**Estimation Of Water Sufficiency For Growing Rice by Analysing Soil Moisture**

**Derived From Radarsat-2 Quad Polarimetric Imageries**

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**Abstract**

One of key success in increasing rice production in paddy fields is through sufficient water management . Lack of water in plant growing will cause decline in rice production indicated by plant leafs curl , leafs burned , rice tillers reducing , plant dwarf , flowering delayed , and unfilled out seeds. The needs of water volume is not similar at each growing stadium. Water needs variation depend on rice variety and paddy field management system . One way to determine how much volume of water needs at each plant growing stadium is by variability of soil moisture monitoring . Variability of soil moisture monitoring is very important , especially in areas where water resources are scarce. Satellite based remote sensing can derive soil moisture parameters spatially over the wide area. The main purpose of the research is estimation of water adequacy for growing rice by image analysis concerning soil moisture derived from RADARSAT - 2 Quad polarimetric combined with weather data and the observed field data. Study area located in Indramayu District of West Java Province . The soil moisture modeling was developed through the synthesis of IEM model and Oh model . Integration of the FAO Penman - Monteith model , WRSI model , water balance models. And result of Synthesising Oh model and IEM model is used to analyze the water demand on rice growing stadia. The expected results of this research are estimating the adequacy of water for growing rice by image analysis of soil moisture derived from RADARSAT - 2 Quad polarimetric, modeling in soil moisture based on Polarimetric method, Implementation methods developed over the study area providing analysis of water demand in growing stadia of the rice plant in West Java as a reference for decision makers concerning the paddy irrigation system problems .

**KEY WORDS :**  *Estimation, Paddy, Soil Mouisture, Radarsat-2 Quad Polarimetric*