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ONLINE ISSN : 1883-1184

PRINT ISSN : 0289-7911

Journal of The Remote Sensing Society of Japan

Vol. 27 (2007) , No. 3 p.205-215

[\[PDF \(1370K\)\]](#) [\[References\]](#)**Salt Breezed Damage Analyses for Rice Paddy by Reenact Experiments**Yohei MINEKAWA¹⁾, Kunio ODA²⁾, Sizuka MORI³⁾ and Yukio KOSUGI¹⁾

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(Received July 18, 2006)

(Accepted April 23, 2007)

Abstract

We propose a method for evaluating the damaged rice paddy caused by salt breeze. In this paper, we analyze highly-precise ground-truth hyperspectral imaging data of damaged rice paddies acquired in indoor experiments under controlled conditions. The ground-truth data are analyzed to establish the analytical method that can be applied to the data acquired by higher-altitude observation systems. In order to provide the damaged rice paddies by salt breeze as observation targets artificially, experiments to reenact salt-breezed damage are conducted by exposing plant pots to salt solution blow under the controlled condition. The sequential changes of the hyperspectral data in damaged leaves are observed every 24 hrs, up to 120 hrs after the saline treatment. In order to evaluate sequential change of the activation level at damaged leaves, the traditional index, the blue shift of the red edge, is applied. Based on the observation of sequential spectral change, we utilize an index : Normalized Difference Green Index (NDGI), to interpret the damage of rice paddies. The index, using small number of channels, is adopted for the purpose of analyzing multispectral data such as satellite images eventually. Evaluating the distribution of the data points in the feature space spanned by NDGI in combination with traditional vegetation index NDVI, the level of salt-breezed damage is explained precisely. At the end of this paper, we show the applicability of the method to the mixel data and multispectral imaging data that can be generally acquired by satellite or airplane.

Keywords: Salt Breezed Damage Analyses, Hyperspectral Images, Sequential Change, Reenact Experiments, NDGI

To cite this article:

Yohei MINEKAWA, Kunio ODA, Sizuka MORI and Yukio KOSUGI: Salt Breezed Damage Analyses for Rice Paddy by Reenact Experiments , Journal of The Remote Sensing Society of Japan, **27, 3**, pp.205-215, 2007 .

JOI JST.JSTAGE/rssj/27.205

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