Examination of the semi-automatic calculation technique of vegetation cover rate by digital camera images.

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The rice is one of the staple foods in the world. High quality rice production requires periodically collecting rice growth data to control the growth of rice. The height of plant, the number of stem, the color of leaf is well known parameters to indicate rice growth. Rice growth diagnosis method based on these parameters is used operationally in Japan, although collecting these parameters by field survey needs a lot of labor and time. Recently, a laborsaving method for rice growth diagnosis is proposed which is based on vegetation cover rate of rice. Vegetation cover rate of rice is calculated based on discriminating rice plant areas in a digital camera image which is photographed in nadir direction. Discrimination of rice plant areas in the image was done by the automatic binarization processing. However, in the case of vegetation cover rate calculation method depending on the automatic binarization process, there is a possibility to decrease vegetation cover rate against growth of rice. In this paper, a calculation method of vegetation cover rate was proposed which based on the automatic binarization process and referred to the growth hysteresis information. For several images obtained by field survey during rice growing season, vegetation cover rate was calculated by the conventional automatic binarization processing and the proposed method respectively. And vegetation cover rate of both methods was compared with reference value obtained by visual interpretation. As a result of comparison, the accuracy of discriminating rice plant areas was increased by the proposed method than the conventional one.