PREDICTION OF YIELD AND QUALITY OF CROPS BY USE OF SATELLITE IMAGES

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1. INTRODUCTION

It is important to monitor crop leaf color, canopy size, fruit number, and other information to conduct precision agriculture. Since it was considered that they could be measured by satellite images, we tried to study on prediction on crop growth based on images from AVNIR-2.

2. ANALYSIS DATA

It was considered that frequent acquired images from satellite might give features which have relation with nitrogen contents, product qualities, and yields at appropriate growth stages. In addition, a mobile fruit grading system could measure fruit size, color, and sugar contents, while field servers could accumulate climate data and soil data of target fields for multivariable analysis. Two local regions were targeted for the analysis: Yagi, Nantan, Kyoto city (paddy fields) and Idai, Matsuyama City (citrus orchards).

We tried to find appropriate images of the target paddy fields out of acquisition images of June, July, August, September and October during 2007-2009. However, there was no image which showed soil surface of the field because of cloudy conditions. As for citrus orchards, there was also no image which showed trees.

Although it is not easy to acquire images without cloud due to rainy season in Japan, it was expected that observation satellite with higher frequency or multitarget pointing technologies might make soil surface and orchard image acquisition possible.