International J. Soc. Sci. & Education
2014 Vol.5 Issue 1, ISSN: 2223-4934 E and 2227-393X Print

Chilies Farmers'Descriptive Thoughts on Importance of Agriculture Sustainability Practices

By

[1]NaliniA., [2]Fakhrul Anwar Zainon, and [2]Wan Norhayate Wan Daud
[1]School of Agribusiness and Extension, Faculty of Agriculture, Biotechnology and Food Science,
[2]Faculty o Business Management & Accountancy Universiti Sultan ZainalAbidin, Gong BadakKampus,
21300 Kuala Terengganu, Terengganu;

Abstract

This study is attempts to discover the importance of agriculture sustainability practices among chilies farmers from Malaysia East Coast Economic Region (ECER). A total of 199 chilies farmers were randomly selected. Data was collected using questionnaire as an instrument through face to face interview. The farmers rated the importance of each of the 35 selected sustainable agriculture practices on a 5-point likert like scale. The collected data was analyzed using SPSS v. 17.0. The mean score for each sustainable practice in term of importance derived. The most importance sustainable practice is "Land and water sources should be preserved".There is need for more research in understanding these agriculture sustainability practices among other field agriculture farmers.

Keywords: *Agriculture sustainability, Chilies, Farmers, Perception, Descriptive analysis*

1. Introduction

In many countries agriculture remains as an important component in blazing the economic growth and its contribution is indeed invaluable as prominent income generator not only for developing countries but also for the under-developed nationsIn Malaysia, similar scenarios are available whereby agriculture is seen as an enigma of growth that provides needed income particularly for the rural community (Bahaman et al., 2010). Malaysian Government allocated a total of USD 1.6 billion in year 2011 for the development of agriculture sector in fighting the terrifying elements such as instability of food production and food insecurity (D'Silva, 2011).

In recent years, development practitioners, policy makers and academicians have increasingly become interested in agriculture sustainable development as an important element for economic development. The sustainability of Malaysian agriculture has been on the national agenda for a long time. The Third National Agricultural Policy (1998 – 2010) had focused on agricultural programs which aim at high productivity while ensuring conservation and utilization of natural resources on a sustainable basis. New demands of society to agriculture increased from the 1980s onwards, related to concepts such as sustainable agriculture, environmentally friendly agricultural practices and responsible management of natural resources.

The goals of sustainable development, in the general sense, comprise equal emphasis on economic, social, and ecological aspects (Brundtland, 1987). Such development is essential to provide for the needs of current and future generations. On the practical level, however, it is difficult to relate specific crop management practices to these three general aspects. Four practical management objectives are applicable to the practical farm level of all cropping systems (Witt, 2003). These four objectives are productivity, profitability, cropping system sustainability, and a favorable biophysical and social environment (PPSE).
Generally, sustainable agriculture is termed as an approach to ensure economic, social and ecological sustainability, Tatlidil et al. (2009) indicated that the sustainability is achieved via the integration of the development process through the three dimensions of economic, social and environment. Although sustainability measurement and assessment has been on the research agenda of many organizations for

quite some time, their actual impact on policies, practices and outcomes on the ground beyond pilot initiatives has been limited. Chili farming systems will have to evolve in this direction. But, there are only a few academic papers dealing with farming sustainability issues, particularly for Malaysia.

Agriculture and food systems are undergoing a technological structural modernization strongly influenced by the growing globalization and liberalization. Food and fiber productivity soared due to new technologies, mechanization, increased chemical use, specialization and government policies that favored maximizing production. Hence, productivity of conventional agriculture had been achieved at the cost of massive damage to the natural environment (Along and Martin, 1995). Given the high level of economic risk and uncertainty around the world, reflected in repeated economic crises, it is becoming accepted that economic development should be based on the concept of sustainability and environmental friendly.

