



Estimating fractional vegetation cover of the litter using the photographic method

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Fractional vegetation cover (FVC) is an important parameter of the ground surface ecosystem. The FVC measurement methods are fundamentally based on the spectral feature that reflects the pigment assimilation. However, the precision of the automatic classification technology using computer is generally low when distinguishing fallen dry branches and withered leaves (defined as litter) from the soil due to the small spectral difference between the litter and the soil. To solve the problem, we first used the photographic method for collecting the image of the litter-contained sample region, and then extracted the textural features from the image and served as the training set which consisted the litter-contained chips and the soil only. Based on the retrieved feature and the training set, a classifier was established using the support vector machine (SVM) method. FVC of the region was finally calculated by applying the classifier to a set of randomly chosen chips of the image. The experiment using corn stalks showed the FVC error was less than 5% and the calculation was independent of the actual level of vegetation given the reasonable sampling volume. The high precision and efficiency paved the way for its application in retrieving FVC of other non-photosynthesis vegetation.