**RICE CROP PHENOLOGY USING TEXTURE ANALYSIS  
ON TIME-SERIES IMAGES OBTAINED FROM STILL CAMERA**

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**KEY WORDS:** Rice crop cycle, Phenology, Paddy, Texture analysis, GLCM, still camera

**ABSTRACT:** In this study, an algorithm is proposed to determine the duration in a rice crop cycle base on texture analysis. During an observation period in 2013, daily images are acquired using a still camera which was installed at paddy field. Given a set of image time-series, the texture analysis is used to classify different stages of the rice growing. Regarding to hypothesis, the rice crop cycle represented by paddy field texture are separated into three phases; starting (sparse texture), midpoint (numerous texture) and ending (no texture). The texture analysis is based on Gray Level Co-occurrence Matrix (GLCM). The proposed analysis consists of three parts; define the paddy region, compute the texture features and analyze the texture features. Initially, subset-image representing the paddy region is manually defined as the area of interest (AOI). Then, edge detection is used for generating co-occurrence matrix described as a texture feature. Various texture features e.g. contrast, correlation and energy are compared for obtaining an efficient model. Finally, the analysis of texture features obtained from time-series images can be used to understand the stages of rice growing. The results show that the texture analysis on the paddy region can efficiently be used to know the duration of rice crop cycle. To obtain more accurate results, our perspective work, we will also combine other features in the system for example: color feature which is generally used to monitor and analyze the phenology from the paddy field.

**Suggestion topic:** Remote Sensing Applications-Agriculture & Crops

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**Preference:** Oral presentation