Sustainable agriculture offers alternative practices and values intended to promote environmental stewardship, conserve resources, preserve farm traditions and support rural communities. Furthermore, the practice of sustainable agriculture can help in reducing environment damages while providing income to the farmer (Flora, 1992). To achieve sustainability, the development process should integrate the three dimensions of environment, economic and social (Tatlidil et al. 2009). Besides that, there is huge need for the farmers to first believe that the practices are, without any doubt, very useful for them. Farmers' perceptions regarding the compatibility of sustainable practices with the farming systems emerged as the best predictors of the adoption of such practices (Alonge and Martin, 1995). D' Silva (2011) mentioned that acceptance of sustainable agriculture practices will undeniably facilitate agricultural entrepreneurs to enhance their economic and social status, and thus, enable them to enjoy a better livelihood.

Tatlidil et al. (2009) mentioned that to achieve sustainability, the development process should integrate the three dimensions of environment, economic and social whereby the protection and effective management of natural resources ensure environmental sustainability, long-term employment and income stability bring toward economic sustainability, and strong participation from farming community will lead to attaining social sustainability. Muller (1998) mentioned that definitions of sustainability vary but there is series of commonly identified characteristics for the concept of sustainability. A variety of definitions with respect to sustainability in agriculture has been classified on the basis of specific economic, social or ecological concern (Douglass, 1984) and its historical and ideological roots (Kidd, 1992).

People from different disciplinary background can also view sustainability quite differently (Lowrance et al., 1986; Shearman, 1990; Heinen, 1994; Jaeger, 1995; Hardaker, 1997; Bell and Morse, 1999; Rigby et al., 2001). An important difference between economists and ecologists is the scope of substitution, particularly of human capital for increasingly scarce natural resources and environmental services. Economists are generally optimistic about substitution while ecologists have a pessimistic view of it (Hardaker, 1997). The perceptions of different stakeholders and experts will be included in this research as a way to identify and rank sustainability attributes (Van Calker et al., 2005). The farm level is regarded as the most important starting point because economic, ecological, and social attributes come together at farm level (De Koeijer et al., 1999)

Sustainable agriculture as a practice that meets current and long-term needs for food, fiber and other related needs of society while maximizing net benefits through conservation of resources to maintain other ecosystem services, functions and long-term human development (Rao and Rogers, 2006). Agricultural sustainability is not about technical fixes and expertise. It is development processes that need to integrate ecological and societal knowledge through changes in policy, institutions and behavior (Saifi and Drake, 2008). The 3 main goals of agricultural sustainability are economic efficiency, environmental quality and social responsibility (Fairweather and Campbell, 2003). The concept of sustainable agriculture is strongly related to the multifunctional role, either explicitly or implicitly, recognized to the primary sector (Parra-Lopez *et al*., 2008). This sustainability approach comprises a social, an environmental and to a lesser extent, an economic dimension.

It takes into account the needs of rural communities and food safety for consumers as well as the impact of agricultural practices on local ecosystem services and the global environment (Aerni *et al*., 2009). Despite the diversity in conceptualizing sustainable agriculture, there is an aspect commonly pointed out which is its multiple dimensional characteristic including economic, environmental and social aspects (Schaller, 1993; Conway, 1994; Rossing *et al*., 1997; Berentsen *et al*., 1998; Legg, 1999; Cobb *et al*., 1999; Pretty and Hine, 2001; Pacini *et al*., 2004; Vandermeulen and van Huylenbroeck, 2008; Peacock and Sherman, 2010). In all aspects, agriculture is well suited to the concept of sustainable development. On the one hand, agriculture deals with climate, soil, land, water, forests and biodiversity through the production of crops and animals. On the other hand, agriculture is related to farmers, rural communities, poverty and other social problems. Especially in developing countries, agriculture always plays more roles than just a way of earning income from farm production. Agriculture is a way of life for people in rural society. The sustainability of agriculture therefore, affects not only food production and the use of natural resources and environment. It also influences the social welfare of people in the agricultural sector and in society as a whole.

It seems that the concept of sustainability is becoming widespread. Chili farming is no exception and chili farming systems will have to evolve in this direction. The main problem is for the farmers to apply sustainable practices. It is very important for the farmers to believe in the practices which will help them in production thereby increasing their livelihood. There is a huge need in addressing local farmers' perceptions on sustainability by studying and measuring the farmers' perceptions and socio-economic characteristics that influence those perceptions. Therefore, this research aims to measure the local chili farmers' perceptions on selected sustainable agriculture practices. Therefore, the objective of the study is to measure the importance that farmers accord to each of the selected agricultural practices.

