

AGRICULTURAL SCIENCES

FEATURES OF INNOVATIVE TECHNOLOGIES IN AGRICULTURE OF UKRAINE

Danylo Klochkov¹

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Nowadays, with competition getting more and more fierce in the agrarian sphere, it's important for agricultural enterprises and individual farmers to use innovative practices and implement innovative technologies, which would help increase crop yield and improve land use efficiency, as well as run agrarian business in a cost-conscious, thrifty and income-generating manner as a whole. Among innovative technologies, which Ukrainian farmers try to implement in order to operate as remunerative businesses to some extent, the most efficient are as follows: comprehensive field agrodiagnostics, agrochemical analysis of soil, precision farming technologies, electronic field map, etc.

More and more agricultural enterprises are recently using such innovative technology as a comprehensive field agrodiagnostics that provides for selecting soil samples using an automated sampler with GPS tracking, conducting a comprehensive agrochemical analysis of soil, developing agrochemical maps, analyzing weather and climate conditions; identifying the critical and risky factors associated with the characteristics of soil and climate conditions and features of fields for growing crops, determining the natural and effective potential of the field, developing recommendations for the fertilizer system, taking into consideration the optimal forms, timing and methods of fertilization, recommendations on the expediency and efficiency of the introduction of precision farming elements, which determine the needs for soil chemical modification. The above mentioned agrodiagnostics has some advantages, which include the following: accurate and precise determination of the actual state of plant nutrition supply; increase in resource efficiency, optimization of financial expenses and reduction in production costs, increase in the effective fertility of the soil, etc.

An efficient farming practice is impossible without the implementation of precision farming technologies that will significantly optimize the use of resources and increase productivity. «Precision agriculture involves big data,

¹ Sumy National Agrarian University, Ukraine

drones, sensors, and farm management software... Environmental controls, cellular agriculture (micro farms), smart packaging technology, gene manipulation, and e-grocer businesses have also pushed the entire agricultural business world into the computer age» [1]. It should be mentioned that precision farming technologies include satellite positioning (GPS) system, automated steering system, remote sensing, geo-mapping, and variable rate technology (VRT), etc. [2]. Moreover, precision farming technologies provide for technological expertise, local-band fertilization, differentiated application of fertilizers, variable seeding rates, automation and remote data exchange.

Another way of improving crop production is to make an agrochemical analysis of soil that is efficient in order to assess the suitability of the field for growing certain crops, create an effective food system, improve the quality of crop production, reduce fertilizer costs, etc. The conducting of agrochemical analysis of soil will help identify the causes of crop failure, optimize the cost of the food system, find out whether a particular land plot is suitable for growing certain crops or not. The above mentioned agrochemical analysis of soil will provide some benefits to farmers: generation of accurate data on the number of hectares under cultivation, possibility to exclude land that is not cultivated from planning, to save resources and plan farmer's budget in an accurate and efficient manner. But the introduction of the above technology will generate value subject to high-quality and accurate analysis.

Today, an electronic field map is one of the key things for the introduction of state-of-the-art technologies in the agrarian sphere. Measuring the field area and creating an electronic field map is the first step to optimize expenses and save money on seed and crop protection agents, and fertilizers, fuel, etc.

In consideration of the foregoing, it is expedient to use the above mentioned technologies along with the best foreign practices successfully applied across the globe.

References:

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