N40°54'07", E48°59'10", H 778 m; Goychay distr., Mirzahuseynli vill., N40°39'13", E47°39'31", H 167 m; Agjabadi distr., surroundings of Aghgol reserve, N39°57'16", E47°33'24", H 28 m; Barda distr., Yeni

Tashkent vill., mowing field, N40°23'31", E47°02' 05", H 132 m.; Jabrayil distr., Chocuq Marcanli, the edge of the sowing area, N 39°23'35", E 47°18'18", H 151m.; Fuzuli distr., Alkhanly vill., hayfield, N 39°35'27", E 47°20'13", H 270 m. (Fig. 2).

It is used as livestock feed with other annual plants in pastures. After inflorescence and seed, its nutritional value decreases (Gadzhiev, 1965).



Fig. 2. *A.eriantha* -Soft-flowered oat. (Barda district, Yeni Dashkend village, 17.05.2023).

2. *A.clauda* Durieu 1845, in Duchartre, Rev. Bot. 1: 360; Karyagin 1950, Fl. of Azerb., I:204; Loskutov 2007, Oat (*Avena* L.):101; Asgarov 2016, The plant world of Azerb.:116. - Suspicious o.

Typed in Algeria, the supposed isotype: "Algerie, Mascara, 1844, Durieu" (LE).

Annual. It is distributed in the lowlands and foothills, on dry lands and on the slopes of semi-desert zones. It blooms and bears seeds in May.

Absheron, Kur-Araz lowland, Greater Caucasus (Guba).

Type in The Ancient Mediterranean. $2n=14$.

During the expedition, a new distribution area of this species was discovered: Shamakhi distr., Meysariyya vill., roadside, N40°38'47", E48°37'29", H 782 m.

Five populations of the *A.clauda* species have also been discovered in other areas of the republic: Agdash distr.: Khosrov vill., roadside, N40°37'19", E47°34'27", H 40 m; Shordahna vill.,

roadside, N40°37'25", E47°31'57", H 36 m; Hajigabul distr., Qizilburun vill., roadside, N39°59'18", E49°12.28", H 15 m; Fuzuli distr., Ashagi Kurdmahmudlu vill., hayfield, N 39°35'21", E 47°28'33", H 172m.; Fuzuli distr., Alkhanly vill., hayfield, N 39°35'27", E 47°20'13", H 270 m. (Fig. 3). The nutritional value of the plant is low, due to its low prevalence (Gadzhiev, 1965).



Fig. 3. *A. clauda* - Suspicious o. (Fuzuli district, Alkhanly village, 20.05.2024)

3. *A. strigosa* Schreb. 1771, Spicil. Fl. Lips.: 52; Loskutov 2007, Oat (*Avena L.*):105; Asgarov 2016, The plant world of Azerb.:116. – Hard hairy o.

Typus: Germany (Leypsiq) ("Inter *Avenam sativam* frequens occurrit, neglecta agricolisque ignota"). Type in Germany (Munich).

Annual. It is distributed on the coastal sands of Absheron, Lankaran. It blooms in May and bears seeds in July.

Type Mediterranean. 2n=14.

4. *A. barbata* Pott ex Link, 1800, Journ. Bot. (Götting.) 2:315; Karyagin 1950, Fl. of Azerb., I:205; Loskutov 2007, Oat (*Avena L.*):106; Asgarov 2016, The plant world of Azerb.:116. - *A. wiestii* Steud. 1854, Syn. Pl. Glum. 1: 231; Karyagin 1950, Fl. of Azerb., I:206; Loskutov 2007, Oat (*Avena L.*):104; Asgarov 2016, The plant world of Azerb.:116. - *A. malzewii* Tzvel. 1993, Bot. jour. 78, 10: 89; Asgarov 2016, Flora

of Azerb.:116.- *A. barbata* var. *caspica* Hausskn. 1894, Mitt. Thüring. Bot. Ver., N. F. 6:41, 45. - *A. hirtula* auct. non Lag.: Musaev, 1969, Reports of the Acad. of Sciences of Azerb., 25, 10: 61. - *A. hirtula* Lag. 1816, Gen. Sp. Pl.:4; Loskutov 2007, Oat (*Avena L.*):104. - Slender wild o.

