The AGROTRACE IoT-based Traceability Platform Concept - Abstract

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Summary

A significant proportion of the fresh products either does not reach the market due to quality deterioration or reaches the consumer in poor condition raising concerns about the products marketing and the public health. Latest advances in agricultural systems and the agri-food supply chain provide the ability to monitor the products following the whole chain starting from in-field production and through all the steps of transportation, processing, and marketing of the agricultural products. This procedure is called traceability and constitutes one the most important trends in the food market. Traceability can enhance collaboration between producers and traders with emphasis to the exports and is a principal step securing consumers' awareness of the products' production and handling conditions and food safety. In this work, a web and android-based platform is proposed which will monitor and guarantee the quality of the fresh products through a traceability system starting from farm level to the consumer. The system supports enhanced communication between sellers and traders and includes all the significant steps from the farm to the storage, processing, packaging, transportation and placement at the store's shelf, the final receiver, the consumer.

The system consists of a web platform with enhanced operability for all the participants in the food supply chain, production, processing and transportation, and an Android application for consumers containing all the basic functions, on-the-fly scanning and retrieving the history and all the important information of the agricultural products. The system uses open architecture securing interoperability with other systems. Traceability begins in the farm, where all the information concerning the cultivation management (irrigation, fertilization, pesticide applications etc.) is recorded. The produced fresh fruits and vegetables are labeled using a unique batch code which follows the product throughout the whole process and logistics chain. TraceID or QR code is used for labeling each individual product which can be scanned by the consumer or any operator in the food supply chain, to retrieve the product's producer's information and the cultivation, handling, and transportation history. IoT

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technologies are integrated in the system to support traceability through continuous monitoring of the product throughout the supply chain.

The proposed traceability system is a powerful tool for resolving or limiting important issues in the agri-food supply chain such as quality deterioration of the sensitive fresh fruits and vegetables and efficient management of agri-logistics, while supports the operation of circular economy approach. Therefore, this system will secure food safety and public health while limiting waste through better post-harvest management of the sensitive fresh agricultural products.

Keywords: IoT; traceability; supply chain.

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