

Farmer Awareness and Adoption on Good Agricultural Practices (GAP) in Sri Lanka

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Abstract

Good Agriculture Practices (GAP) are more important to get higher income in crop production. GAP involves economic viability, social acceptability, sustainability of environment and food safety and quality factors. Most of farmers are not aware of the advantages of GAP. At Present, some farmers involved in GAP certification programme. Officials of the department of agriculture are conducting awareness programmes on GAP all over the Island. The study based on a survey which was carried out in Batticaloa, Ampara, Polanaruwa, Monaragale and Anuradhapura district to find out hundred respondents registered commercial fruits cultivation farmers were randomly selected and a primary survey was conducted during January – May 2020 using a structured questionnaire. Farmer's knowledge on GAP program, and its elements perception and adaption GAP by farmers, factors affecting farmer's eligibility to apply for GAP certification measured. A probity model was estimated to identify determinants of a farmer being eligible for GAP certification. In determining the variables affecting the GAP eligibility a value of 1 is assigned for farmers who were eligible and a value of 0 was assigned for farmers who were not eligible. The results of the estimation showed that there is not statistically significant relationship between eligibility and age, perception score, land ownership, and farming experience. Farmers' knowledge of GAP certification and land extent positively and significantly on farmer eligibility. It was revealed that commercial farmers have good awareness of GAP. More attention should be paid to their knowledge on soil test-based fertilizer application. Specific area such as fertilizer use Integrated Plant Nutrient System but Raise adaptation, perception on ownership of land, Farming experience and farmers knowledge on GAP certification and provision of subsidy will lead to more adaptation of GAP.

Keywords: Environmental Safety, Agricultural Extension Adopting, Farmer Perception, Farming Experience.

I. INTRODUCTION

Good Agriculture Practices considered to environment, economics and human resource. Demand for quality, safe and healthy food, produced in environmentally friendly and socially acceptable manner is increasing globally and there is a requirement of introducing an acceptable certification system for value agriculture products for the betterment of consumers as well as producers (Ajzen I. and Fishbein.1980). Good Agriculture practices programe was introduced in 2015 as an initiative by the Department of Agriculture Sri Lanka with the purpose of providing safe agriculture commodities to consumer overcoming the technical barriers in crop production, and for facilitating farmers to gain good income. Presently GAP is being implemented by the Division of Agribusiness Counseling of the Extension and Training Center while the certification is carried out by the GAP

certification unit of the Seed certification Services, Department of Agriculture. GAP programme in Sri Lanka is still in its initial stages. Identification of barriers and constraints in GAP program would be beneficial for the successful implementation it in the future. The present study was carried out to identify problems GAP procedure, understanding level (GAP) of farmers, adaptation of farmers and idea about cultivation of special farm practices (Pongthong, Yamao and Hosono.2014).

A. Problem Identification of Gap Implementation

Good agricultural practices inspection procedure, ineffective market conditions and limitations of extension activities were the major reasons behind the inefficiency of GAP implementation problems

II. MATERIALS AND METHODS

The study (survey) was carried out in Batticaloa, Ampara, Polanaruwa, Monaragale and Anuradhapura districts. Hundred respondents were randomly selected registered commercial fruits cultivation farmers and a primary survey was conducted during January – May 2020 using a structured questionnaire. According to the Theory of Planed Behavior (TPB), individual behavior is determined by evaluation of object intension, attitudes, perceived behavioral control (that is ease or difficulty to perform) and social norms .TPB was used as the theoretical framework for the study (Policy Brief, 2018) Based on TPB, farmers' behavior towards adopting/intensions to GAP in the future would be guided by their knowledge and understanding of GAP, attitude towards GAP, and ease and difficulty in adopting GAP, influence of external factors and control factors such as marketing, and price for the produce. Data were analyzed using Table for descriptive statistics correlations and a probity model were prepared. Farmers' perception in GAP was analyzed by developing perception scores for each individual using seven positive statements on GAP given in five-point scale.