Typus: It is considered a specimen known in Portugalia ("wächst in deutschen Garten"). According to the records of N. Tsvelev, this species was described in Egypt (Tsvelev, 1976).

Annual. It is distributed in the lowlands, sometimes in the lower mountain belt, coastal sands, river beds, on dry rocky slopes, and on the edges of crops. It blooms in May and bears seeds in July.

Absheron, Samur-Shabran lowland, Gobustan, Alazan-Ayrichay valley, Kura-Araz lowland, Kura plain, Lesser Caucasus (south), Diabar, Lankaran lowland.

Type Mediterranean. 2n=28.

During the expedition, 2 new distribution areas of this species were discovered: Agjabadi distr., Khojavand vill., forest surroundings, N40°02'20", E47°24'17", H 31m.; Khachmaz region, Agatala village, right bank of the Shollar water pipeline, railway area, garden areas.

The following populations of the *A. barbata* species have been discovered in other areas of the republic: Balakhani, between oil rigs, N40°27'57", E49°56'23", H19 m; Mehdiabad-Pirshaghi road, roadside, N40°31'52", E049°52'44", H 29 m; Zira vill., roadside, N40°21'38", E50°16'33", H -14 m; Pirallahi distr., seaside, N40°27'16", E50°20'05", H-9m; Mardakan settlement, roadside, N40°27'34.576", E50°10'11.237", H8m; Pirallahi distr., Chilov island, fieldside, N40°19'16", E50°36'10", H-43 m; Yasamal distr., around the Residential Complex, roadside, N40°22'42", E49°47'52", H 98 m; Goychay distr., Garamaryam vill., roadside, N40°37'07", E48°01'08", H162 m; Hajigabul distr., Qizilburun vill., roadside, N39°59'18", E49°12.28", H 15 m; Aghdam distr., Abdal Gulabli village, N39°52'57", E46°56'48", H554m.; Jabrayil distr., Chocuq Marcanli, the edge of the sowing area, N39°23'35", E47°18'18", H151m.; Fuzuli-Khojavand road, meadow, N39°36'13", E47°07'39", H462 m. (Fig.4).

This species of oat is considered to be a good pasture and hay crop (Gadzhiev, 1965).

Note: The species *A.malzevii* Tzvel. was described from Azerbaijan. It is described from Azerbaijan. Typus: "Баку, 2 V 1893, В. Липский" (LE).



Fig. 4. *A.barbata* – Slender wild o. (Agjabadi district, Khojavand village, 16.05.2023).

Russian botanist Lipski collected *A.barbata* var.*caspica* Hausskn. as a genotype of *A.barbata* on the basis of a herbarium specimen, collected around Baku in 1893. N. Tsvelev studied the specimens stored in St. Petersburg and accepted this species as an independent species. According to Tsvelev, the plant known as *A.hirtula* auct.non Lag. is a species *A.malzevii* Tzvel. However, the WFO currently lists this species as a synonym of *A.barbata*.

5. *A.ventricosa* Bal. ex Coss. 1854, Bull. Soc. Bot. Fr. I: 14; Musaev 1991, Cereals of Azerb.:102; Loskutov 2007, Oat (*Avena* L.) : 102; Asgarov 2016, The plant world of Azerb.:116. – *A.bruhnsiana* Grun. 1867, Bull.Soc.Nat. Moscou, 40, 4: 458; Karyagin 1950, Fl. of Azerb., I:205; Loskutov 2007, Oat (*Avena* L.) :102; Asgarov 2016, The plant world of Azerb.:116. – Blistered o.

Typus: "Lieux incultes de l'Algerie occidentale", Balansa.

Annual. It is distributed in coastal sands. 2n=14.

Absheron.

During the expedition, 4 populations were discovered: Balakhani, between oil rigs, N40°27'57", E 49°56'23", H 19 m; Zira vill.,

roadside, N40°21'38", E50°16'33", H-14 m; Pirallahi distr., seaside, N40°27'16", E50°20'05", H-9m; Pirallahi distr., Chilov island, fieldside, N40°19'16", E50°36'10", H-43 m. (Fig.5).



Fig. 5. *A.ventricosa* – Blistered o. (Khazar district, Zira village, 06.05.2023)

The distribution area is not large. Moderately significant as a forage crop.

