

## **Bioecological Features of Some Feed, Poisonous and Noxious Plants on the Winter Pastures of the Mil Steppe in Azerbaijan**

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### **Abstract**

The winter pastures of the Mil steppe are used as a source of forage in animal husbandry by legal and physical persons. The bioecological features of main feed and poisonous and noxious plants were investigated during field research. As well as considering the bioecological features of dominant and subdominant species, recommendations for rational usage and measures of improvement were prepared.

### **Introduction**

In the region studied there are some valuable feed plants, including *Salsola dendroides*, *Petrosimonia brachiata*, *Suaeda dendroides*, *Salsola nodulosa*, *S. ericoides*, *Alhagi pseudoalhagi*, *Hordeum leporinum*, *Eremopyrum orientale*, *Lolium rigidum*, *Anisantha rubens* and ephemers like *Hordeum leporinum*, *Eremopyrum orientale*, *Lolium rigidum*, *Anisantha rubens*, from the ephemerooids *Poa bulbosa*, as well as *Artemisia lerchiana*, in the species content of formations (Imeskenova, 2014; Hasanov, 2016; Vatan, 2004).

Results of the research conducted determined that there are 41 species of vegetation in the geobotanical content of formations found in desert and semidesert feed, including poisonous and noxious plants. Of them 30 species (73,2%) are main feed plants and of medicinal importance, 11 species (26,8%) are poisonous and noxious.

Based on this information, the bioecological features of some fodder, poisonous and noxious plant species distributed on the region's winter pastures were studied.

## Materials

A list of the plants found in the species content of the formations studied was prepared in preparation for studies of their bioecological features (Table 1).

**Table 1. List of main feed, poisonous and noxious plants distributed in the desert and semidesert vegetation of winter pastures**

| №                                | Name of species                            |
|----------------------------------|--|
| <i>Feed and medicinal plants</i> |  |
| 1                                | Salsola dendroides Pall.                   |
| 2                                | Alhagi pseudoalhagi (Bieb.) Desv.          |
| 3                                | Halostachys belangeriana (Mog.) Botsch.    |
| 4                                | Lolium rigidum Gaudin.                     |
| 5                                | Eremopyrum triticeum (Gaertk.) Nevski.     |
| 6                                | Petrosimonia brachiata (Pall) Bunge.       |
| 7                                | Hordeum leporinum Link.                    |
| 8                                | Artemisia lerchiana Web.                   |
| 9                                | Climacoptera crassa (Bieb.) Botsch.        |
| 10                               | Kalidium caspicum (L.) Ung.-Sternb.        |
| 11                               | Aegilops cylindrica Host.                  |
| 12                               | Bromus japonicus Thunb.                    |
| 13                               | Medicago minima (L.) Bartalini             |
| 14                               | Suaeda dendroides (C.A.M.) Moq.            |
| 15                               | Salsola arbuscula Bieb.                    |
| 16                               | Salsola nodulosa (Moq.) Iljin.             |
| 17                               | Anisanthum rubens (L.) Nevski              |
| 18                               | Poa bulbosa L. (Link.) Schul.              |
| 19                               | Tragopogon graminifolius DC.               |
| 20                               | Gamantus pilosus (Pall.) Bunge.            |
| 21                               | Eremopyrum orientale (L.) Yaub. Et Spach.  |
| 22                               | Plantago coronopus L.                      |
| 23                               | Cynodon dactylon (L.) Pers.                |
| 24                               | Aeluropus reflexa aristata (Nevski) Nevski |
| 25                               | Aeluropus littoralis (Gouan.) Parl.        |
| 26                               | Phleum puloides (L.) Karst.                |
| 27                               | Caragana arborescens Lam                   |

|                                     |   |
|-------------------------------------|---|
| 28                                  | <i>Limonium meyeri</i> (Boiss.) O.Kuntze      |
| 29                                  | <i>Glycyrrhiza glabra</i> L.                  |
| 30                                  | <i>Plumbago lanceolata</i> L.                 |
| <i>Poisonous and noxious plants</i> |   |
| 31                                  | <i>Cirsiumvulgare</i> (Savi.) Ten.            |
| 32                                  | <i>Taraxacummarianum</i> (L.) Gaertn.         |
| 33                                  | <i>Adonis binertii</i> Butk.                  |
| 34                                  | <i>Tamarix ramosissima</i> Lebed.             |
| 35                                  | <i>Euphorbia ispanica</i> Boiss.              |
| 36                                  | <i>Anabasis aphylla</i> L.                    |
| 37                                  | <i>Allium rubellum</i> Bieb.                  |
| 38                                  | <i>Capparis herbacea</i> Willd.               |
| 39                                  | <i>Erodium cicutarium</i> (L.) L'Her.         |
| 40                                  | <i>Psylliostachys spicata</i> (Willd.) Nevski |
| 41                                  | <i>Xanthium spinosum</i> L.                   |

## Results

### Feed plants. Shrubs.

These plants belong to the *Chenopodiaceae Vent.* family.

