STAVROPOL STATE AGRARIAN UNIVERSITY

# POLICIES TO ENSURE THE CONSERVATION, RESTORATION AND SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS

**Stavropol**

**2023**

# POLICIES TO ENSURE THE CONSERVATION, RESTORATION AND SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS

Restoration of forest landscapes and ecosystems, agriculture-related activities should primarily contribute to their return to a healthy, stable state so that they can meet human needs for sustainable food production and livelihoods.

The ultimate goal of restoration efforts should be to reverse the declining trend in the sustainability of many agricultural systems and to optimize the ecological relationships between plants, animals, humans and the environment, with the principle of leaving no one behind.

It is important to note that restoring forest ecosystems is not limited to planting trees or promoting the natural regeneration of trees. This is not just a technical approach; but also engagement with stakeholders in all relevant land user sectors, using participatory decision-making processes.

## Restoration approaches to campus forestry

We Increase the number of trees through a mix of forestry and agroforestry activities to improve the condition of cropland.

To increase the production of wood products, commercially oriented plantation monocultures are being introduced.

Drylands are among the ecosystems most affected by environmental degradation, and their restoration has been one of the priorities of SSAU for many years. Efforts in this direction have been highly effective, and SSAU currently has a plan for large-scale land reclamation for small-scale agriculture, which provides opportunities to use innovations in the field of land reclamation/rehabilitation and crop production for the benefit of local communities and shows that soil degradation is not always irreversible.

Restoration and sustainable use of productive ecosystems and landscapes is fundamental to achieving sustainable development goals.

At the same time, the proper quality of agricultural return flows is ensured to maintain healthy ecosystems.

There is a comprehensive approach to ecosystem restoration that takes into account the complex social, political, economic and environmental factors that lead to the degradation of agricultural landscapes.

**Restoration approaches in agricultural landscapes**

SSAU has extensive experience, significant scientific and technical knowledge and a range of innovative tools that can be used to restore ecosystems through tireless work in areas such as agro-ecology, rangeland and grassland management, ecosystem services, and soil health.

The ability of agricultural landscapes to perform various ecological functions can be restored through nature-based solutions. Restoring and sustainably using biodiversity helps improve carbon and nutrient cycling and overall soil health. By increasing soil carbon sequestration, increasing the availability of nutrients for crops and plant biomass in pastures, increasing the recycling of nutrients (e.g. manure and crop residues) into the system, reducing competition between forage and food crops, improving bee habitats and other pollinators and biological control of pests and diseases can increase biodiversity and consequently support sustainable agricultural livelihoods.

At the policy level, special attention should be paid to efforts to restore degraded soils and landscapes using approaches that promote system diversification, sustainable land management practices, and sustainable rangeland management. Such methods help increase the amount of organic matter, including from manure, returning to the soil.

Plant health measures such as the use of quality genetic material, clean seeds and seedlings, the use of organic material to improve soil structure, the correct use of non-toxic pesticides and the judicious use of fertilizers play an important role in restoring agricultural systems.

To restore land, soil-protective and resource-saving farming methods such as zero tillage are used.

Growing trees, shrubs and fodder trees on agricultural land using various forms of agroforestry helps:

- increase the resilience of agricultural systems to climate impacts by improving soil moisture conditions in dry areas;

- increase the effectiveness of biological methods of pest control by creating optimal habitats for predators and natural enemies of pathogenic microorganisms;

- improve the quality of nutrition and livelihoods of the population through

silvopastoral systems;

- increase the effectiveness of erosion control by stabilizing soils and absorbing nutrients from deep layers of soil by tree roots; and reduce yield variability, increase crop yields on degraded lands, and increase the amount of feed available to livestock in harsh climates from crop residues.

SSAU brings to this activity knowledge, tools and experience in the field of effective land use planning, which help plan the use of land at the local level and rationally exploit land resources; In addition, the development of these plans prioritizes the application of the circular economy concept and the reuse/recycling of existing resources. Thus, the ecosystem approach to restoration is based on restorative models of agricultural production, aimed at solving the problems of degradation of pasture and arable lands, reclamation of saline lands and, in general, restoring the productive potential of agricultural land.