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Soybean Yield Components in Responses to Planting Date and Tillage Practice in Southern Plains Paddies

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[Introduction]

There have been growing concerns about over-produced rice and reduced rice consumption per capita in Korea. To reduce rice production and meet the dietary change, converting rice paddy to upland crop production system was suggested. For Southern plains in Korea peninsular, winter cash crop, garlic or onion, followed by summer upland crop, soybean, waxy and silage corn, can be a reasonable rotation system. However, poor drainage and following flooding stress could be challenges for the system. Thus, in the current research, we investigated if planting dates (from early June to late July) with different tillage practice affect soybean yield component in the field where it had been used for rice production.

[Materials and Method]

This research was conducted Gyeongsang National University research farm located Sacheon City, Gyeongnam where it had been used for rice production for decades. The experimental design was a randomized complete block design with a split-plot arrangement. Tillage practices; deep cultivation then conventional tillage (DC) and conventional tillage only (CT) was main-plot, and planting date (6/10, 6/25, 7/10, and 7/25; PD 1 to 4, respectively) was sub-plot. Two Cultivar ‘Deawon’ and ‘Haepum’ were planted and analyzed separately in 2018. Before planting, starter fertilizer was applied in the level of 3-3-3kg/10a. Other management practices were conducted according to RDA guideline. Plants were harvested and analyzed when they reached full maturity.

[Result and discussion]

Across the tillage practice, delayed planting date, DT4, has shown lowest the number of pods, total seed number per plant, 100-grain weight, and overall yield, significantly for both cultivars. For Daewon, DT4 showed 51% yield decrease comparing to DT2 (245.2kg/10a). This trend was same for Haepum, DT4 showed 46% yield decrease comparing to DT2 (246.0kg/10a). Hence, DT 1, 2, or 3 did not show significant yield difference but DT2 showed greatest yield in number for both cultivars. However, tillage practice did not affect yield components. If the winter cash crop harvest has to be delayed, there is a harvest window until mid-June as long as summer Monsoon does not affect planting practice for summer crop. This is the data from one year experiment. Thus, an additional year factor has to be concerned as we continue to work on the current topic.

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