

Characterizing Spectral Signatures For The Moisture Of Grass Land

Kuan-Tsung Chang ^{1*}, Ta-Ko Chen², Ge-Wen Lee³, Jin-King Liu ⁴, Szu-Wei Chen ⁵,
He-Chin Lin ^{5,6}

^{1*}Corresponding author, Dept. of Civil Eng. and Environmental Informatics, Ming Hsin University of Science and Technology, Xinfeng, Hsinchu 304 Taiwan,
ktchang1216@gmail.com

²Green Energy and Environment Research Laboratories, Industrial Technology Research Institute, Chutung, Hsinchu 310 Taiwan, TKChen@itri.org.tw

³Dept. of Applied Geomatics, Chien Hsin University of Science and Technology, Zhongli, Taoyuan 320 Taiwan, gwlee@uch.edu.tw

⁴LiDAR Technology Co., Zhubei, Hsinchu 302 Taiwan, jkliu@lidar.com.tw

⁵Institute of Civil Eng. and Environmental Informatics, Ming Hsin University of Science and Technology, Xinfeng, Hsinchu 304 Taiwan, hiphopsoul0919@gmail.com

⁶Business Leader, Xinfeng Golf Course, Hsinchu 304 Taiwan.

Abstract: Planting grass is a common means for the green landscaping. And, irrigation sufficiency is an indispensable issue in the maintenance of grass land. To establish the relationship between spectral characteristics and moisture of grass land after and before irrigation, this study propose to gather the spectral signatures in the grass land of the Golf course using the field portable spectro-radiometers and its corresponding post processing software. Using an irrigation sprinkler in the Greens as the center of test area, there are nine points detected within the scope of a round area in a radius of eight meters. Except for collecting the spectral data using the field spectro-radiometers (GER3700), a soil moisture meter (TDR 300) is also used to measure in-touch the moisture of the grass land as reference. Moreover, a handheld thermal imager is used to detect the surface temperature value of the test points. A variety of measured data for each instrument are analyzed and summarized to build the operational procedures of spectral library for the Golf course. Preliminary experimental results indicate that the near-infrared spectral characteristics of grass are highly correlated with the moisture change. In the future, more experimental data will be collected to create a complete spectral library for the Golf course.

Keyword: Grass Land, Moisture, Biomass Analysis, Spectral Signatures