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Income Analysis of the Potato-Sesame-Garlic Multiple Cropping System of Paddy Field in 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 and income. 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. To earn much more gain, economic crops such as vegetables, oil crops are important to introduce the multiple cropping system. This experiment was conducted to compare the income of potato-sesame-garlic multiple cropping system to the single cropping system such as soybean or rice single cropping system in the central northern area of Korea.

[Materials and Methods]

The experiment was conducted at the Suwon and Anseong during 2020~2021 under two-year three-crops multiple cropping system of potato-sesame-garlic and single rice cropping system as control. Total 4 varieties(potato variety 'Choobaek' sesame variety 'Ansan', garlic variety 'Danyang', rice variety 'Samkwang') were planted and compared to general growth characteristics, yield potential, cultivation stabilization, manpower reduction and income generation etc.

[Results and Discussion]

Potato variety Choobaek showed total yield of 5,287kg/10a, gross income 4,748,000won, operating expense 1,185,000won, net income 3,563,000won respectively. Seame variety Ansan showed total yield of 124kg/10a, gross income 2,786,000won, operating expense 491,000won, net income 2,295,000won respectively. Garlic variety Danyang showed total yield of 1,149kg/10a, gross income 3,008,000won, operating expense 1,796,000won, net income 1,212,000won respectively. Rice variety Samkwang(single-single cropping) showed total yield of 1,415kg/10a, gross income 3,563,000won, operating expense 970,000won, net income 2,593,000won respectively. In the net income effect comparison, potato-sesame-garlic cropping system showed about 2.7 times of higher income index rather than single-single rice cropping system as control with multiple cropping system. Of course, suggested research result was only from one year 2021, 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 2022.

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