

Attitudes of Malaysian Extension Workers Towards Sustainable Agricultural Practices

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ABSTRACT

The challenge of producing enough food for growing population increasingly affected Malaysian agricultural sector. Intensive farming system and increase in fertilizer used by farmers has led the agricultural sector to some environmental damage. The Department of Agriculture (DOA) has earmarked Sustainable Agricultural Practices (SAP) to transfer unsustainable agriculture into a sustainable manner. The SAP should be transferred by extension workers to the farmers. However little is known about Malaysian extension workers' attitudes towards SAP. Front line extension workers in the DOA were surveyed to identify their attitudes on SAP. A descriptive research design was used to collect data from 400 extension workers. Results revealed that extension workers have positive attitudes on SAP concepts. It is recommended to find out to what extent extension workers attitudes has played significant role to transfer information to the farmers.

Keywords: Attitude, Extension Worker, Sustainable Agriculture Practices

1. INTRODUCTION

The challenge of producing enough food has embarked Malaysia on an insensitive farming system and consequently environmental damage (Barrow *et al.*, 2009). Mineral fertilizers account for more than 90% of fertilizers used by all types of farming systems in Malaysia. Recently sustainable agriculture practices have implemented in this country to transform the agricultural sector into sustainable manner. According to the USDA's Sustainable Agriculture Research and Education (SARE) program, sustainable agriculture promotes environmental stewardship, generates an acceptable level of income and maintains stable farm families and communities (SARE, 2003). Similarly Williams (2000) defined economically sound, environmentally protective and socially acceptable as three components of sustainable agriculture. Positive efforts made by the government agencies to minimize chemical fertilizers and use the resource on a sustainable base. Practices such as Good Agricultural Practices (GAP) and Organic Farming (OF) are being promoted by

the Department of Agriculture (DOA) in order to reduce fertilizers for crop production (Tiraieyari and Uli, 2011). Although the current Malaysian agricultural policies are compatible with the standard of sustainable agriculture, however agricultural practices in the country differ to some extent from sustainability. Reaching toward sustainable agriculture is the responsibility of all participants in the system, including extension workers. The success of sustainable agricultural program depends to a large extent on training of farmers by extension workers. Thus agricultural extension workers as a source of information play an important role for achievement of sustainability by influencing farmers' adoption of Sustainable Agricultural Practices (SAP). Agung (1995) reported extension workers should be convinced of the value of sustainability, otherwise how they can be expected to educate farmers on the concepts. Attitudes are important determinants of human behaviors; they provide direction and purpose to behavior and performance (Liaghati *et al.*, 2008). Extension workers attitudes towards the concepts of sustainable agriculture are fundamental in building a strong sustainable agriculture

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program for Malaysia. A better understanding of extension workers' attitude on sustainable agriculture would help managers to understand if extension workers have been oriented themselves to carry out the task. Extension workers need to acquire positive attitude on SAP to influence farmers' adoption. According to Udoto and Flowers (2001) overall positive attitude of the benefits of sustainable agricultural practices to the environment may serve as a major influence for extension workers to transfer sustainable agriculture. Hence the first step to identify major obstacles to adoption of sustainable agricultural practices in Malaysia is to examine extension services to find out to what extent the extension workers acquired positive attitudes on sustainable agriculture? Past researches have been conducted to determine extension workers' attitude towards SAP (Chizari *et al.*, 1999; Minarovic and Mueller, 2000; Straquadine, 1997; Allahyari *et al.*, 2008; Allahyari, 2008; Udoto and Flowers, 2001; Williams and Wise, 1997). Scholars argued that generating desirable change in the attitude of extension workers at first step can be used as a foundation for extension workers to transfer SAP to the farmers. However little is known about Malaysian extension workers' attitude towards SAP. Hence this study aims to work with Malaysian extension workers at the DOA whom directly dealing with farmers.

The purpose of this study was to determine attitudes of extension workers towards SAP concepts. The specific objectives included:

- Determine extension workers' attitude towards production efficiency of SAP
- Determine extension workers' attitude towards economic viability of SAP
- Determine extension workers' attitude towards environmental sustainability of SAP
- Determine extension workers' attitude towards social responsibility of SAP
- Determine if differences exist in Malaysian extension workers' attitudes on SAP concepts when examined by level of education and years of working experiences

2. MATERIALS AND METHODS

The study employed a descriptive research design. Participants were selected from peninsular Malaysia who worked at the Department of Agriculture (DoA) including extension workers and supervisors. The total of 400 extension workers was selected randomly from west Malaysia. The instrument was adopted from previous studies conducted by Conner *et al.* (2004) and Chen (2003) with some modification. The questionnaire contained 19 statements related to four areas of the sustainable

agriculture; production efficiency, economic viability, environmental sustainability and social responsibility.

