A FRAMEWORK FOR THE ECOLOGICAL REHABILITATION OF DEGRADED SOILSCAPES IN EASTERN ROMANIA

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- Soil degradation, as a 21st century global problem, occurs under a wide variety of conditions and circumstances leading to decline in soil quality and health, with a reduction in ecosystem functions and services. Soil degradation has significant environmental, economical and social impact.
- In the last 20 years, particularly in the Eastern part of Romania, anthropogenic unreasonable and aggressive actions corroborated with soil water erosion, accentuated the processes of environmental degradation and decreased the productive potential of the soils. The erosion phenomena in the Eastern part of Romania are very aggressive. Water erosion is influenced and favored by the temperate continental climate with torrential rainfalls and by anthropogenic impact, mainly due to overgrazing.
- This research starts from the practical necessity to increase the functional efficiency of these soils, through the assessment of the risk factors.

Goals: i) to diminish the negative impact of soilscape degradation; ii) to increase the life conditions of the people.

Screening of negative, limiting and stress environmental factors and determinants

Analysis and identification of the soil limiting factors and determinants using the environmental diagnosis

Sustainable Management Plan based on a major set of concrete measures for the ecological rehabilitation of these degraded pasture ecosystems

IDENTIFICATION AND ANALYSIS OF HAZARD RISKS IN CRITICAL POINTS. NEGATIVE, LIMITING AND STRESS ENVIRONMENTAL FACTORS AND DETERMINANTS

ENVIRONMENTAL AND ECONOMICAL NEGATIVE EFFECTS

- excessive and prolonged summer drought
- disruption of vegetative and reproductive cycle of plants
- covering the pastures with noxious species, in spite of valuable graminaceous and leguminous
- soil trading and soil compaction due to overgrazing, particularly on the moist soil
- surface and gully erosion; depopulation and reducing the topsoil on the slopes; destruction of soil structure
- decline in soil organic matter and biological activity
- decline in Net Biome Productivity

GEOCLIMATIC FACTORS
- low summer rainfalls
- slope relief with very active morpho-genetic processes
- torrential rain and hailstone
- underground water in soil profile
- stagnant rainwater

PEDOLOGICAL FACTORS AND DETERMINANTS
- thin soil texture
- poor air-water regime
- poor water drainage
- variability in summer
- high plasticity
- strophic and play processes
- nutrient depletion

ANTHROPOGENIC FACTORS
- irrigating
- lack of anti-erosional works
- lack of drainage and draining works
- lack of maintenance works
- lack of organic-mineral fertilization

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<thead>
<tr>
<th>SUSTAINABLE MANAGEMENT PLAN</th>
<th>[major set of concrete measures for restoring the soil quality and health through sustainable management]</th>
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<tbody>
<tr>
<td>1. TECHNOLOGICAL MEASURES</td>
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<td>- unblocking the canals</td>
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<td>- network of draining: drainage canals</td>
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<td>- ensuring the fodder leguminous and graminaceous</td>
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<td>- applying the fertilizer species on the top slope</td>
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<td>- erosion works of invasive species in the pastures</td>
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<td>- clearing the grazing, closing the grazing on humid lands</td>
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<td>2. ECONOMIC MEASURES</td>
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<td>- unblocking the drainage-drainage canals and their maintenance</td>
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<td>- developing the agriculture works before starting the fodder cycle in the spring</td>
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<td>- planting the pasture for a rotational grazing</td>
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<td>- organic-mineral fertilization of the pastures before starting the fodder cycle in the spring, and after ending the grazing in the autumn</td>
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<td>- ensuring the necessary quantities of organic-mineral fertilizers and their application</td>
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<td>- ensuring the necessary quantities of fodder seeds for reaching the areas without vegetation</td>
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<td>- monitoring the total grazing according to the plan of the ecological rehabilitation of degraded areas, without vegetation or neglected, that represent outbreaks of infection with noxious species</td>
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<td>3. SCIENTIFIC MEASURES</td>
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<td>- ensuring the financial sources for the acquisition of fodder seeds, organic-mineral fertilizers, maintenance and agro-ecosystem-atmospheric works</td>
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<td>- network between local authorities, research institutes and universities in the frame of European projects (EU Framework Programme for Research and Innovation – Horizon 2020) to get the funds for ecological rehabilitation of these degraded pasture ecosystems</td>
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<td>4.  A FRAMEWORK FOR THE ECOLOGICAL REHABILITATION OF DEGRADED SOILSCAPES IN EASTERN ROMANIA</td>
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