2. Methodology

The study used the descriptive survey design. The samples for study were 199 chilies farmers who practiced farming in the East Coast Economics Region (ECER). The random sampling method was applied in the selection of the respondents. The questionnaires were used as an instrument and face to face interview method applied in collecting the data. The collected data was analyzed using SPSS v. 17.0. Farmers' descriptive thought on the importance of selected sustainable practices were measured using 35 statements which related to the selected indicators of sustainable agriculture which derived from review of literature. Each question that related to sustainable indicator was employed using a five-point Likert-like scale, namely 1- Very low importance (VLI), 2- low importance (LI), 3- medium importance (MI), 4 – high importance (HI) and 5- very high importance (VHI).

3. Results and Discussion

Table 1 presents the information on farmers' demographics profile of chilies growers in East Coast Economic Region (ECER). The demographic characteristics of respondents showed that mean age was 52 years with 18 years of farming experiences. One hundred and seven (53.8%) of the respondents were equipped with secondary education; 68 (34.2%) with primary education; 19 (9.5%) considered illiterate and very minority of the respondents with tertiary education. The result proved that majority of the farmers were literate and able adapt the new agriculture technologies if introduced by the Malaysia Ministry of Agriculture and Agro-Based industry. There were 142 (73.9 %) male and 52 (26.1 %) female farmers. This shows that the traditional gender imbalance was also present in the chilies farming sector. Gidarakou (1997) concluded that participation of female low in agriculture sector due to the sector demands for physical works and female commitments with the families. It was observed that the mean income per month for the farmer is approximately RM 2500.00 where this is far exceeds the poverty level set by the government RM 720.00 (Abu Samah et al., 2012). Most of the farmers own the land to

cultivate the chilies. Minority of the farmers (18.6%) rented the farm to cultivate the chilies farm. The mean of the farm size was 2.44 acres. The findings of survey shown that most of them working in own farms and according to Carolan (2006) there is a suitable situation for applying sustainable practices.

Table 1: Farmers' Demographics Profile

Variables	Frequency (n=199)	Percentage (%)
Age		
21-30	14	7.0
31-40	29	14.6
41-50	35	17.6
51-60	67	33.7
61-70	47	23.6
>71	7	3.5
Gender		
Male	142	73.9
Female	52	26.1
Educational Level		
No Education	19	9.5
Primary	68	34.2
Secondary	107	53.8
Tertiary	5	2.5
Farming Business		
Full Time	157	78.9
Part Time	42	21.1
Experience (years)		
< 10	74	37.2
10 – 20	85	42.7
21 - 30	29	14.6
>30	11	5.5
Income Level (RM)		
<1000	39	19.6
1000-2000	41	20.6
2000-3000	31	15.6
>3000	88	44.2
Farm Size (Acre)		
<0.5	42	21.1
0.5 - 1.0	33	16.6
1.1 - 1.5	60	30.2
1.6 - 2.0	57	28.6
>2.0	7	3.5
Ownership		
Owner	162	81.4
Rented	37	18.6

Source: Survey, 2014

The table 2 presents the information on farmers' perception on sustainability practices. The presented items were adapted and modified from Tathdil et. al (2009). A total of 35 statements were constituted the mean score with respect to perception of farmers towards agriculture sustainability practices in chilies farming. The mean score was then grouped into five categories (Tathdil et. al., 2009), namely no importance (NI) (1.00 – 1.49), low importance (LI) (1.50 – 2.49), medium importance (MI) (2.50 – 3.49), high importance (HI) (3.50 – 4.49) and very high importance (VHI) (4.50 – 5.00). The findings revealed

that out of 35 practices, the respondents were given medium importance to 15 practices and high importance for other 20 practices. No practice was rated very high importance (VHI), no importance (NI) and low importance (LI).