The questionnaire was translated into Bahasa Malaysia by an expert. Before the survey, the instrument checked for content and face validity by panel of experts. The questionnaire reliability was estimated by calculating Chronbach's alpha. Respondent were asked to rate items using a semantic differential scale from 1 strongly disagree to 10 strongly agree. According to Allen and Rao (2000), in an empirical review of several scale types, a 10-point measurement scale is preferred to the five-point or seven-point likert scale. First the wider distribution of scores around the mean gives more discriminating power. The second reason is that, it is easier to establish covariance between two variables with grater dispersion around their means. Pallant (2007) also contended that the 10-piont scale gives respondents a wider range of possible scores and increase the statistical analysis available to respondents by arranging a number from 1 to 10. Collected data were analyzed using the SPSS for Windows (version 20.0). Descriptive statistic including the mean and standard deviation were used to achieve objectives of the study. The one-way ANOVA, were also used to compare the effect of education and working experiences on extension workers 'attitude towards SAP.

3. RESULTS

Table 1 lists the Mean and Standard Deviation for the production efficiency statements. Among the statements used for assessment of production efficiency, the statement "Technology should be used as best as possible to increase efficiency of Agricultural production" had the highest mean with 8.63(SD = 1.34).

The overall mean of the respondents on production efficiency were divided into three levels for reporting purposes: (1.00-3.99 = low, 4.00-6.99 moderate, 7.00-10.00 = high). Based on interpret scale, majority of extension workers, 89.8 % (n = 359) had high level of attitude on production efficiency. 10% (n = 41) of respondents reported moderate level of attitude on production efficiency (**Table 2**).

Table 3 includes the data for the economic viability statements. Statement "Farming is first and foremost a business like any other business" had the highest mean 8.95 (SD = 1.39) among the statement. The overall mean of the respondents on economic viability were divided into three levels: 1.00-3.99 = low, 4.00-6.99 moderate, 7.00-10.00 = high. Based on interpret scale, 76.5% (n = 306) extension workers had high level of attitude on economic viability. 23.3% (n = 93) of respondents reported moderate level of attitude on economic viability and only one extension workers reported had low attitude on economic viability (**Table 4**).

Table 1. Mean and Standard Deviation for extension workers' attitude towards production efficiency

Production efficiency statements	Mean	SD
Production, processing and marketing of agricultural products is best done at the local level	8.21	1.39
Technology should be used as best as possible to increase efficiency of Agricultural production	8.63	1.34
Meeting food needs with fewer farmers is a positive outcome of technological progress	8.29	1.56

Table 2. Level of extension workers' attitude towards Production efficiency

Level	Frequency	Percent	Valid (%)	Cumulative (%)
Moderate	41	10.3	10.3	10.3
High	359	89.8	89.8	100.0
Total	400	100.0	100.0	

Table 3. Mean and Standard Deviation for extension workers' attitude towards economic viability

Economic Viability Statements	Mean	SD
The primary goal of farmers should be to maximize the productivity, efficiency and profitability of their farms.	8.46	1.47
The successful farmer is one who earns enough from farming to enjoy a good standard of living	7.85	1.85
Small to medium-size farmers can best serve agriculture needs	6.81	2.01
Farmers should farm only as much land as they can personally care for	7.48	1.97
The amount of farmland owned by an individual/corporation should be limited in order to encourage land ownership by as many people as possible	6.66	2.37
Farming is first and foremost a business like any other business	8.95	1.39

Table 4. Level of extension workers' attitude towards economic viability

Level	Frequency	Percent	Valid (%)	Cumulative (%)
Low	1	0.3	0.3	0.3
Moderate	93	23.3	23.3	23.5
High	306	76.5	76.5	100.0
Total	400	100.0	100.0	

Table 5 shows the Mean and Standard Deviation for the Environmental sustainability of SAP. Among the statements used for assessment of production efficiency, the statement "Soil and water are the sources of all life and should therefore be strictly conserved" had the highest mean with 9.33(SD = 1.13).

The overall mean of the respondents on Environmental sustainability were divided into three levels for reporting purposes: (1.00-3.99 = low, 4.00-6.99 moderate, 7.00-10.00 = high).

Table 5. Mean and standard deviation for extension workers' attitude towards Environmental sustainability

Environmental sustainability statements	Mean	SD
Soil and water are the sources of all life and should therefore be strictly conserved	9.33	1.13
Farms should be specialized in one or at most a few crops	7.44	2.24
The key to agriculture's future success lies in learning to imitate natural ecosystems and farm in harmony with nature.	8.53	1.46
Modern agriculture is a major cause of ecological problems and must be greatly modified to become ecologically sound.	7.82	1.87
Farmers should use primarily natural fertilizers/production methods such as manure, crop rotations, compost and biological pest control	8.94	1.10
Farmland should be farmed so as to protect the long-term productive capacity of the land, even if this means lower production and profits	8.17	1.59
Modern agriculture is a major cause of ecological problems and must be greatly modified to become ecologically sound	7.65	1.98

Table 6. Level of extension workers' attitude towards environmental sustainability

Level	Frequency	Percent	Valid (%)	Cumulative (%)
Moderate	57	14.3	14.3	14.3
High	343	85.8	85.8	100.0
Total	400	100.0	100.0	

