

PA-04

## Screening of Promising Multiple Cropping System Adapting to the Middle Area of Korean Peninsula

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### [Introduction]

The first and most important advantage of multiple cropping system is to increase output per area as multiple cropping involves cultivating two or more crops in the same field during one season. The technique of multiple cropping allows farmers to achieve better results by making practical use of resources such as soil, water, fertilizers, etc. Utilization of nutrients is maximum with multiple cropping as crops having different nutritional requirements grow simultaneously in the same piece of land. Various types of crops can be cultivated in mixed cropping practice, such as food crops, vegetables, silage etc. This helps farmers become self-sufficient in food production while also providing them the option to sell additional products. In this study, promising multiple cropping systems in north central region in Korea are observed based on meteorological data and growth and yield of crops.

### [Materials and Methods]

Total three different cropping systems were used for the experiment and related crops were sowed or transplanted according to the standard cultivation method at the Suwon and Ansong regions during 2018. Total 7 crops such as corn, perilla, sesame, potato, onion, rice garlic were used as materials. We compared disaster competition, manpower reduction and income increase among cropping systems and surveyed general growth characteristics and yield components of each crop.

### [Results and Discussions]

According to the results, the cropping system 'potato-sesame-garlic' showed 96.1% of manpower deduction rate in view of mechanized processing introduction at the sowing and harvest time. The cropping system 'corn-perilla-onion' and 'corn-sesame-onion' showed 81.3%, 84.3% respectively. Incase of rice which was designed to control showed 81.6%. We also compared income increase potential among cropping systems. the cropping system 'potato-sesame-garlic' showed 17,761,000 Korean won of gross income and net income was 14,742,000 Korean won. The gross income of 'corn-perilla-onion' and 'corn-sesame-onion' were 11,073,000 Korean won, 10,156,000 Korean won respectively. And each of net income was 8,225,000, 7,506,000 Korean won.

The income index of 'potato-sesame-garlic', 'corn-perilla-onion' and 'corn-sesame-onion' compared to 'mono rice cropping' were 1,643%, 917% and 837% respectively.

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