

Abstract

A Study of Technical Efficiency and Productivity Changes in Rice Cultivation of Young Smart Farmers in Chainat Province aimed to compare the costs and returns of rice production between young smart farmers and general farmers. The study aimed to analyze the technical performance productivity changes among young smart farmers and formulate guidelines for developing their potential. Data was collected through interviews with 40 young smart farmers who cultivated rice in the crop year 2018/19 and cultivation year 2021/22, as well as 40 general farmers who produced rice in the cultivation year 2021/22.

The study found that in the cultivation year 2021/22, young smart farmers had an average total production cost of 4,696.80 baht per rai and an average yield of 770.03 kilograms per rai. The average price of paddy rice sold at the farm with 15% humidity was 8.30 baht per kilogram. This resulted in an average return of 6,391.25 baht per rai and an average net return (profit) of 1,694.45 baht per rai or 2.20 baht per kilogram. On the other hand, general farmers had an average total production cost of 4,891.31 baht per rai, an average yield of 732.17 kilograms per rai, and an average price of paddy rice sold at the farm with 15% humidity was 8.30 baht per kilogram. This resulted in an average return of 6,077.01 baht per rai and an average net return (profit) of 1,185.70 baht per rai or 1.62 baht per kilogram. When comparing the costs and returns of production, it was found that young smart farmers had lower production costs and higher yields per rai compared to general farmers, resulting in higher net returns.

The study also analyzed the technical production efficiency of in-season rice for young smart farmers in the crop year 2021/22 using the Data Envelopment Analysis (DEA) method. The results revealed that young smart farmers had an average technical production efficiency of 0.8931, indicating that they still have room for improvement. Factors such as seed and chemical fertilizer usage were found to be in surplus. To achieve a higher level of production efficiency, young smart farmers should reduce the use of these production factors. The analysis of factors affecting the efficiency of rice production among young smart farmers in their first year, using the Fractional Regression Model Method, found that the factors affecting technical efficiency statistically significant at the confidence level of more than 90 percent were experience in farming, membership in organizations/farmer groups, and the use of innovations in farming were statistically significant factors affecting technical efficiency. Increasing experience, being a member of an organization/farmer group, and adopting more innovations in farming were found to lead to increased technical efficiency.

By calculating the Malmquist Index using inputs and yields from the crop years 2018/19 and 2021/22, the study measured changes in rice production productivity among young smart farmers. It was found that the overall productivity change was 1.143, with an average factor of production change of 1.037 and an average change in technical efficiency of 1.102. All these changes were greater than 1, indicating an increase in productivity among young smart farmers in the crop year 2021/22 compared to the crop year 2018/19. This improvement can be attributed to the development of production factor utilization techniques and advancements in technology.

The results of the analysis to find ways to develop the potential of farmers from the lessons learned are divided into three approaches. Firstly, the production process development guidelines suggest starting with the application of agricultural innovations in production planning. It is important to collaborate with the community to prepare for planting and set appropriate dates for activities. Farmers should choose to buy rice seeds from trusted sources, considering the germination rate. Additionally, they should use agricultural technology that can be easily managed, taking into account the area conditions and past production cycle problems. It is crucial to manage the production system efficiently by using appropriate production factors in every process. Farmers can adapt production techniques from knowledgeable or successful individuals to suit their specific area. The government should promote knowledge, academic advice, and practical experience in the area to encourage farmers to be open-minded and implement these practices. Secondly, the innovation development guidelines recommend that farmers choose innovations suitable for their specific production conditions. They should seek comparative information on the use of different types of innovations to appropriately utilize production factors. It is also suggested to invent low-cost innovative tools with good efficiency that can be implemented in real farming areas, allowing farmers to access and benefit from these innovations. The government should prioritize the continuous promotion of knowledge and information regarding the use of innovations, enabling farmers to make appropriate choices. Lastly, other related development guidelines focus on encouraging farmers to join groups and build networks to exchange knowledge and support each other. This applies to both the agricultural occupation and the use of innovation.

Based on this research, it is suggested that the government should provide farmers with continuous and serious knowledge and information regarding the use of new innovations. This will help farmers open their minds to accept and choose innovations that are suitable for their needs and conditions. Furthermore, the government should facilitate

the adaptation and application of expensive innovative concepts by creating low-cost tools or innovations that offer similar performance. This will allow farmers to access and take advantage of innovations more easily. Most importantly, the government should manage agricultural information to ensure it is complete, accurate, and up-to-date. Farmers should have convenient and fast access to this information through the development of an information platform covering all aspects of agriculture. Additionally, the government should continue inventing new innovations to help farmers plan their production more accurately. Ultimately, the potential of farmers needs to be developed to ensure they have the knowledge and access to take full advantage of these innovations.

Keywords: young smart farmers, technical efficiency, productivity, technology and agricultural innovation