

## 작물 스트레스와 관련된 식생지수의 계절적 특성을 추출하기 위한 자료 처리 방법

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### Data Processing Method to Extract the Seasonal Characteristics of Vegetation Indices Related to Crop Stress

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Sensors for observing spectral reflectance of crops in the near surface have been produced, and they can continually monitor the status of crops. For example, the spectral reflectance is utilized in the form of vegetation indices. Normalized vegetation difference index (NDVI) is one of the representative vegetation index observed by the ground-based sensor, and it can express the growth and development of crops. In addition, photochemical reflectance index (PRI) sensor was developed to comprehend the physiological conditions of crops. PRI had both diurnal and seasonal patterns, while NDVI had only seasonal pattern during the cultivation period. Thus, it is hard to understand seasonal patterns from continuously observed PRI data although it will be useful to detect the physiological stress on growth phases. Our aim is to develop the simple method to extract the seasonal characteristics of PRI. Spectral reflectance sensor (SRS) were installed in the near surface to continually monitor the crops such as paddy rice, barley, and garlic. The accuracy of SRS-derived vegetation indices were assessed, and they were the reasonable correlation with spectrometer-derived vegetation indices. After that, meteorological variables of insolation, amount of clouds, sunshine duration, and precipitation were used to exclude distorted seasonal values of PRI and NDVI. When sunshine duration was used, the seasonal characteristics of vegetation indices were appeared reasonably. The correlation ratio between vegetation indices from observed reflectance raw data and smoothed vegetation indices was improved statistically. These processed seasonal pattern was clearly distinguish the heading stage in paddy rice and barley. Our results contributed to comprehend the seasonal characteristics of vegetation indices continually measured by SRS, and they will be useful to detect crop stress.

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