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MONITORING OF OIL PALM FIELDS USING UAV IMAGE USING GLCM METHOD

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Abstract

Unmanned Aerial Vihicle (UAV) is a tool used to monitor oil palm land, from the beginning of the growth period so that it can be monitored which parts of the plantation land have fertile (growing perfectly), less fertile (growing but not perfect), or not growing at all. The orthophoto image produced by this UAV can be processed using Matlab, to distinguish fertile, less fertile and non-growing oil palm plants using the Gray Level Co-Occurrence Matrix (GLCM) method based on four parameters with gray degree directions of 0°, 45°, 90°, and 135° with 30 image samples. The four parameters are Contrast, Correlation, Energy or Entropy and Homogeneity. The results of image processing using the GLCM method are recalculated with statistics to map fertile, less fertile and non-growing areas. From the statistical results, the range value for the 00 contrast area is 7.7635, 450 contrast is 14.2758, 900 contrast is 8.2313, 1350 contrast is 12.5904. The 00 correlation range value is 0.1998, 450 correlation is 0.3625, 900 correlation is 0.1729 and 1350 correlation is 0.7310. The value range for 00 energy is 0.1137, 450 energy is 0.0965, 900 energy is 0.0988, 1350 energy is 0.4215. The value range for 00 homogeneity is 0.2964, 450 homogeneity is 0.2870, 900 homogeneity is 0.2553 and 1350 homogeneity is 0.2755

Keywords: UAV, Palm Oil,orthophotos, glcm

INTRODUCTION

Image processing has a very wide spectrum of applications in various fields of life both in the fields of astronomy, biomedicine, biometrics, archaeology, archives and documents, industry and remote sensing using satellite image technology.

The use of satellite images has been widely carried out, especially to identify changes in the shape, area or condition of an area. This study utilizes satellite images using *Unmanned Aerial Vihicle* (UAV) to monitor oil palm plantations. The development of technology in the field of plantations is also increasing both in terms of planting, fertilizing, watering and harvesting produce. To get satisfactory yields, it is necessary to monitor the growth of oil palm plants from the beginning so that oil palm plants that are fertile, do not grow, or grow but are not healthy can be identified quickly and can be planted and fertilized again. For plantations with a small area, manual monitoring can be done. But it would be a problem if the area of