*Suaeda dendroides*(C.A.Mey.) Moq.

60-80 cm in height, salinity tolerant. Branches are covered with brittle, grey and brittle hairs. Sometimes young branches are hairless. Leaves are small, juicy, oval, blue and 5-10 mm in length. Flowers are 2-3 in number, in locules. Seeds are smooth, round and bright black (Parachin *et al.*, 2015; Toleubayeva & Kartayeva, 2015). Vegetation begins in May; flowering in August-September and semination in November-December. *Suaeda dendroides* is eaten by livestock after frosty days in the autumn-winter period.

### Subshrubs

*Salsola dendroides* Pall.

50-70 cm in height. The stem is ligneous, multi-branched. Length of leaves, 2-5 mm. Vegetation is in April-May, flowering and semination in October-November. *Salsola dendroides* is the main fodder plant on the pastures and is eaten as a feed plant by livestock in the winter season (Toleubayeva & Kartayeva, 2015).

Prilipko (1970) noted that the leaves and young branches of *Salsola* are eaten by sheep in January after frost. *Salsola* is the dominant species of the Artemisieto-Salsoleum formation on the region's winter pastures. As a subshrub plant, *Salsola dendroides* is formed on grey-brown soils and is considered an indicator of ground water.

### **Undershrubs**

*Kalidium caspicum* (L.) Ung. - Sternb.

10-30 cm in height. The leaves and biennial branches are succulent. This species is found on saltish, grey-brown and saline soils.

Flowering and seeding is in April-October and November. It is found in the region's saline deserts. *Kalidium caspicum* is considered a feed source on the winter pastures. *Kalidium caspicum* is eaten by livestock on freezing winter days, because ephemers and ephemeroïds pass dormant period.

*Salsola nodulosa*(Moq.) İljin

30-40 cm in height. Irregularly branched, the stem is covered by light grey bark. Young branches are small and hairy. Leaves are arranged in alternate directions and are 5 mm in length. Reproduction is by seed. Vegetation begins in June-July, flowering in July-August and semination in October-November. *Salsola nodulosa* is distributed on winter pastures and slopes, as well as on saline, grey-brown and saltish soils. It is a halophyte undershrub. Caucasian endemic (Imeskenova & Komendanova 2018; Gurbanov, 2004; Grossheim, 1967; Toleubayeva & Kartayeva, 2015).

*Salsola nodulosa* is dominant in desert and semidesert phytocenoses, as well as in Artemisetum-Salsoleum formations. As with *Artemisia fragrans*, *Salsola nodulosa* is considered a main fodder plant of winter pastures in these formations. R.A. Aliyev noted that the edible part of a *Salsola* shrub amounts to 50-120 q.

### **Herbs. Annuals**

*Petrosimonia brachiata* (Pall.) Bunge.

*Petrosimonia brachiata* belongs to the *Chenopodiaceae* Vent. family and is a characteristic annual halophyte. 5-20 cm in height. The leaves are 4 cm in length.

The stem is branched, flowers are covered with a double-layered perianth, 3-5 divided, greenish or grey coloured.

Vegetation of *Petrosimonia brachiata* begins from April, flowering in October-November and semination in December.

This halophyte plant is considered an indicator of saline and brackish, grey-brown soils. Thus, *Petrosimonia brachiata* is dominant in a Suaedata- Salsoleta-Petrosimonum formation and is subdominant in Artemisieta-Salsoletum and Salsoleta-Artemisetum formations.

*Petrosimonia brachiata* is low in fodder quality. In the frosty winter period its dried branches are eaten with pleasure by livestock.

## Ephemers

*Hordeum leporinum* Link.

*Hordeum leporinum* belongs to the *Poaceae Barnhart* family. Its height is 15-20 cm. The width of its leaves reaches 3-4 mm. Its spikes consist of close spikelets 4-5 cm in length and the awns are very coarse. Flowering and semination is from April to June.

This species is found in the species content of formations distributed in desert and semi-desert vegetation types. *Hordeum leporinum* is distributed on grey-brown and saline soils.

Before flowering it is considered a high-quality fodder plant in the early period of vegetation. Then plant's stem hardens and cannot be eaten.

*Eremopyrum orientale* (L.)Yaub. et Spach.

10-30 cm in height. Spikes are flattened, two sided and cylindrical in form. Leaves are in two ranges and hairy. Reproduction is by seed. In autumn and winter it gives seedlings. In early spring vegetation accelerates. Flowering is in April and semination is in May. It is a typical ephemeral. This plant is found on saline, clay and grey-brown, as well as on salty and sandy soils. *Eremopyrum orientale* is dominant in Artemisia-Ephemeretum, Artemisia-Salsoletum and Suaedata-Salsoleta-Petrosimonum formations. It is a feed plant. In the pasture areas *Eremopyrum orientale* is eaten by livestock until spikes are formed (Prilipko, 1970; Clemants & Cherepanov, 1995).