A model analysis are used and estimated to identify determinants of a farmer being eligible for GAP certification. In determining the variables affecting the GAP eligibility a value of 1 is assigned for farmers who were eligible and a value of 0 was assigned for farmers who were not eligible (Development of Locally Appropriate GAP., 2016).

III. RESULTS AND DISCUSSION

A. Farmers knowledge on GAP Program

Based on the results 65 % farmers were aware of GAP while others 35% were not aware GAP programe. Most of the farmers are mentioned that the GAP programe support healthy, economically earning farm productions and developments. Farmer have become aware of GAP programme in various ways. Most of the respondents (60%) awareness on GAP from the officials DOA. while (15%) from media, (10%) from neighboring framers, (5%) from private sector, and (10%) from the internet made them aware of the GAP Program (A Practical Manual, 2019).

B. Perception and adopting GAP by farmers

Farmer sensation for whole sampling area populations was more than 75% value are mention

the farmers are proper management attitude toward practices of GAP but table 1 show the percentage value of farmers adaptation practice of GAP.

Table 1: Adoption of GAPs by farmers (percentage)

Practices	Adaptation	
	Yes	No
Water source and drainage		
Natural or irrigation water source (Mahaweli, irrigation department)	87	13
Used irrigation water of efficiency (sprinkler, drop)	50	50
Proper water management	58	42
Cultivation site		
Use of soil conservation practice	90	10
Pest and disease management		
Use of recommended pesticides by DOA	74	26
Use of recommended dosages of pesticides by (DOA)	71	29
Fertilizer Application		
Use of recommended amount of fertilizer (DOA)	55	45
Harvest and Post-harvesting		
proper harvesting method (time of harvesting,tool)	65	35
Use of proper handling for harvest and transport	55	45
Recode keeping/documentation		
Farmer keeps records	65	35
Worker health and society		
Concern about farmers health condition	63	37
Use of safety kit when working	55	45
Keep first-aid box in farm-site	80	20

Farmers poorly adapted to most of management practices proper systems of water managements, efficiency of water usage, proper way for the water management, use of recommended pesticides, use of recommended dosages of pesticides, use of recommended amount of fertilizer, use of proper

harvest and post-harvest practices record keeping (previews crops records, chemical records financial records), concern about farmers health conditions (understood health issues), use of safety kit when working since the adaptation was less than 75% (table 1) (Food and Agriculture Organization, 2007).

C. Farmers' knowledge of GAP elements

Farmers knowledge are depended on the own experience but normally all farmer are following some special idea or practice of cultivation cropping systems, escape cultivation, seasoning cultivation but some commercial cultivation farmers they will used advance practices and recommendations fertilizer and chemicals used for the cultivations. 35% farmers use recommended amount of fertilizer, 20% apply fertilizer by their experience. However, more than half of farmers 55% had applied recommended amount of fertilizer while others (45%) used overdose of fertilizer More than 70% followed recommendations of DOA for proper land preparations, used pheromone trap, use of cropping systems, use of biological control agents (predators) and others didn't follow. Most of farmers used recommended pesticides (74% farmers) with recommended dosages (71% farmers) while others (26-29%) use unrecommended pesticides with over dosages (figure 04). over chemical application. No one soil test-based fertilizer application. Proper harvest and post-harvest practices were used by more farmers (65% and 55% farmers respectively) compare to non-users meanwhile, a considerable percentage (45%) didn't know about proper handling of harvest and transport (Punyawardena, 2007).

D. Eligibility requirements of GAP and Estimation of Probity Model

More than half of farmers (55%) full filled the requirements of GAP and others should improve farm management practices and awareness of GAP (figure 09). but we are used quality and quantity parameter eligibility criteria of farmer. A probity model was estimated to identify determinants of a farmer being eligible for GAP certification. The results of the estimation of probity model are shown in table 2. Result show that there is not statistically significant relationships between eligibility and farmer age, perception score, land ownership, and farming experience. Farmers' knowledge on GAP

certification and land extent were positively and significantly affected on farmer eligibility.

