

기후변화 대응 물 효율성 증대를 위한 스마트 관개기술 연구  
Smart irrigation technique for agricultural water efficiency against  
climate change

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**Abstract**

Climate change causes unpredictable and erratic climatic patterns which affects crop production in agriculture and threatens public health. To cope with the challenges of climate change, sustainable and sound growth environment for crop production should be secured. Recent attention has been given to the development of smart irrigation system using sensors and wireless network as a solution to achieve water conservation as well as improvement in crop yield and quality with less water and labor. This study developed the smart irrigation technique for farmlands by monitoring the soil moisture contents and real-time climate condition for decision-making support. Central to this design is micro-controller which monitors the farm condition and controls the distribution of water on the farm. In addition, a series of laboratory studies were conducted to determine the optimal irrigation pattern, one time versus plug time. This smart technique allows farmers to reduce water use, improve the efficiency of irrigation systems, produce more yields and better quality of crops, reduce fertilizer and pesticide application, improve crop uniformity, and prevent soil erosion which eventually reduce the nonpoint source pollution discharge into aquatic-environment.

**Key words:** soil moisture content, evapotranspiration, water-saving, irrigation efficiency, smart irrigation, climate change

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