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«МАРКАЗИЙ ОСИЁ ЯЙЛОВЛАРИ: ГЛОБАЛ МУАММОЛАР ВА ГЛОБАЛ ИМКОНИЯТЛАР»

Шароф Рашидов номидаги Самарқанд давлат университети, АҚШнинг Невада (Рено) университети, Япониянинг Тоттори университети Қурғоқчил минтақаларда тадқиқот ва таълим халқаро маркази (IPDRE) ва Исландиянинг Ерларни тиклаш (GRO LRT) дастури томонидан ҳамкорликда таъкил этилган халқаро миқёсдаги илмий-амалий анжуман

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loss of soil organic carbon, which might further deteriorate soil structure and overall soil quality and fertility.

Grasslands play important role in overall sustainability, but their importance it is not properly addressed. Environmental experts should recognize drivers of grasslands degradation and propose appropriate conservation and restoration measures. The priority should be avoidance of grassland degradation that requires good assessment of their current conditions and monitoring of plant, soil, climate conditions and land use activities. Further measures are deduced to sustainable land management practices and smooth human interventions, whereas the aftermost adopted measures should be related to restoration. Grasslands should have more emphasized role in our society and LDN principles should be applied for their preservation.

POTENTIAL OF RANGELAND SPECIES *FESTUCA VALESIACA* FOR PHYTOREMEDIATION OF CONTAMINATED SITES: CASE STUDY OF COPPER MINE BOR, SERBIA

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Metalliferous mine wastes are notable sources of contamination remaining after ore exploitation process. Bor mine is one of the largest copper mine basins in Europe where long-term mining caused severe degradation and environmental pollution, making it one of the remediation priorities in the country. Mine wastes, formed by non-selective overburden deposition, generated surface Technosols of variable physico-chemical conditions. Moreover, they are characterized by increased concentration of potentially toxic elements, such as As, Cu, Pb, and Zn.

Festuca valesiaca Schleich. ex Gaudin, species characteristic for rangelands of Eurasia, was found colonizing dry sandy patches of Bor mine waste Technosols. Parent material was fresh andesite and conglomerates rocks of volcanic origin. This research aims at revealing the potential of *F. valesiaca* for phytoremediation of such multi-contaminated sites.

Composite rizosphere soil and plant material were collected and analyzed from several selected sites. Soil pH was measured in 1 to 2.5 ratio of soil and distilled water using pH-meter. Organic carbon content was determined by the method of Tjurin, while total nitrogen content was obtained by Kjeldahl digestion process. Pseudo-total and bioavailable concentration of As, Cu, Pb, and Zn were determined in soil samples by using aqua-regia and EDTA-extraction, respectively. Underground and aboveground parts of *F.valesiaca* were digested with HNO₃ and H₂O₂. Concentration of elements in soil and plant material was analyzed using ICP-OES (Thermo Scientific, 6500 Duo). Bioconcentration (BCF),

bioaccumulation (BAF) and transfer factors (TF) were determined for pseudo-total and EDTA-available soil fractions.

Technosols colonized by *F. valesiaca* were alkaline (pH=7.23-8.35), with low organic matter (0.85-2.5%) and total nitrogen content (0.03-0.05 %). Pseudo-total contents of As, Cu, Pb and Zn were 137 mg kg⁻¹, 1152 mg kg⁻¹, 113 mg kg⁻¹ and 221 mg kg⁻¹, respectively. Bioavailable fractions ranged from 4.75% (As) to 36.2% (Pb) of their pseudo-total content. Estimated BCF for Cu was highest, exhibiting values 1.12, while in the case of bioavailable Cu fractions it was 6.52. Generally, BCF_{EDTA} values were >1 for all investigated elements. While all BAF factors were <1, BAF_{EDTA} values for As, Cu and Zn were >1 (1.05, 1.14 and 5.87, respectively). Root to shoot ratios were low, ranging from 0.18 (Cu) to 0.41 (As).

F. valesiaca showed phytostabilization potential in case of pseudo-total Cu content at Bor mine waste site. Moreover, it also exhibited possibility for accumulating all investigated trace elements in roots in relation to their bioavailable concentration. As this is palatable species, low transfer of elements from root to shoot enables safe use of *F. valesiaca* for phytostabilization of copper mine wastes in Bor, but potentially also for other similar multi-polluted sites within its wide distribution range.

RESTORATION AND PROSPECTS FOR THE DEVELOPMENT OF DESERT PASTURES

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Today, the daily growth of the population is the problem of providing them with food. In this regard, it is necessary to use not only irrigated land areas, but also natural pastures. Natural pastures and hayfields make up a large part of the land intended for agriculture. It is these lands that are the main feed base for the development of the livestock sector. 21.1 million in the territory of our republic. there are pastures, and the efficiency of using these land areas is decreasing year by year due to the influence of various factors.

The productivity of natural pastures and hayfields depends on the amount of annual atmospheric precipitation, and the weather of Guzor district is strongly continental. Characteristic of the desert region, or hot and dry, with many sunny days and cold winters.

The most common forage plants in the pastures of the area surveyed in the representative plot:

- trees and bushes: white saxophone;
- perennial herbs: yantok, konkirbosh, rang, chitir, akkurai;
- annual grass plants: yalырbosh, barley, pea;
- noxious plants: akkurai, kpirchapon, kiltyk.

During the last years, the results of the monitoring show that the productivity of pastures and hayfields is decreasing and the species of plants are disappearing due to anthropogenic factors and degradation.