



Field Monitoring System and Analysis of Rainfall Data for Tomato Cropping Calendar in Batac City, Ilocos Norte, Philippines

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ABSTRACT – Using a Field Monitoring System (FMS), a demonstration study on soil moisture monitoring was conducted in a tomato field in 16N, Quiling Norte, Batac City, Philippines. The FMS consisted of an intelligent sensor node which is capable of automatically measuring rainfall, relative humidity, solar radiation, soil moisture/temperature/electrical conductivity (E C) and wind speed. Additionally, 23 years of rainfall data (1990-2011) from the Mariano Marcos State University Agrometeorological Station were used to determine the start of rain, maximum dry run and end of season/rains. Dynamic changes in soil moisture/temperature/EC were particularly measured and monitored. Based on the findings of the demonstration experiment, the system was effective, reliable, and efficient in monitoring the available moisture in the soil. Irrigation commences when 56-60% of Readily Available Moisture (RAM) has been depleted. Irrigation was done every 11 days at a depth of 50mm to a field capacity of 24%.

Meanwhile, off-season tomato may be best planted on May 11 to May 19 during the rainy season (upland condition) and on the first week of November during the dry season. Better and more detailed understanding of the changes in local environmental and meteorological conditions in 16N Batac City, Ilocos Norte is possible using the FMS data for the next several years. With the noticeable manifestations of climate change, probable modification of the formulated cropping calendar may be done as an adaptation measure in tomato production.

Keywords: Field Monitoring System, Readily Available Moisture, Irrigation, Sensors, Cropping Calendar, Climate Change



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