Table 2: Factors affecting farmer's eligibility to apply for GAP certification

Description	Coefficient	P-value
Farmers knowledge on GAP certification	1.289	0.008
Farmers age	-0.002	0.843
Land ownership	0.18	0.619
Perception score	0.13	0.659
Farming experience (year)	0.008	0.508
Log if land extent(Ac)	0.205	0.081
Log likelihood value		
43.767		
No. of observation		
100		

Figure:1 showed detail about to the farmers how tacked idea to GAP knowledge from the resources. But most of the farmers/respondents (60%) knew detail from department of agriculture.

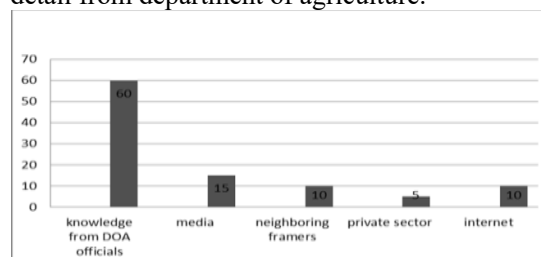


Figure 01: Farmers knowledge on GAP Program

Figure 2 explains most of the farmers (87%) received water from Natural or irrigation water source supplied by the (Mahawali Authority or irrigation department) other depended on the rainfall and various systems of irrigations.

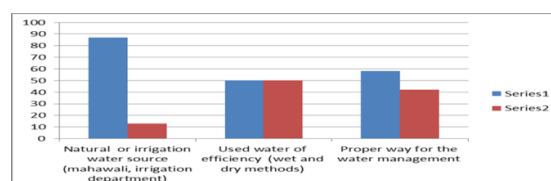


Figure 02: Water source and

Figure 3 showed detail most of the farmers (90%) practiced soil conservation management and others (10%) don't have ideas about soil conservation

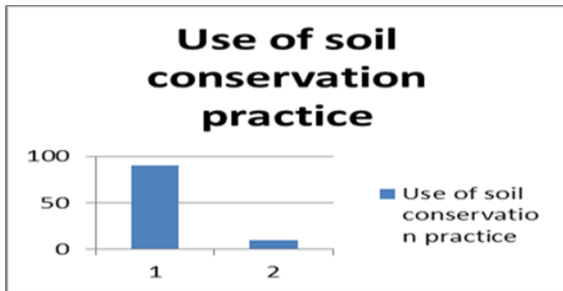


Figure 03: Use of soil conservation

Figure 4 showed column (1) 74% Used of department of agriculture recommended pesticides but others percentage of farmers used chemicals over applications or some of the farmers are by experiences.

Column (2) Shown use of recommended dosage of pesticides (Plant production division) department of agriculture but most of the farmers (71%) followed department of agriculture instructions other percentage of farmers over dosage or by experience applications.

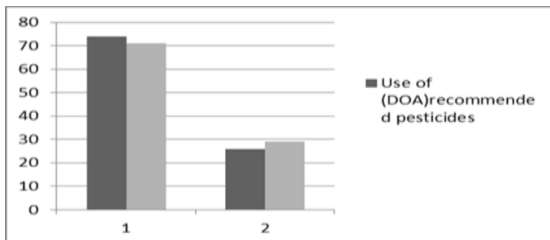


Figure 04: Pest and disease management

Figure 5 describe first column (1) shown More than 50% farmers use of the department of agriculture recommended fertilizer. Column (2) 45% percentage of farmers they applied fertilizer by experiences.

