

EXPLORING MODERN TRENDS IN SOIL RESEARCH: RECENT ADVANCES AND DISCOVERIES

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Modern trends currently used in soil research are a priority for agriculture. For some reason, this is essential for a thriving economy for the territory of the Republic of Moldova. Even though soil is essential for sustainable food production, its quality and health can decline as cultivation becomes more intensive and inappropriate. The importance of healthy soil to our country cannot be ignored. That's why the use of the latest generation technologies for intelligent soil quality prediction gives us accurate and fast data about its condition. Modern automated survey techniques now provide intelligent soil prediction systems. The purpose of this article is to provide an analysis of the exploration of modern trends in soil research through the advances and discoveries of recent decades. Soil properties and quality, existing soil data set, soil map, soil nutrients required for crop growth - which can be compared today through these innovative techniques - are key to improving and maintaining soil health. So, the advanced trend in smart agriculture today can be an asset to improve the quality and production of agri-food in the country. Only if we take into account the maintenance of soil health, agriculture in the future will offer sufficient productivity to satisfy consumer demands and better product quality. Continued research in this aspect and their development may lead to more cost-effective, more suitable possibilities for better adaptation (including improved plant resistance) to climate change.

In recent years, there has been a notable change in the field of soil science, with researchers recognizing the need for modern techniques to improve work efficiency and reduce labor, time and expense. Consequently, new methods have been developed to address these challenges and advance the field of soil research. The assessment of modern trends in soil research involves a systematic approach that includes various materials and methods.

This article reviewed published scientific articles, books, relevant research monographs, academic journals, and conference proceedings related to soil science. Which include, in themselves, online soil datasets to identify patterns, correlations and trends in the described soil properties. The researchers' interdisciplinary approaches reflected in the papers, in turn involved collaboration with experts from related fields such as ecology, agronomy, geology and climate science to explore complex soil-ecosystem interactions and trends.

Keywords: agri-food production, climate change, modern trends in soil research, soil health, smart agriculture.