

Identification of Healthy and BSR-Infected Oil Palm Trees Using Color Indices

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Abstract : Most of the oil palm plantations have been threatened by Basal Stem Rot (BSR) disease which causes serious economic impact. This study was conducted to identify the healthy and BSR-infected oil palm tree using thirteen color indices. Multispectral and thermal camera was used to capture 216 images of the leaves taken from frond number 1, 9 and 17. Indices of normalized difference vegetation index (NDVI), red (R), green (G), blue (B), near infrared (NIR), green - blue (GB), green/blue (G/B), green - red (GR), green/red (G/R), hue (H), saturation (S), intensity (I) and thermal index (T) were used. From this study, it can be concluded that G index taken from frond number 9 is the best index to differentiate between the healthy and BSR-infected oil palm trees. It not only gave high value of correlation coefficient ($R=-0.962$), but also high value of separation between healthy and BSR-infected oil palm tree. Furthermore, power and S model developed using G index gave the highest R^2 value which is 0.985.

Keywords : oil palm, image processing, disease, leaves

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