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Survey of Pesticides and Fertilizers use patterns and farmers' perceptions in Tomato Production on Floating garden in Inle Lake, Myanmar

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Abstract The poor agricultural management by some farmers has resulted in contaminating the Inle lake ecosystem, in Myanmar. This study investigates the factors influencing the usage of pesticides and fertilizers of selected farmers for tomato production. A total of 80 farmers who cultivate tomato with good agricultural practice (GAP) and non-GAP were interviewed in four villages inside the Inle Lake, during June to August 2019. Descriptive analysis and multiple regression analysis models were performed to achieve the research objectives. The pesticide and fertilizer application increased in non-GAP when compared with GAP method. The pesticide consumption of sample farmers was positively and significantly influenced by farm size, insect and pest damage of their crop, net profit but negatively and significantly influenced on different agricultural practices. Fertilizer consumption was positively and significantly influenced by experience in using pesticides and fertilizers, tomato yield but negatively and significantly influenced on different agricultural practices. GAP had a positive effect on pesticide and fertilizer consumption for both models. Therefore, GAP method would be a proper system for an environment-friendly agricultural production and sustainable agricultural practices in order to conserve the Inle Lake.
Keywords: agricultural practices, fertilizer, pesticide, tomato

INTRODUCTION

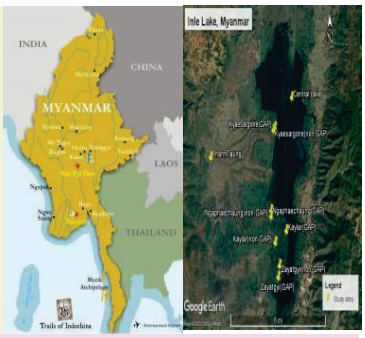
Tomato cultivation on the floating gardens is the main income for local farmers. About 2448 ha are growing for tomato production on floating beds but 182 ha are production with GAP methods (DoA, 2018). An increasing demand for tomato production, some farmers used agrochemical more than the recommended rate (Butkus & Su, 2001). The use of heavy chemicals result in water pollution and impact on environments.

OBJECTIVES

To describe the socio-economic status of farmers, factors influencing the usage of pesticides and fertilizers in tomato production on floating gardens

METHODOLOGY

The four study villages are located in Inle lake, Nyaung Shwe Township, Shan stage, Myanmar and farmers are growing tomato with GAP and non-GAP.



Data collection

The sample respondents consisted of two groups of farmers, of which 50% was GAP farmers and 50% was non-GAP farmers. The information about the background of family, farming of tomato crop and methods of pesticide and fertilizer application were surveyed.

Data Analysis

Descriptive statistics and multiple regressions analysis were performed to achieve the factors influencing pesticides and fertilizers consumption by sample farmers.

REFERENCE

Butkus, S., & Su, M. (2001). *Pesticide use limits for protection of human health in Inle Lake (Myanmar)*. Retrieved from Living Earth Institute, 1930 Woodland Creek Street NE, Olympia, WA 98516, USA

RESULTS AND DISCUSSION

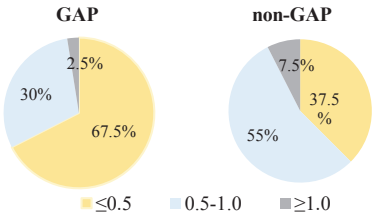


Fig.1 Farm size of respondents farmers

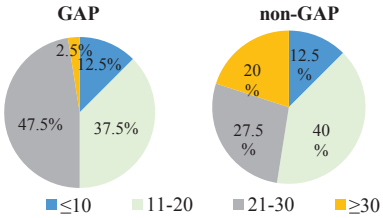


Fig.2 Experience using pesticide and fertilizer

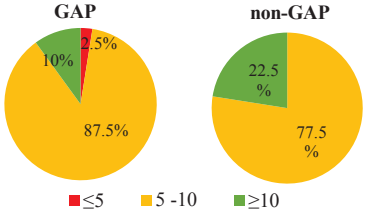


Fig.3 Frequency of insecticide application

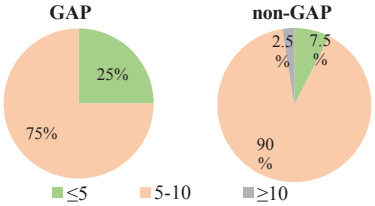


Fig.4 Frequency of fungicide application

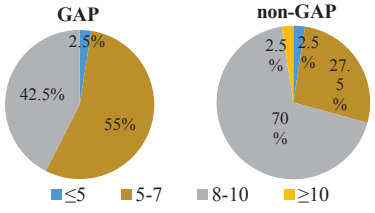


Fig.5 Frequency of fertilizer application

Table 1 Factors influencing the use of pesticides

Independent Variables	Coefficient	P -value
Constant	1.336 ^{ns}	0.104
Age (year)	-0.002 ^{ns}	0.371
Schooling (year)	0.010 ^{ns}	0.133
Family size (person)	-0.008 ^{ns}	0.473
Farm size (ha)	-0.058 ^{ns}	0.310
Experience (year)	0.005 **	0.031
Insect and pest damage	-0.021 ^{ns}	0.397
Agricultural practice	-0.103 **	0.017
Total yield (kg/ha)	0.562 **	0.036
Net profit (US$/ha)	-0.181 *	0.078
Foliar fertilizer (L/ha)	-0.006 ^{ns}	0.476
Quantity of pesticide (L/ha)	-0.026 ^{ns}	0.784

** = significant at 5% level, * = significant at 10% level, ns = not significant

Table 2 Factors influencing the use of fertilizers

Independent Variables	Coefficient	P -value
Constant	1.477^{ns}	0.184
Age (year)	-0.001 ^{ns}	0.570
Schooling (year)	0.016 *	0.066
Family size (person)	0.020 ^{ns}	0.185
Farm size (ha)	0.328 ***	0.000
Experience (year)	-0.001 ^{ns}	0.734
Insect and pest damage	0.074 **	0.019
Agricultural practice	-0.234 ***	0.000
Total yield (kg/ha)	-0.505 ^{ns}	0.142
Net profit (US$/ha)	0.266 **	0.042
Chemical fertilizer (kg/ha)	-0.043 ^{ns}	0.784
Foliar fertilizer (L/ha)	0.001 ^{ns}	0.923

** = significant at 5% level, * = significant at 10% level, ns = not significant

CONCLUSION

GAP is better for tomato farmers because of low cost and greater economic returns.

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