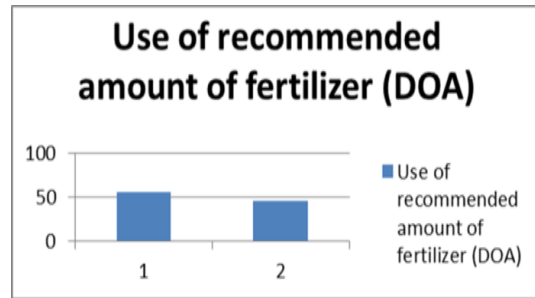


Figure 05: Use of recommended amount of fertilizer (DOA)

Figure 6 showed to first column shown 65% Proper harvesting method is practiced but 35% they don't know about the post harvesting methods. Column (2) 55% of farmers use of proper Handling for harvest and transport but 45% of farmers they don't about post harvesting technologies.

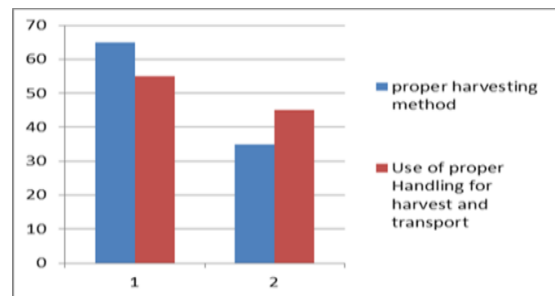


Figure 06: Post-harvesting

Most important part of the GAP this record keeping or documentation of farm practices. Majority of farmers (64%) have kept records on farming practices and others didn't keep records (figure 07).

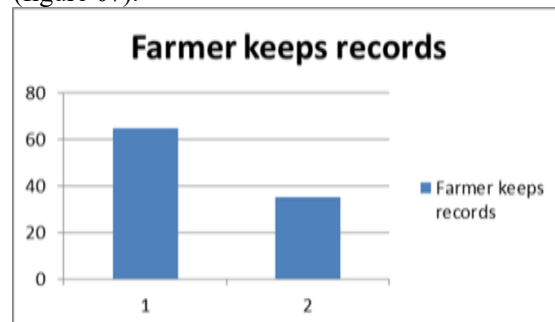


Figure 07: Recode keeping/documentation

Figure 8 described 63 % Concern about farmers health condition but 37% farmer they didn't considering health condition to the during the work.55% of farmers use of safety kit when

working 45% of farmer they not wearing safety kit or safety practices. Most of the farmers (80%) have keep first-aid box in farm-site and others have not.

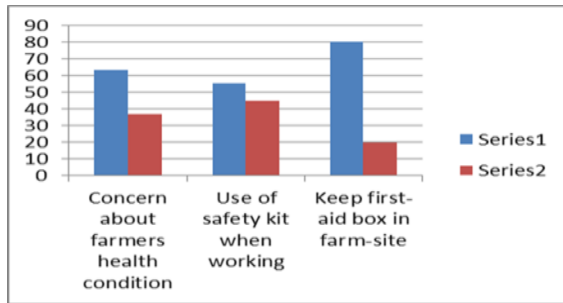


Figure 08: Worker health and society

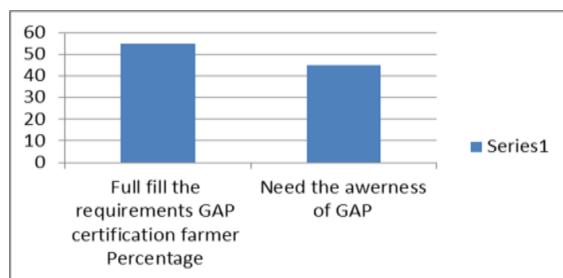


Figure 09: Eligibility requirements of GAP and Estimation

IV. CONCLUSION

Commercial cultivation farmers have good awareness towards good agriculture practice. More attention should be paid to their knowledge on some soil test-based fertilizer application (Use of recommended amount of fertilizer DOA), Proper water management, and used irrigation water of efficiency (wet and dry methods), Use of proper handling for harvest and transport, Use of safety kit when working, will lead to more adaptation of GAP. GAP registered commercial farmers are taking special subsidies, insurance of department of agrarian.

Indicated that knowledge on GAPs, non-economic benefits such as appropriate farming techniques, economic incentives of GAP and improving income and profitability led to successful GAP implementation.

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