*Lolium rigidum* L.

15-30 cm in height. An ephemeral, reproduction is by seed. The leaves are flattened, the spikes are narrow, straight or slightly bent. Flowering is in April-May, semination in May-June. *Lolium rigidum* L. is dominant in Artemisia-Ephemeretum formations. It is also found as ephemeral content in other formations. It is considered one of the better feed plants on the winter pastures. It is eaten by livestock as a high quality feed plant in the early period of vegetation, as well as during flowering and semination. *Lolium rigidum* is considered a promising plant for improvement of the region's winter pastures.

*Anisantha rubens* L. Nevski

10-25 cm in height. The width of leaves reaches 2-4 mm. The panicle is straight and yellow. Flowering is observed until April. *Anisantha rubens* is found in Suaedata-Salsolietum-Petrosimonium formations of desert vegetation. As a typical ephemeral it is found on grey-brown and saline soils. At the beginning of vegetation it is eaten by livestock as a feed plant. Then the plant's vegetative organs become rough and cannot be eaten. Seed germination capacity is very high; 80-90% of 100 seeds sown may germinate.

Besides the above-mentioned plants *Poa bulbosa* L., *Medicago minima* (L.) Bartalini, *Alhagi pseudoalhagi* (M. B.) Desv., *Artemisia lerchiana* Web. also have a great importance for feed and these plants are suitable for improving soil fertility.

### **Poisonous and noxious plants**

It was determined that there are 11 species of poisonous and noxious plants within the research area. We studied their bioecological features and life forms (ANAS, 1969; Hatamov, 2000).

*Allium rubellum* Bieb.

This species belongs to the Alliaceae Agardh. family. A perennial herb and geophyte; the bulb is egg-shaped, yellowish, 10-20 mm in width. Height is 10-20 cm. The leaves are narrow and linear. The stem is covered by a sheath from below. The umbel is semicircular. Densely flowered, the stalk is longer than the flower. The perianth is 4-5 mm, pink. Leaves are long and sharp.

This plant has a strong odour and a bitter taste, thus it is not eaten by livestock. It is poisonous for livestock.

*Euphorbia ispanica* Boiss., *Cirsium vulgare* (Savi.) Ten., *Xanthium spinosum* L. are also poisonous plants. To prevent their initial spread, rational usage of winter pastures and the implementation of measures of improvement are important. As well as the protection of feed plants, study of their bioecological features is advisable.

## References

- ANAS.** (1969). Fodder plants for haymaking and the pastures of Azerbaijan. II volume. Publishing house of Academy of Sciences of Azerbaijan SSR. Baku.
- Hatamov, V.V.** (2000). Pasture ecosystems of Azerbaijan and their protection. Baku Publishing House of Elm, 184 p.
- Prilipko, L.I.** (1970). Plant cover of Azerbaijan. Science publishing house. Baku, Azerbaijan, 170 p.
- Imeskenova, E.G. & Komendanova, T.M.** (2018). Contemporary condition of winter pastures. Agricultural sciences. Bulletin of Krasnoyarsk State Agrarian University. No1, p. 25-30.
- Imeskenova, E.G.** (2014). Ecological evaluation of pasture vegetation of the Tunkin region of the Buryatiya Republic. Bulletin of Novosibirsk State Agrarian University. Vol (1) 30. 25–29.
- Gurbanov, E.M.** (2004). Flora and vegetation of Atropatena province (within Azerbaijan Republic). Autoreferat of dissertation for the degree of doctor of biological sciences. Baku, Azerbaijan, 55 p.
- Hasanov, V.N.** (2016). Superficial improvement of winter pastures of Azerbaijan. Bulletin of Kurgan State Agricultural Academy by T.S. Maltsev. No 3, Kurgan, Russia, 12-13.
- Clemants, S. & Cherepanov, S.K.** (1995). Vascular Plants of Russia and Agrosent states (The former USSR). Brittonia, 48: 284.
- Grossheim, A.A.** (1967). Flora of the Caucasus. M.-L Vol. I-VII. Publishing House of Branch of the Academy of the USSR in Azerbaijan.
- Vatan.** (2004). Instruction on index symbols of typological classifications of natural fodder areas of Azerbaijan Republic. Baku.
- Parachin, N.B., Kobozev, I.V., Gorbachev, I.V.** (2015). Fodder making: Textbook for higher educational institutions. 432 p.
- Toleubayeva, Z. & Kartayeva, T.** (2015). Regional features of the winter pastures on the Lower reaches of Syrdarya. Bulletin, 75, Kazakhstan. 157-175