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MAIN CRITERIA OF ECO-GEOBOTANICAL ASSESSMENT OF SOIL AND VEGETATION COVER

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(Presented by Academician of ANAS G.Sh.Mammadov)

Objects of research were soil and vegetation of Shirvan zone of Azerbaijan. For the first time a new methodology for eco-geobotanical assessment of the soil and vegetation cover of the territory of Shirvan was developed based on the data on bonitation and ecological assessment of soils, as well as data on the assessment of natural plant communities. The eco-geobotanical assessment of the soil-vegetation cover of Shirvan, expressed in balls, made it possible to identify at the first time eco-geobotanical groups on the territory: high productivity (100-81 balls), average productivity (80-61 balls), low productivity (60-41 balls), very low yield (40-20 balls) in the course of our research. This method can be applied to areas similar in terms of soil and vegetation cover throughout the Republic.

Keywords: soil, plant, bonitation, eco-geobotanical assessment

Introduction

Protection of nature and rational use of natural resources are one of the leading and most important problems of mankind. At present, the deterioration of the ecological state of soils in the world has led, in particular, to desertification. 3.3 billion hectares (80%) of agricultural land are arid territories. As is known, 21% of irrigated areas of the earth, 77% of rainfed lands, and 8.2% of pastures are moderately prone to desertification. It should be noted that on a global scale, the main factors leading to desertification are water erosion, deflation, and destruction of vegetation cover. The solution to this problem requires an integrated approach, including environmental protection, proper and rational use of natural resources, etc. After 2001, a number of decrees of the President of the Republic of Azerbaijan for the conservation of biodiversity and a National Report and a Strategic Action Plan were prepared [1]. The environmental assessment of such territories in their relevance is at the centre of scientists' attention [2,3].

The Shirvan region is also subject to degradation of landscapes and a tendency to desertification, and in this research paper, these processes are the most highlighted ones. According to real biocenoses, a part of the territory of Shirvan,

in terms of aridity and climatic indicators, as well as xerophilic and salt vegetation, belongs to desert and semi-desert. The indicators of these ecosystems are xerophytes and halophytes. The irrational use of winter pastures and the failure to take measures to improve their condition resulted in a decreased productivity and a deterioration in the quality of forage. The surface coverage of such arid territories is characterised as highly underdeveloped (10-15%) [4].

Material and methods

Objects of research were soil and vegetation of Shirvan zone of Azerbaijan. Bioecological and geobotanical methods; methods for studying vegetation resources and their productivity; ecological methods; soil research methods and pasture assessment method; bonitation method have been used.

Results and discussion

Both soil and vegetation in Shirvan have independent spatial dynamics to some extents have shown observations. Thus, there may not be an overlay of plant formations on soil contours: several plant formations can be distributed along one soil contour or, conversely, several soil contours can be distributed within one plant

formation, which was taken into account when conducting an eco-geobotanical assessment (EGA) of soil-vegetation cover of Shirvan.

However, in most cases, the regularity of the variability of plant formations depending on the composition of the soil cover was observed both in mountainous and in lowland areas:

- in soil and plant communities distributed within alpine and subalpine meadows and meadow-steppe landscapes;
- in soil and plant communities of mesophilic, xerophilic forests, shrubs and dry mountain steppes;
- in agrophytocenoses

An EGA of the soil and vegetation cover which has both theoretical and practical significance can be a valuable tool in the management of soil and plant resources, as well as in optimizing the use of summer and winter pastures was carried out after the stage of a comparative assessment of soils and an ecological assessment of soil and landscape complexes at our research site. With this in mind, using the indicators obtained as a result of the study of vegetation and soil cover, we conducted the EGA of the soil-

vegetation cover of Shirvan for the first time (Table 1).

The choice of evaluation criteria and the establishment of an eco-geobotanical assessment scale is one of the most important issues of soil and vegetation EGA. As with all forms of assessment, the choice of assessment criteria for EGA is associated with certain difficulties. The following formula has been used to determine the eco-geobotanical ball of soil-vegetation cover:

$$E_{gb} = [(B_t + B_p + B_o) + B_e] : n$$

Here, E_{gb} is the eco-geobotanical assessment of soil-vegetation cover; B_t is the yield of grain crops, expressed in ball; B_p is the yield of legumes, expressed in ball; B_o - productivity of motley grass, expressed in ball; B_e - ecological assessment of soils; n is the number of units (ball) participating in the assessment. The results of the EGA of the soil and vegetation cover of Shirvan in landscape complexes varied between the following parameters (Table 1):

Table 1

Eco-geobotanical assessment of the soil and vegetation cover of Shirvan (fragment)

Landscapes	Soil and Plant complexes	Productivity of plant formations, centner/ha/bal			Ecological ball of soils in plant formations	Eco-geobotanical ball of soil and plant association
		Cereal	Leg.	Motl-gr.		
1	2	3	4	5	6	7
Alpine and subalp. meadows and meadow steppes	Motley-grass-legume-cereals (moun.-meadow soddy; moun.-meadow soddy-peaty)	$\frac{1200}{100}$	$\frac{210}{100}$	$\frac{1600}{100}$	75,79	91
	Cereals, motley-grass (moun.-meadow, chernozems-prominent)	$\frac{1100}{92}$	-	$\frac{760}{48}$	83	74

