SESIUNEA DE COMUNICĂRI ȘTIINȚIFICE A INSTITUTULUI DE CERCETARE-DEZVOLTARE PENTRU PROTECŢIA PLANTELOR, BUCUREŞTI

"Protecția plantelor, cercetare interdisciplinară în slujba dezvoltării durabile a agriculturii și protecției mediului"

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The role of artificial intelligence systems in the biological control of diseases, pests and risk identification: the AGRODATA project of S.C.D.A Brăila

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Introduction

The research proposed in this project is endorsed by the need for farmers to reduce trekking across their land, under the conditions of obtaining updated real-time information on crop status. This knowledge supplied by the modern solutions currently appropriate can be valued and transferred to interested farmers by creating an online database (web-portal) to be accessed by farmers who want crop monitoring with the help of satellites and remote piloted drones. With the help of the AGRODATA database, farmers who will join the project and will register with us from the second year of project implementation, after validating the results of the first year, will have access to updated data on the health of the monitored crops, including various warnings and recommendations formulated by scientific researchers. AGRODATA is an innovative project for the North Bărăgan area, which proposes a digitized working system for farmers, using drones and satellites, so that the agricultural crops can be monitored during all the vegetation period, and the respectively acquired data will be available online in any moment to those farmers who will join later AGRODATA platform.

Keywords

emerging agricultural technologies, artificial intelligence, agricultural robotics, automated agricultural production systems.

Purpose, objectives

The paper presents the plan for a research project, entitled Research on the digitalization of agriculture in Northern Baragan Plain, through the use of drones and satellites, with the purpose of monitoring crops and efficiency [AGRODATA] The steps for creating the soil sensor network, the online database, the soil and crop scanning with the help of drones and satellites, with the formulation of warnings and recommendations for each soil are presented. The implementation and use of these new technologies on farms, data collection and interpretation is a crucial step for the farmer as well as a benefit by which farmers reduce farm costs, protect the environment, know exactly what parameters have crops and any disturbance of the agricultural ecosystem produced by pathogens, pedo-climatic factors, etc. The final aim of this paper is to present some of the technologies used by farmers to assess agricultural ecosystems, based on data obtained from crops, making decisions based on these data (after their interpretation), implementing a sustainable process of making of decisions and execution of tasks with the help of technological equipment available on the farm.

Material and Methods

The research proposed in this project is supported the need for farmers to reduce field trips, in order to obtain some real-time updated information on crop status. This knowledge provided by modern solutions currently applicable can be capitalized on and passed on interested farmers by creating an online database to be accessed by farmers who wish remote crop monitoring using drones and satellites. Through this database we we propose to create it through the AGRODATA project, farmers who will register from the second year of implementation of the project, after validation of the results of the first year, will have access to updated data on the situation of field crops, as well as will receive the necessary recommendations for obtaining productions of quality.

Results

The analysis of the pluviometric regime of the agricultural year 2019-2020 allows the specification of the following particularities:
• Overall, the agricultural year 2019-2020 (September 2019- August 2020) was characterized as an excessive year of drought, because rainfall (Brăila Meteorological Station) totaled 220 mm, with a deficit of 222 mm compared to the multiannual monthly average of 442mm. The seasonal distribution attests to the following:
• Poor rainfall, totaling 34 mm (95 multi-year) with a deficit of 61 mm
• Winter also poorly supplied, accumulating 46 mm (91 multiannual) and deficit of 45 mm
• Poor spring, with only 53 mm (multi-year 109 mm) with a deficit of 56 mm
• Summer also poor in rainfall, with 88 mm cumulative, with a deficit of 59 mm

Conclusions

Based on the results of AGRODATA project we can make a prediction about and and what technological measures are needed in the near future. Based on the results of the project, farmer can see on the platform the fertilization plan for each plot, culture and warnings for real-time disease and pest attacks. In the second stage of the project, it will be possible to access the treatment recommendations of infection or pest outbreaks, with drone treatment solutions.