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Mapping the Potential Distribution of Dwarf Bamboo Using Satellite Imagery and DEM

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Abstract
In recent years, various models were developed to evaluate forest ecosystem productivity. Leaf area index (LAI) and fraction of photosynthetically active radiation (FPAR) are key parameters in these models. Remotely sensed data is used to identify these parameters. However, these parameters derived from remotely sensed data have been treated as that of forest canopy. Understory plant, especially dwarf bamboo, plays an important role to the carbon balance in a cool-temperate forest ecosystem. Understanding the areas included the effect of dwarf bamboo is therefore needed for precise evaluation of forest ecosystem productivities using remotely sensed data. Logistic regression model based on the knowledge of ecological research was applied to the mapping of the distribution of dwarf bamboo using satellite remotely sensed data and digital elevation model (DEM). Light condition on the forest floor is the main factor affecting dwarf bamboo. In this study, relative direct solar radiation, NDVI in leaf constant period and difference in NDVI between pre- and post-leaf fall period were valid parameters for mapping the distribution of dwarf bamboo. The logistic regression model developed by this study indicated an overall accuracy of 86.11%.

 Keywords: dwarf bamboo, cool-temperate forest, light condition, digital elevation model

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