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THE COMPETENCIES REQUIRED OF THE AGRONOMY ENGINEER IN THE CONTEXT OF THE NEW LABOR MARKET DEMANDS

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Abstract: *In recent decades, the labor market has undergone significant transformations, driven by processes such as globalization, accelerated technological advancement, and climate change. In this context, the agricultural sector, traditionally perceived as conservative, has become a dynamic field, characterized by the rapid adoption of innovative technologies and sustainable production practices. The role of the agricultural engineer has expanded considerably, no longer being just a specialist in plant cultivation, but a complex professional with multidisciplinary skills. The agricultural engineer of the future will have a strategic role in ensuring food security and promoting sustainable agriculture.*

• Introduction

The accelerated transformations in agriculture, generated by digitalization, climate change, the development of smart technologies and the increasingly complex demands of the labor market, determine the redefinition of the professional profile of the agronomist engineer. Modern agriculture is no longer based exclusively on traditional knowledge regarding plant cultivation and agricultural resource management, but involves the integration of technical, digital, managerial and sustainability skills. In this context, employers require specialists capable of using modern technologies, efficiently managing natural resources and adapting agricultural activities to the requirements of sustainable development. Current requirements require flexible and permanently updated professional training, in line with economic and technological developments in the agri-food sector.

Traditional agriculture is progressively replaced by smart and precision agriculture, based on the use of information technologies, digital monitoring systems, drones, smart sensors and software applications for farm management. These transformations have led to the emergence of new requirements regarding the professional skills of the agronomist engineer, with employers requiring specialists capable of using modern technologies and interpreting complex data to optimize agricultural processes.

The importance of analyzing the skills required for an agricultural engineer is also determined by the strategic role of agriculture in the sustainable development of society. The growth of the global population, the need to ensure food security and the efficient use of natural resources require the existence of specialists capable of developing efficient and sustainable agricultural systems. In this regard, the professional training of an agricultural engineer must meet both the economic needs of the labor market and the objectives of environmental protection and sustainable rural development.

• Material and method

To carry out the research, specific methods of documentary analysis and comparative study on the evolution of professional skills required in the agronomic field were used. The research method involved the analysis of specialized literature on labor market transformations in agriculture and the identification of skills considered essential for the training of an agronomist engineer. The technical skills specific to the agricultural field were analyzed, the digital skills associated with precision agriculture, as well as the transversal skills necessary for effective integration into the labor market. The requirements of employers regarding practical training, adaptability and the level of entrepreneurial skills of graduates in the agronomic field were also analyzed.

• Results and discussions

The research results highlight that the labor market requires a complex professional profile for the agricultural engineer, characterized by combining traditional technical skills with digital and managerial ones. Employers attach increasing importance to the ability to use modern technologies, sustainable agriculture skills and agricultural data analysis and interpretation skills.

An important aspect identified in the study is the increasing role of digital skills in agronomic activity. In this context, the agricultural engineer must have skills in the use of specialized software applications, the interpretation of satellite images and the use of smart equipment.

Climate change and the degradation of natural resources determine the need to apply responsible agricultural practices, based on soil conservation, pollution reduction and efficient use of resources. Consequently, the agricultural engineer must know the principles of organic agriculture, climate adaptation strategies and modern sustainable management methods.

Communication skills, team coordination, critical thinking and problem-solving skills are considered essential for professional integration and for the management of modern agricultural activities. Entrepreneurial and economic skills become important in the context of the development of competitive agricultural holdings and accessing European funds.

The agricultural engineer of the future must combine classical technical skills with digital, managerial and social skills, in order to effectively respond to the challenges of contemporary agriculture and to contribute to the development of a competitive and sustainable agricultural sector.

• Conclusions

The economic, technological and social transformations of the last decades have profoundly changed the structure of the agricultural sector and have directly influenced the labor market requirements for specialists in the agronomic field. Modern agriculture requires professionals capable of responding to the challenges generated by digitalization, climate change and the requirements of sustainable development. The modern agronomist must be able to efficiently manage economic and human resources, develop development strategies and identify financing and investment opportunities. The development of competitive and sustainable agricultural holdings requires the existence of specialists who combine technical training with management and economic planning skills. Investments in agronomic education, digitalization and the development of professional skills are essential factors for increasing the competitiveness of agriculture and for ensuring a sustainable agricultural sector, capable of responding to the economic, social and environmental challenges of contemporary society.