Continuation of Table 1

1	2	3	4	5	6	7
Mesophilic, xerophilic forests, shrubs and dry mountain steppes	Cereals, legumes (moun.-forest brown typical)	$\frac{850}{100}$	$\frac{700}{100}$	-	88	96
	Legumes, cereals (moun. brown steppe; moun. brown immature)	$\frac{500}{59}$	$\frac{380}{54}$	-	88, 42	61
Dry subtropical steppes	Motley grass (moun. gray-brown (chestnut) light deep gypsum-bearing thin; moun. gray-brown (chestnut) light deep-saline; moun. gray-brown (chestnut) ordinary solonetzic))	-	-	$\frac{480}{87}$	37, 48, 43	54
	Cereals (composition: ephemers) (moun. gray-brown (chestnut) ordinary thin; moun. gray-brown (chestnut) ordinary gypsum bath; moun. gray-brown (chestnut) ordinary deep-salted; moun. gray-brown (chestnut) ordinary carbonate)	-	-	$\frac{550}{100}$	53, 61, 58, 83	71
	Motley grass (moun. gray-brown (chestnut) meadow solonchak; moun. gray-brown (chestnut) underdeveloped; moun. gray-brown (chestnut) light solonetzic thin; moun. gray-brown (chestnut) light solonchak thin; moun. gray-brown (chestnut) ordinary deep-ashed, thin	-	-	$\frac{350}{64}$	45, 38, 26, 27, 34	39

Alpine and subalpine meadows and meadow steppes: 74 balls [cereals, motley grass (composition: juniper-feather grass-fescue), (mountain-meadow chernozem-like)] - 91 balls [motley grass-bean-cereals (mountain-meadow sod; mountain-meadow soddy-peaty)];

Mesophilic, xerophilic forests, shrubs and dry mountain steppes: 61 ball [legumes-cereals (composition: clover- wheatgrass-feather grass), (mountain brown steppe; mountain

brown underdeveloped)] - 96 balls [cereals, legumes (composition: polyurus-bromegrass-couch grass), (mountain-forest brown typical)];

Dry subtropical steppes: 39 balls [motley grass (composition: wormwood-ephemeral), (mountain gray-brown (chestnut) meadow solonchak; mountain gray-brown (chestnut) underdeveloped; mountain gray-brown (chestnut) light solonetzic thin; mountain gray-brown (chestnut) light saline thin; mountain gray-brown (chestnut) ordinary deep-saline thin)] - 71 balls [cereals (composition: ephemeral), (mountain gray-brown (chestnut) ordinary thin; mountain gray-brown (chestnut) ordinary gypsum; mountain gray-brown (chestnut) ordinary deep-salted; mountain gray-brown (chestnut) ordinary carbonate)];

Semi-deserts: 20 ball [motley grass (composition: wormwood ephemerality), (gray-brown solonetzic-saline;)] - 86 balls [salt-grass, (composition: petrosimonia, comb-salt-grass-grass petro-simonium), (meadow-gray dark irrigated; meadow - sierozem dark long-term irri-

gated; meadow-sierozem dark solonetzic long-term irrigated; sierozem-meadow ordinary irrigated)].

Conclusion

For the first time a new methodology for eco-geobotanical assessment of the soil and vegetation cover of the territory of Shirvan was developed based on the data on bonitation and ecological assessment of soils, as well as data on the assessment of natural plant communities. The eco-geobotanical assessment of the soil-vegetation cover of Shirvan, expressed in balls, made it possible to identify at the first time eco-geobotanical groups on the territory: high productivity (100-81 balls), average productivity (80-61 balls), low productivity (60-41 balls), very low yield (40-20 balls) in the course of our research.

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TORPAQ VƏ BİTKİ ÖRTÜYÜNÜN EKO-GEOBOTANİKİ QIYMƏTLƏNDİRİLMƏSİNİN ƏSAS MEYARLARI

T.E.Qasimzada

Tədqiqat obyekti Azərbaycanın Şirvan zonasının torpaq-bitki örtüyü olmuşdur. İlk dəfə olaraq, torpaqların bonitirovkası və ekoloji qiymətləndirilməsi, habelə təbii bitki birliklərinin qiymətləndirilməsi göstəriciləri əsasında Şirvan ərazisinin torpaq və bitki örtüyünün eko-geobotaniki qiymətləndirilməsinin yeni metodologiyası işlənib hazırlanmışdır. Şirvanın torpaq və bitki örtüyünün ballarla ifadə edilən eko-geobotaniki qiymətləndirilməsi ilk dəfə olaraq ərazidə eko-geobotaniki qrupları aşağıdakı göstəricilərə görə müəyyən etməyə imkan verdi: yüksək məhsuldarlıq (100-81 bal), orta məhsuldarlıq (80-61 bal), aşağı məhsuldarlıq (60-41 bal), çox aşağı məhsuldarlıq (40-20 bal). Bu metod respublika üzrə torpaq və bitki örtüyünə görə bütün oxşar ərazilərdə tətbiq oluna bilər.

Açar sözlər: torpaq, bitki, bonitirovka, eko-geobotaniki qiymətləndirmə

ОСНОВНЫЕ КРИТЕРИИ ЭКО-ГЕОБОТАНИЧЕСКОЙ ОЦЕНКИ ПОЧВЕННО-РАСТИТЕЛЬНОГО ПОКРОВА

Т.Э.Касимзаде

Объектом исследования выбран почвенно-растительный покров Ширванской зоны Азербайджана. Впервые на основе данных бонитировки и экологической оценки почв, а также данных оценки природных растительных сообществ была разработана новая методика эко-геоботанической оценки почвенно-растительного покрова территории Ширвана. Эко-геоботаническая оценка почвенно-растительного покрова Ширвана, выраженная в баллах, позволила впервые выделить на территории эколого-геоботанические группы по следующим показателям: высокая продуктивность (100-81 балл), средняя продуктивность (80-61 балл), низкая продуктивность (60-41 шар), очень низкая продуктивность (40-20 шаров). Этот метод может быть применен к сходным по почвенному и растительному покрову территориям по всей республике.

Ключевые слова: почва, растение, бонитировка, эко-геоботаническая оценка