Note: *Avena bruhnsiana* was described from Azerbaijan. It was considered an endemic species.

Typus: "Mare Caspi, Pyralaia, 24 IV 1864, A.Bruhns" (LE).

L.F. Gruner collected this species from Absheron (Artyom Island) in 1867 and described it as an endemic species for Azerbaijan under the name *Avena bruhnsiana* Grun. Rajhathy insisted that this species was a species of Shingles oat (*A.ventricosa* Bal.). However, as a result of the analysis of collected and herbarium specimens, it became clear that *A.bruhnsiana* Grun. is an endemic plant to the flora of Azerbaijan.

According to S.Musaev (Musaev, 1971), in Absheron, in the coastal sands can be found a species of oat - *A.ventricosa* Bal. which differs by its short glumes and callus, along with *A.bruhnsiana* Grun. S. Musaev (Musaev, 1971) showed that this species is distributed in other regions of the Caucasus too.

The author of a monograph of the genus "Oat (*Avena* L.) distribution, taxonomy, evolution and breeding value" I.Loskutov concludes that the primary distribution center of the *A.ventricosa*

Bal. ex Coss. species described in Algeria is Algeria, near the city of Oran, at an altitude of 200 m above sea level (Loskutov, 2007). According to unconfirmed data, the second center of the species is Iran.

Loskutov did not mention in his monograph the distribution of this species in Azerbaijan.

However, the WFO currently lists this species as a synonym of *A. ventricosa*.

Sect. II. *Denticulatae*

6. *A. fatua* L. 1753, Sp.Pl.:80; Karyagin 1950, Fl. of Azerb., I:207; Loskutov 2007, Oat (*Avena L.*):109; Asgarov 2016, The plant world of Azerb.:116. - *A. meridionalis* (Malz.) Roshev 1932, Fl. Turkm., I, 105; Karyagin 1950, Fl. of Azerb., I:206; Asgarov 2016, The plant world of Azerb.:116. - *A. fatua* L. subsp. *meridionalis* Malz. 1930, Works on applied botany, genetics, selection 38:304, табл. 45; Tsvelev 2006, Consp. of the fl. of Caucasus, II:286. - Wheat o.

Typus: Европа ("in Europae agris inter segetes").

Annual. It is distributed in the lowlands to the middle mountain belt, in weeds, sowings, fields, and roadsides. It blooms in June and bears seeds in July.

Absheron, Samur-Shabran lowland, Greater Caucasus (Guba), Gobustan, Alazan-Ayrichay valley, Kura-Araz lowland, Kura plain, Diabar, Lankaran lowland.

Type Polyarctic type. $2n=42$.

During the expedition, 2 new distribution areas of this species were discovered: Ismayilli distr., İvanovka vill., vineyard area, N40°45'06", E48°02'07", H768 m; Zagatala district, Jar village, backyard, roadside, N41°39'31", E46°40'22" H709 m.

6 populations of *A. fatua* species have been discovered in other areas of the republic: Goygol distr., Togana vill., rocky and grassy slopes, N40°26'17", E046°19'24", H1144 m; Lerik distr., Galasar vill., bush, N38°41'29", E048°23'54", H1360m; Ujar distr., Alpi vill., roadside, N40°29'25", E47°41'27", H14m; Hajigabul distr., Pirsaat vill., roadside, N40°02'25", E49°02'27" H76 m; Kurdamir road, roadside, N40°11'25", E48°35'30", H-12 m; Fuzuli distr., Alkhanly vill., hayfield, N 39°35'27", E 47°20'13", H270 m.

Valuable food and fodder plant and is used by livestock. Occasionally used as a cereal

substitute (Gadzhiev, 1965).

7. *A. sterilis* subsp. *ludoviciana* (Durieu) Nyman 1882, Consp. Fl. Eur. : 809. - *A. ludoviciana* Durieu, 1855, Act. Soc. Linn. Bordeaux, 20:41; Karyagin 1950, Flora of Azerb., I:208; Loskutov 2007, Oat (*Avena L.*):109; - *A. persica* Steud. 1854, Syn.Pl.Glum. 1: 230; Asgarov 2016, The plant world of Azerb.:116. - *A. trichophylla* C. Koch 1848, Linnaea, 21:393; Karyagin 1950, Fl. of Azerb., I:208; Asgarov 2016, The plant world of Azerb.:116. -Ludovic o.

