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Selection of Promising Varieties for the Multiple Upland Crops Cropping System of Paddy Field in the Middle Area of Korean Peninsula

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[Introduction]

The first and most important advantage of cropping system is to increase output per area as multiple cropping involves cultivating two or more crops in the same field for single or two seasons. Farmers determine various factors such as crops, varieties, and cultural methods to earn benefic gains under cropping system. Various types of crops can be cultivated in mixed cropping practice, such as food crops, vegetables, silage crops. This helps farmers become self-sufficient in food production while also providing them the option to sell additional products for making money. This experiment was conducted to find out optimum crop varieties under potato-sesame-garlic multiple cropping system in the central northern area of Korea.

[Materials and Methods]

The experiment was conducted at the Suwon and Anseong during 2020 under two-year three-crops multiple cropping system of potato-sesame-garlic and single rice cropping system as control. Total 9 varieties(potato variety ‘Sumi’, ‘Jopoong’, ‘Choobaek’ sesame variety Yangbaek, Ansan, Sungbun, garlic variety Eiseong, Seosan, Danyang) were planted and compared to general growth characteristics, yield potential, cultivation stabilization, manpower reduction and income generation etc.

[Results and Discussion]

Relatively higher yield potential at the unit area(10a) among varieties of crops were potato variety Jopoong(3,800kg), sesame variety Ansan(75kg) and garlic variety Danyang(987kg). We also compared net income effect as the varieties yield potential difference. Potato variety, Jopoong showed 3,889,000won per 10 are which was 0~269% higher than other two variety. Sesame varieties, Ansan showed 697,000won per 10 are which was 85% higher than other two varieties. Garlic variety, Danyang showed 12,808,000won per 10 are which was 25~38% higher than other two varieties. In the net income effect comparison of single rice cropping system as control with multiple cropping system, potato-sesame-garlic cropping system showed about 3.7 times of higher income index. Of course, suggested research result was only from one year 2020, so we have to look at the various factors to affect crop variety yield potential such as meteorological factors such as temperature, soil moisture, irradiation etc and physiological disaster such as disease & insects incident, lodging rate etc. Those are very important factors to determine crops yields potentials and we will investigate yearly yield variation through the same experiment conduction in 2021.

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