

Effects of Crop Sequence and Plant Residue Application
on Crop Yield and Soil Fertility in Cropping Systems¹

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Abstract

Productivity potential of crop in each of the cropping patterns is mainly affected by the crop sequence of rotation, and its soil and fertilizer management. Long-term trial showed that spring rice yield decline in first 3 years when previous crop, soybean, was substituted with corn, however, rice yield would increase after corn was continuous planted for more than four years. Spring rice would reduce yield 2-3% when plant residue of previous crop, no matter corn or soybean, was incorporated into the soil. The yield of corn planted in dry fall season increased about 7% when previous rice crop, rice, was substituted with sesbania.

However, sesbania mulching would reduce corn yield by 8% if compared with rice straw mulching. The change of cropping system from double rice to single rice with two seasons of upland crop would significantly reduce soil organic matter content which can not reach new balance within 5 years. Plant residue application slowed down the speed of dropping. Soil pH would increase when soybean was planted before rice crop. Soil available K content related to the amount of K fertilizer applied, while available P content was affected by soil pH.

Key words : Crop sequence \ Plant residue \ Soil fertility.

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