Factors Affecting Adoption of Good Agricultural Practices (GAPs) of Potato Cultivation in Badulla District

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Introduction

Potato has been one of an economically attractive crop grown in the hill country of Sri Lanka. Although, a crop with high income generation capability, potato yield has been gradually declining and cost of cultivation has been increasing during last decades (Kamalinie et al. 2008). From the selection of the seed tubers up to the post-harvest practices farmers follow inappropriate practices that cause both the economic losses and adverse effects to the environment. Also hill country shows the highest amount of soil erosion, about 58% of the potato-cultivated land found to be prone to severe soil erosion (Abeygunasekara, 2004). Good Agricultural Practices (GAPs) are practices that address environmental, economic and social sustainability of on farm processes and result in safe and quality food and non-food agricultural products (Rathnayake and Dharmadasa, 2011). Therefore adoption of GAP by potato farmers will be a sound solution to soil erosion problem in hill country and it will help to improve the productivity of potato industry in Sri Lanka. The GAP concept can be associated with critical production decision factors and recommendations for potato-based systems in developing countries (Lutaladio et al. 2009).

There are no studies that help to identify the level of adoption of GAPs by potato farmers and the influence of socio-economic factors on farmers' decision on those levels. Therefore this study aimed to determine the socio-economic factors that influence the level of adoption of GAP by potato farmers.

Methodology

The study was conducted in four major potato growing Divisional Secretariats Divisions in Badulla District. A total of 100 farmers from four Divisional Secretariats were selected using stratified sampling technique. They were interviewed with a pre tested questionnaire.

The level of adoption (LADOPT) was derived to have values ranging from 0 to 100% depending on number of practices adopted by each farmer.

$$LA\ PT = \frac{\text{Number of recommended GAPs followed by farmer}}{\text{Total number of recommended GAPs}} \times 100$$

Empirical model was developed to determine the factors affect on LADOPT in potato farming sector. Ten independent variables were identified through comprehensive literature review process.

Empirical Model

$$LA\ PT = \beta_0 + \beta_1 AGE + \beta\ GEN + \beta_3 E\ U + \beta\ FE\ P + \beta_5 E\ TENT + \beta_6 TSPEN + \beta_7\ NER + \beta_8 A\ ARE + \beta\ UC\ ST + \beta_{10} UINCM + i$$

Descriptive statistical techniques were used in describing the sample characteristics. The Multiple Linear Regression was used to find the determinants of adoption level.

Table 1. Description of variables for empirical model.

Variable	Description	Remarks
LADOPT	Level of adoption	Percentage
AGE	Age of the farmer	Year
GEN	Gender of the farmer	Dummy
EDU	Education level of the farmer	Scores
FEXP	Farming experience of potato	Years
EXTENT	Extent of cultivation	Acres
TSPEND	Time spend on cultivation	Dummy
OWNER	Tenure status of the land	Dummy
AWARE	Awareness on GAPs	Dummy
UCOST	Cost per acre	Rupees per acre
UINCM	Income per acre	Rupees per acre

Results and Discussion

The survey revealed that 27% of the farmers had well adopted to GAPs while 40% and 33% of farmers adopted moderately and poorly to GAPs respectively. The farmers with good adoption level (LADOPT 73.33%) to GAPs bear an average cost around Rs. 135,000 per acre while getting an average income around Rs. 530,000 per acre. But the farmers with poor adoption level (LADOPT 73.33%) to GAPs bear a high average cost ranging from Rs. 200,000 to Rs. 212,000 per acre and getting an average income ranging from Rs. 300,000 to Rs. 395,000 per acre.

Table 2. Result of the multiple linear regression model.

Variable	Coefficient	Standard Error Coef.	Sig. Value
Constant	20.981	7.740	0.008
AGE	-0.1087	0.1158	0.351
GEN	1.512	2.426	0.535
EDU	2.2023	0.9302	0.020**
FEXP	0.2664	0.1129	0.020**
EXTENT	3.416	2.498	0.175
TSPEND	-2.869	2.466	0.248
OWNER	3.641	1.826	0.049**
AWARE	4.748	2.041	0.022**
UCOST	-0.00004253	0.00001535	0.007***
UINCM	0.00008653	0.00000933	0.000***

Note: *** Significant at 1% level, ** Significant at 5% level
R-Sq = 83.9% R-Sq (adj) = 82.1%

The results revealed that the adoption of recommended GAPs on potato cultivation was significantly determined by the education level of the farmer, experience in potato cultivation, tenure status of the land, awareness on GAPs, cost per acre and income per acre. The model explains up to 82.1% of variation of adoption level by all the independent variables. Formal

education is an effective variable to capture environmental awareness of farmers who are basically literate. With long term experience, farmers come to know the best practice. The farmers are more likely to adopt the GAPs by putting great efforts on their own resources to get direct long term benefit. When the cost per acre is high, farmers are not much interesting in following GAPs and if the income per acre is high, farmers tend to adopt more GAPs.

Conclusions

According to the study, potato farmers in Badulla district have not paid much concern yet on GAPs. The level of adoption of GAPs is significantly determined by the education level of the farmer, experience in potato cultivation, tenure status of the land, awareness on GAPs, cost per acre and income per acre.

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