

Development of water control for tropical wetland agriculture.

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Editors: Pagliai, M., Jones, R.

Document Title: Advances in Geocology

Abstract:

Water level control in agriculture land converted from tropical peat land is very crucial, not only for attaining optimum production but also for preventing soil degradation. Commonly, peat soil tends to subside when the water level goes down below a considerable threshold point for a period of time. Controlling water level with conventional way such as gravitation method has been proved ineffective since, in most cases, water level changes abruptly with time as directly affected by tidal and rainwater. This research was aimed at applying a real-time water control system in providing sufficient water for plant growth and at the same time preventing soil subsidence. Experimental studies were carried out in a small plot of 5 m × 5 m in tidal-influenced wetland agricultural area. Groundwater level in the plot was measured continuously using pressure transducer, and this information was transferred electronically to a microcomputer to be analysed by means of Fuzzy Logic Algorithm. Output from the computer was sent to an actuator that would command whether drainage or irrigation pump should be ON for a definitive time. The results showed that groundwater level inside the plot could be maintained around the set point level even though the actual groundwater level changed considerably with time.

Publisher: Catena Verlag