Typus: France.

Annual. Distributed in the middle mountain belt, sowing areas, roadsides. It blooms in April and bears seeds in July.

It is found in all regions of Azerbaijan.

It is of the ancient Mediterranean type. $2n=42, 44$.

During the expedition, several populations from Azerbaijan were discovered: Baku city: Khatai distr., Mehmandarov street, roadside, N40°22'25", E49°57'14", H70 m; Masazir-Novkhani road, N40°30'26", E49°45'14", H 12 m; Binagadi distr., around the Vegetable Institute, roadside, N40°31'06", E49°52'08", H44 m.; Mehdiabad road, N40°29'42", E49°52'42", H30 m; Pirallahi distr., Chilov island, fieldside, N40°19'16", E50°36'10", H-43 m; Khizi distr., Bakhishli vill. surroundings, forest, N40°54'07", E48°59'10", H778 m; Imishli distr., roadside, N39°45'13", E047°53'53", H16 m; Kurdamir distr., Girdimanchay surroundings, river bank, N40°09'42", E48°03'48", H-13 m; Kurdamir distr., Khinishli vill., meadow, N40°21'16", E48°16'02", H 6 m; Hajigabul distr.: Pirsaat vill., roadside, N40°02'.25", E49°02'27" H76 m; Qizilburun vill., roadside, N39°59'18", E49°12.28", H 15 m; Guba distr: Gonaqkend vill., roadside, N41°04'17", E48°36'07", H1063 m; Vladimirovka vill., roadside, N41°23'20", E48°32'40", H518m; Barda distr., Lanbaran vill., mowing field, N40°12'17", E47°17'49", H25 m.; Salyan distr., the edge of the reserve, N39°33'54", E49°00'23", H-25 m; Ismayilli distr., İvanovka vill., vineyard area, N40°45'06", E48°02'07", H768 m; The road to Agsu, N40°41'07", E48°26'41", H868 m; Shamakhi distr., Madrasa vill., vineyards, N40°36'17", E48°33'708", H 673 m; Lerik distr., Divagaj vill., xerophytic grass and shrubs, N38°42'54", E48°31'37", H1470 m; Lerik

distr., Gunashli vill., forest, N38°46'25", E48°24'49", H1085 m; Yardimli distr., upper part of Pirembel vill., Canak area, N38°55'03", E048°07'02", H1400 m; Exit of Gobustan distr., roadside, N40°31'31", E48°51'28", H721 m; Goygol distr., Togana vill., rocky and grassy slopes, N40°26'17", E046°19'24", H1144 m; Nakhchivan: Ordubad distr., around Duyulu vill., N38°55'34", E46°00'17", H1020 m; Shahbuz distr., the end of Kolani vill., N39°27'19", E45°41'07", H1428 m; Babek distr., Nehram vill., N39°07'13", E45°28'07", H833 m; Julfa distr., around Yayci vill., N38°57'39", E45°42'54", H 764 m; Beylagan distr., Allahyarli vill., surrounding area of the agricultural field, N39°44'19", E47°35'58", H81 m; Agjabadi distr., surroundings of Aghgol reserve, N39°57' 16", E47°33'24", H28 m; Jabrayil distr., Chocuq Marcanli, the edge of the sowing area, N39°23'35", E47°18'18", H151 m.; Fuzuli district, edge of the Kondalen reservoir, hayfield, N39°36'9.774, E47°11'43.867, H401 m.; Fuzuli-Khojavand road, meadow, N39°36'13", E47°07'39", H462 m.; Fuzuli distr., Ashagi Kurdmahmudlu vill., hayfield, N39°35'21", E47°28'33", H172 m. etc. (Fig. 6).

Valuable fodder crop. It is cultivated as a fodder crop by locals in the Western Caucasus (Gadzhiev, 1965).



Fig. 6. *A. sterilis* subsp. *ludoviciana* - Ludovic o. (Beylagan district, Allahyarli village. 15.05.2022)

Note: The species *A. trichophylla* C. Koch was described from Azerbaijan (Shirvan Plateau).

