

Developing a system for land assessment and improving soil health in Bulgaria

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A simplified and easy-to-use methodology has been developed for assessing soil health on agricultural production farms in Bulgaria. The methodology adheres to the limitation methods recommended by FAO and more precisely to those that take into account the number and degree of existing limitations for a certain set of land characteristics and is tailored to the specifics of agricultural production at the farm level. The research enables dynamic monitoring of the changes in the qualities of the soils in accordance with the measures taken to improve their health.

The land features selected for work are grouped into 4 large groups. When selecting the working characteristics of the lands, we complied with the rule to work with the smallest possible number of characteristics that describe as fully as possible the agro-ecological conditions in relation to the requirements of the plants, while at the same time not allowing double and triple evaluation of the same characteristic.

The four groups cover information for agroclimatic, terrain and stony soils, drainage conditions, and soil fertility. It includes a total of 10 indicators. Also, the study suggests the ranking of all these indicators and algorithms for general evaluation and categorization of lands. The evaluation system allows farmers to determine the risk to soil health and receive specific recommendations for its improvement, leading to more sustainable and efficient agriculture.

The suggested indicators allow dynamic monitoring of changes in soil properties in accordance with the measures taken to improve their health. Furthermore, it is possible to further develop a digital tool that evaluates which soil restoration practices are appropriate for a given soil based on its characteristics and how these practices would affect the income-cost structure.

The methodology is open and allows for the inclusion of additional characteristics that will allow for the assessment of some specific soil indicators, such as heavy metal contamination, acidification, salinization, etc.

The developed methodology for assessing soil health allows:

- Testing the approach with data from different countries to ensure broad applicability;
- Developing a digital platform based on the methodology for easy access and application;
- Creating an automated system to provide specific recommendations based on input data;
- Evaluating how soil restoration practices affect the income-cost structure for farmers.

Keywords: Land assessment, soil health, classification

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