Green Network: Solutions for Supply Chain Traceability and Monitoring of Environmental Parameters to Support Agriculture and to Improve Product Quality

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The term Smart Agriculture defines the sphere of solutions aimed at monitoring, managing and optimizing processes related to agriculture: being able to monitor environmental parameters related to agriculture reduce the use of resources and environmental impact. In this project, a forecasting model to predict the health state of tobacco plants was developed, along with two different types of sensor to measure soil and air parameters, such as electro-conductivity (soil), temperature and humidity (both air and soil) and leaf wetness. Measuring these parameters has a two-fold purpose: to set up a control and warning system for the activation of prevention and correction activities, and to give the possibility to the operator who requests monitoring, to build a useful database to elaborate analysis and forecasting strategies. The device is built so that it can be placed in open fields and it can transmit data to a control unit that acts as a hub for all the sensors displaced in the area. The collected data are then processed by a software and elaborated into different graphs, which can be monitored by two different users, farmers and agronomists, depending on which kind of information they want to investigate. A spore-detection module will be installed to prevent plant infections caused by pathogens. From the collected data it has been shown that this project would have a positive impact on agriculture, making it more controlled, smart and efficient, thus improving reducing its environmental impact and the quality of the products obtained.

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