Table 7. Mean and standard deviation for extension workers' attitude towards social responsibility

Environmental sustainability statements	Mean	SD
Agricultural extension programs should teach farmers about the interrelationships among the environment, agriculture and people	8.77	1.18
An important responsibility of agricultural extension programs is to develop future leaders for the agricultural industry and communities rural in Malaysia	8.75	1.25
I believe our farmers have a good understanding of the interrelationships among the environment, agriculture and people	8.16	1.62

Table 8. Level of extension workers' attitude towards social responsibility

Level	Frequency	Percent	Valid (%)	Cumulative (%)
Moderate	31	7.8	7.8	7.8
High	369	92.3	92.3	100.0
Total	400	100.0	100.0	

Based on interpret scale, majority of extension workers, 85.8% (n = 343) had high level of attitude on Environmental sustainability. 14.3% (n = 57) of respondents reported moderate level of attitude on Environmental sustainability (**Table 6**).

Extension worker were asked a series of questions on their attitude toward social responsibility.

Table 9. Extension Workers' Attitudes on SAP Concepts When Examined By level of education

	ANOVA					
	Sum of Squares	Df	Mean	Square	F	Sig.
Overall Attitude	Between Groups	2.64	3	0.881	1.010	0.388
	Within Groups	345.58	396	0.873		
	Total	348.22	399			
Economic viability	Between Groups	6.77	3	2.258	1.467	0.223
	Within Groups	609.56	396	1.539		
	Total	616.33	399			
Environment sustainability	Between Groups	2.10	3	0.702	0.593	0.620
	Within Groups	468.96	396	1.184		
	Total	471.06	399			
Production efficiency	Between Groups	5.20	3	1.735	1.480	0.220
	Within Groups	464.38	396	1.173		
	Total	469.59	399			
Social responsibility	Between Groups	0.86	3	0.289	0.201	0.896
	Within Groups	571.08	396	1.442		
	Total	571.95	399			

Table 10. Extension Workers' Attitudes on SAP concepts when examined by Years of working experiences

	ANOVA					
	Sum of Squares	df	Mean	Square	F	Sig.
Overall Attitude	Between Groups	4.89	3	1.630	1.880	0.132
	Within Groups	343.33	396	0.867		
	Total	348.22	399			
Economic viability	Between Groups	1.74	3	0.583	0.494	0.687
	Within Groups	467.84	396	1.181		
	Total	469.59	399			
Environment sustainability	Between Groups	6.24	3	2.083	1.77	0.151
	Within Groups	464.81	396	1.174		
	Total	471.06	399			
Production efficiency	Between Groups	3.63	3	1.213	1.09	0.351
	Within Groups	439.01	396	1.109		
	Total	442.64	399			
Social responsibility	Between Groups	5.78	3	1.927	1.34	0.259
	Within Groups	566.17	396	1.430		
	Total	571.95	399			

Table 7 presents mean and standard deviation for extension workers' attitude towards social responsibility (objective 4). Among the statements used for assessment of social responsibility, the statement "Agricultural extension programs should teach farmers about the interrelationships among the environment, agriculture and people" had the highest mean with 8.77(SD = 1.18). The overall mean of the respondents for attitude towards social responsibility were divided into three levels: 1.00-3.99 = low, 4.00-6.99 moderate, 7.00-10.00 = high. Based on interpret scale, 92.3% (n = 369) of extension workers had rated high on attitude towards social responsibility while 7.8% (n = 31) of extension workers had rated moderate and non rated low (**Table 8**).

A one-way between-groups analysis of variance was performed to compare the effect of level of education and year of working experiences on attitude of extension

workers on SAP. Preliminary assumption testing was conducted to check for normality and homogeneity of variance with no serious violations noted. There is no significant differences exist in Malaysian extension workers' attitudes on SAP concepts when examined by level of education and years of working experiences (**Table 9 and 10**).

4. DISCUSSION

The main purpose of this study was to determine attitudes of extension workers towards SAP concepts and results revealed that extension workers attitudes towards dimension of SAP is favorable. This finding confirms the results of previous research (Chizari *et al.*, 1999; Minarovic and Mueller, 2000; Straquadine, 1997;

Allahyari *et al.*, 2008; Allahyari, 2008; Udoto and Flowers, 2001; Williams and Wise, 1997). Among four dimensions of SAP namely; production efficiency, social responsibility, environmental sustainability and economic viability, extension workers ranked social responsibility as highest rank followed by production efficiency, economic viability and environmental sustainability. In addition based on the results of ANOVA test, level of education and working experience of extension workers didn't effect on their attitude towards dimension of SAP.

5. CONCLUSION

Although sustainable agriculture is relatively new in Malaysia, extension workers in west Malaysia indicated that they have positive attitude on SAP. However in order to gain a fuller understanding of extension workers' attitude on SAP concepts it is recommended further data collection could be undertaken. Indeed future research is needed to determine if this finding hold true for other extension workers at the DOA in east Malaysia. More research needs to be conducted in other agricultural agencies in Malaysia to investigate extension workers' attitudes on SAP concepts.

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