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## Effect of Crop Rotation and Compost Application on Crop Production and Soil Properties

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### [Introduction]

Crop production affected by many agricultural practices such as crop rotation, fertilizer and compost application. For the purpose of food security and increasing self-sufficiency rate of food, the rotation of soybean(*Glycine max*) and rice(*Oryza sativa*) is recognized as one of the most important cropping system in paddy field in Korea. This study was conducted to investigate the effect of crop rotation and chemical/compost application on soil properties and crop production.

### [Materials and Methods]

The study was carried out at the research field of National Institute of Crop Science in Miryang, Korea. There are three land use type: 1) continuous rice cultivation, 2) continuous soybean cultivation, and 3) soybean-soybean-rice cultivation in rice paddy field. Each treatment was applied with chemical fertilizer or compost including the control.

### [Results and Discussion]

Rice and soybean development was affected by land use type and fertilizer application. The treatment of rice and soybean rotation had significantly greater rice height compared to the continuous rice cultivation. Fertilizer or compost application increased plant height, number of tiller and SPAD value at day after transplanting 41 stage. Rice height and number of tiller was significantly higher with compost application compared to only chemical fertilizer application. Plant available nitrogen content in soil was not significant by land use type, but it was significantly increased by chemical or compost application. The content of organic phosphate in soil was higher with compost application, but there was no difference between continuous rice cultivation and crop rotation. The results of this study showed that the rice-soybean rotation and compost management practices influenced on soil properties and crop productivity and it should be investigated for long-term sustainability.

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