

## An Experimental Study of Crop Discrimination Using Pi-SAR2 Data

著者	FURUYA Soh, YONEZAWA Chinatsu, ISHITSUKA Naoki, KOJIMA Shoichiro
journal or publication title	Journal of Integrated Field Science
volume	15
page range	78-78
year	2018-10
URL	<a href="http://hdl.handle.net/10097/00124019">http://hdl.handle.net/10097/00124019</a>

### **p3. An Experimental Study of Crop Discrimination Using Pi-SAR2 Data**

Soh FURUYA<sup>1</sup>, Chinatsu YONEZAWA<sup>1</sup>, Naoki ISHITSUKA<sup>2</sup> and Shoichiro KOJIMA<sup>3</sup>

<sup>1</sup>Graduate School of Agricultural Science, Tohoku University, Japan

<sup>2</sup>National Agricultural and Food Research Organization, Japan

<sup>3</sup>National Institute of Information and Communications Technology, Japan

Crop discrimination in agricultural field using remote sensing data is expected for food security management. Synthetic Aperture Radar (SAR) would play a powerful role of remote sensing instrument, because it enables us to obtain high-resolution imagery under all weather conditions. Polarimetric SAR has potential to detect differences of surface characteristics and properties. In this study, the possibility of crop discrimination using air-borne polarimetric X-band SAR was examined.

The airborne X-band SAR, Pi-SAR2 data acquired in full polarimetric mode in August 2013 and 2014 were analyzed in order to discriminate agricultural crop types. The target area was an agricultural field in Field Science Center, Tohoku University located in Osaki-shi, Miyagi-ken. Yamaguchi four-component decomposition method was applied to the Pi-SAR2 data to decompose the data into scattering mechanisms. We also computed polarimetric parameters as scattering entropy, anisotropy and alpha angle using Cloude-Pottier eigenvalue/eigenvector decomposition. An imagery obtained from high resolution satellite, Worldview-2, was used to make a vector data set of agricultural parcels. This vector data was overlaid on the decomposition images of Pi-SAR2 data, and the mean value for each agricultural parcel was computed.

By visual interpretation of four-component decomposition images, agricultural parcels in cultivated dent corn and rye were discriminated from other parcels. It is difficult to distinguish parcels of paddy rice from that of grass plant. There are several grass plant parcels, and some of them showed different scattering characteristics from others. These results suggest the possibility of the crop discrimination using Pi-SAR2 data.