Thesis Title	Technology Assessment in Garlic and Shallot Productions
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Abstract

The study of technology assessment in garlic and shallot productions in Chiangmai and Lamphun provinces from crop year 1996 has two main objectives. Firstly, to estimate a logit model used to identify socio-economic factors influencing on adoption of technology. Secondly, to estimate frontier production function using the Corrected Ordinary Least Squares (COLS) technique. The estimated results from frontier production function used to calculate yield gap of each farmer and also the study try to identify socio-economic factors influencing the yield gap among farmers.

The research results showed that in the case of shallot and high-yielding garlic varieties, the level of seed price was an important explanatory variable influencing on technology adoption of farmers. This means that, the higher level of seed price, the lower rate of technology adoption for these farmers. Furthermore, educational level, including formal and informal education, had positive effects on technology adoption of farmers.

In the case of traditional garlic varieties, the research results also showed that the important factors explaining technology adoption were farmer's attitude toward risk, educational level, experiences and agricultural credit. It means that, risk lover farmers were likely to have a higher technology adoption probability more than risk averse farmers. In addition, educational level, experiences in agriculture and agricultural credit had positive effects on technology adoption.

The results of frontier production function estimated by using COLS for each crop showed that the production function of each crop had increasing returns to scale which equal to 1.22, 1.39 and 1.06 for shallot, traditional and high-yielding garlic varieties, respectively.

The research results also showed that each farmer had an inefficient production, it means that, he produced only 53.04 % of yields that could be achieved on the production frontier. The percentage of yield gap as the proportion of yield that could be achieved on the frontiers for shallot, traditional and high-yielding garlic varieties equal to 41.06 %, 77.50 % and 40.55 %, respectively. Considering yield gap by farm size of each crop, the research results showed that, the yield gap of shallot, traditional and high-yielding garlic varieties were not different. It means that both small and large farms had technical inefficiency.

The policy implications derived from this study, in the case of shallot and high-yielding garlic varieties, the government could help farmers to have higher probability of technology adoption by providing inputs, especially seeds providing at reasonable and competitive prices. Meanwhile, the government should guarantee the output prices of each crop and try to reduce marketing margin of middle man in order to raise its output prices. Moreover, upgrading educational level and training implementation policy would encourage farmers to have higher technology adoption probability. In the case of traditional garlic varieties, upgrading educational level and implementation of training programs would encourage farmers to adopt technology.

Policy options to reduce the yield gap in order to improve the technical efficiency of farmers, the government must provide an adequate agricultural credit for the need of farmers and try to emphasize on productive credit which used for agricultural purpose. Moreover, the government must implement land provision scheme through agricultural land reform in order to provide land to landless farmers.