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Characteristics of Soybean Growth and Yield Using Precise Water Management System in Jeollanam-do

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[Abstract]

With the development of digital technology, the size of the smart agriculture market at home and abroad is rapidly expanding. It is necessary to establish a foundation for sustainable precision agriculture in order to respond to the aging of rural areas and labor shortages. This study was conducted to establish an automated digital agricultural test bed for soybean production management using data suitable for agricultural environmental conditions in Korea and to demonstrate the field of leading complexes. In order to manage water smartly, we installed a subsurface drip irrigation system in the upland field and an underground water level control system in the paddy field. Based on data collected from sensors, water management was controlled by utilizing an integrated control system. Irrigation was carried out when the soil moisture was less than 20%. For effective water management, soil moisture was measured at the surface, 15cm, and 30cm depth. The main growth characteristics and yield, such as stem length, number of branches, and number of nodes of the main stem, were investigated during the main growth period. During the operation of the test bed, drought appeared during the early vegetative growth period and maturity period, but in the open field smart agriculture test bed, water was automatically supplied, reducing labor by 53% and increasing yield by 2%. A test bed was installed for each field digital farming element technology, and it is planned to verify it once more this year. In the future, we plan to expand the field digital farming technology developed for leading farmers to the field.

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