

GLOBAL SUMMIT ON RENEWABLE AND SUSTAINABLE ENERGY



Martin Žagar

RIT Croatia, Croatia

IoT Platform for Sustainable Monitoring

Abstract: In recent years, there has been a growing focus on fostering collaboration within the agricultural supply chain, driven by the rising global demand for increased crop yields and sustainable farming practices. With limited resources, such as soil threatened by various environmental factors, along with challenges like drought and water scarcity, integrating Internet of Things (IoT) technology into smart farming presents a promising solution. This integration enables precise application of inputs, efficient data collection, and real-time farm monitoring. Research shows that collaboration among supply chain participants—farmers, processors, distributors, and retailers—can lead to significant benefits, including improved efficiency, cost savings, and better crop quality. However, the adoption of smart farming and collaborative approaches faces challenges, particularly due to high costs, time demands, and limited expertise among small-scale farmers. Additionally, farmers may be reluctant to share equipment, data, and knowledge due to concerns over data privacy. This study seeks to address these barriers by developing IoT-based smart farming models to optimize crop yields and promote sustainable agriculture. In collaboration with a small family farm in Croatia, we installed IoT sensors and collected data to build a machine learning model, leveraging expertise from academic campuses in Croatia and Dubai. The selected farm, located in Sisacko-Moslavačka County, represents a region characterized by underdevelopment, where traditional organic farming methods prevail, but farmers face challenges in improving productivity due to limited capacity and entrepreneurial skills.

Keywords: Agricultural Supply Chain Collaboration; Smart and Sustainable Agriculture; IoT-based Smart Farming Models; Small Family Farms

Biography: Assoc. prof. Martin Žagar, Ph.D. in Computer Science, EMBA, likes to apply scientific achievements in the real sector and work with students. He published over 130 scientific and professional papers and participated in various types of international and domestic, professional and research projects, as a leader and researcher. His areas of research interest are related to multimedia technologies, high performance computing, data compression, computer architectures and digital platforms, and telemedicine. He is currently employed at RIT Croatia, and is a member of the observatory for online platforms of the European Commission.