Typus: "In der schirwan`schen Ebene auf Kalk, Mergelboden 500-700` hoch, C.Koch" (B?).

In the flora of Eastern Europe (Tsvelev, 1976), this species is described from the Shirvan steppe in the South Caucasus. During the determination of the description of the species ("In der Schirwan`schen Ebene auf Kalk, Mergelboden 500-700` hoch, C.Koch") (Tsvelev, 2006), it becomes clear that it is described from the territory of Azerbaijan.

8. *A. byzantina* C. Koch 1848, in Linnaea, 21: 392; Loskutov 2007, Oat (*Avena* L.):110; Asgarov 2016, The plant world of Azerb.: 116. - Byzantine o.

Typus: Described from Turkey. "In der Umgegend von Konstantinopol unter dem Getreide auf Mergelund Kalkboden, C.Koch" (B).

Annual. Lesser Caucasus (east), Lankaran lowland. It blooms in June and bears seeds in August. Cultivated as a fodder crop. 2n=42.

Note: *A. byzantina* species was described in 1848 by Karl Cokh around the city of Istanbul. Musaev in "A new species of oat in the flora of the USSR" (Musaev, 1971) recorded that this species is similar to the species of hairy oat (*A. trichophylla* C. Koch) in terms of morphological features (hairy leaves, stem nodes, etc.). The only difference from this species is the absence of a slug-shaped hole at the lower part of the flowers on the spike. Wild oat has a sloping hole at the base of the lower flower.

Byzantine oat differs from cultivated oat by the presence of a small holl at the base of the flower and its resistance to drought and fungal diseases. Distributed in Azerbaijan in the Lesser Caucasus (Tartar region) and Talish (Musaev, 1971).

9. *A. sativa* L. 1753, Sp. Pl.: 79; Karyagin 1950, Fl. of Azerb., I:207; Loskutov 2007, Oat (*Avena* L.). :110; Asgarov 2016, The plant world of Azerb.:116. - *A. macrantha* (Hack.) Malzev 1934, USSR weed plant, I, 206; *A. fatua* subsp. *macrantha* Malzev 1930, Oats and wild oats, 309; Karyagin 1950, Fl. of Azerb., I:208; Rozhewicz 1934, Fl. of USSR, II:266; Grossheim 1939, Fl. of Caucasus, I: 211. - *A. orientalis* Schreb. 1771, Spic. Fl. Lips. :52; Asgarov 2016, The plant world of Azerb.:116. - Grass o.

Typus: London. Described from the Mediterranean Sea.

Annual. It is spread in all regions of Azerbaijan. It blooms in June and bears seeds in August.

It is a Mediterranean area. $2n=42$.

Several populations from Azerbaijan were discovered during the expedition: Yardimli distr., the upper part of Pirembel vill., Canak area, N38°55'03", E048°07'02", H1400 m; Hajigabul distr., Navai vill., roadside, N40°02'01", E49°05'13", H45m; Gabala distr., right bank of Demiraparan river, stony and sandy places, N40°58'37", E47°52'14", H972 m.; Masalli distr., Sharafa vill., roadside, N39°04'32", E48°41'25" H -15 m.; Jabrayil distr., Chocuq Marcanli, the edge of the sowing area, N39°23'35", E47°18'18", H151m. (Fig. 7).



Fig. 7. *A. sativa* - Grass o. (Hajigabul district, Navai village, 18.05.2022)

A. sativa L. has been used as food and fodder since ancient times. It is used in the preparation of porridge, bread, snacks, and baby food. In industrialized countries, oat seeds are mainly used as animal feed, especially for horses, but also livestock and other animals.

CONCLUSIONS

As a result of the conducted research, the distribution of 9 species of the genus *Avena* L. in

Azerbaijan has been determined. The work "Flora Azerbaijan" lists 11 species of the genus. Several species (*A. bruhnsiana*, *A. wiestii*, *A. meridionalis*, *A. macrantha*, *A. trichophylla*) have been transferred to synonymy of other species. New distribution areas of 4 species (*A. eriantha*, *A. clauda*, *A. barbata*, *A. fatua*) were discovered. A distribution map of the collected species was given.

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