The practices that categorized as high importance are as followed, "Land and water sources should be preserved", "One of the GAP principles is reduce the environmental damages", "Farmers' objectives are to maximize the productivity, efficiency and profit", "Proper uses of pesticides", "Proper irrigation", "Avoid using dangerous chemicals", "Integrated Pest Management (IPM) is the best pest and weeds control method", "Proper use of energy in agriculture", "Mechanization and technologies should be used to improved production", "Proper uses of chemicals and fertilizers", "Farmers should cultivate the manageable area only", "Continuous cultivation increase the pest infestation", "Pesticides, chemicals and fertilizers reduce farm productivity", "Not let farm without crop", "Crop rotation and diversity reduced pest infestation", "Farm production increase as the usage of fertilizer increased", "Animal based fertilizer increased the profit", "Personal involvement in commodity marketing", "Farm should combine the agriculture and animal husbandry" and " Taking adequate measures to control soil erosion.

Whereas, the practices that categorized as medium importance are as followed, "Semangi and alfafa cultivation increase the soil fertility", "Expanding the size of farm by purchasing new farm", "Planting reduce the quality of soil and soil erosion", "Conducting soil test", "Owning adequate farm machinery", "Agriculture chemicals pollutes environment", "Using animal manure", "Crop rotation caused soil erosion", "Crop rotation reduced farmers income", "Reforestation is less advantage for farm environment", "Using legume crops for rotation", "Long term crop rotation", "Proper care of animal health", "Growing cover crops" and "After harvest not burning the crop residues".

The analysis indicated that the respondents were showing their importance to the listed 35 practices. The high importance was given to "Land and water resources should be preserved". This indicated that the chilies farmers were aware that land and water resources are central of agriculture and rural development. They were interested to converse the environment. The least medium importance given to "After harvest not burning the residues" means that most of the farmers burn the residues after the harvest. These results are partially in line with studies that conducted by Sadati et al. (2010), Bagheri, A. (2010), Tathdilet. al., (2009) and Abu Samah et al., (2012).

Table 2: Farmers' Perception on Sustainability

Practices	Mean	SD	Indicator
1. Land and water sources should be preserved.	4.33	0.95	HI
2. One of the GAP principle is reduce the environmental damages.	4.22	0.91	HI
3. Farmers' objectives are to maximize the productivity, efficiency and profit.	4.20	0.78	HI
4. Proper uses of pesticides.	4.15	0.85	HI
5. Proper irrigation.	4.11	0.89	HI
6. Avoid using dangerous chemicals.	4.10	1.01	HI
7. Integrated Pest Management (IPM) is the best pest and weeds control method.	4.10	0.77	HI
8. Proper use of energy in agriculture.	4.08	0.86	HI
9. Mechanization and technologies should be used to improved production.	4.03	0.95	HI
10. Proper uses of chemicals and fertilizers.	3.96	0.97	HI
11. Farmers should cultivate the manageable area only	3.81	0.78	HI
12. Continuous cultivation increase the pest infestation.	3.80	0.83	HI
13. Pesticides, chemicals and fertilizers reduce farm productivity.	3.79	0.85	HI

14. Not let farm without crop.	3.77	0.81	HI
15. Crop rotation and diversity reduced pest infestation.	3.77	0.74	HI
16. Farm production increase as the usage of fertilizer increased.	3.77	0.71	HI
17. Animal based fertilizer increased the profit.	3.75	0.87	HI
18. Personal involvement in commodity marketing.	3.65	1.07	HI
19. Farm should combine the agriculture and animal husbandry.	3.61	0.82	HI
20. Taking adequate measures to control soil erosion.	3.58	0.88	HI
21. Semangi and alfafa cultivation increase the soil fertility.	3.46	0.91	MI
22. Expanding the size of farm by purchasing new farm.	3.40	0.82	MI
23. Planting reduce the quality of soil and soil erosion.	3.36	0.92	MI
24. Conducting soil test.	3.32	0.91	MI
25. Owning adequate farm machinery.	3.24	0.91	MI
26. Agriculture chemicals pollutes environment.	3.20	1.16	MI
27. Using animal manure.	3.14	0.93	MI
28. Crop rotation caused soil erosion.	3.13	1.02	MI
29. Crop rotation reduced farmers income.	2.98	1.08	MI
30. Reforestation is less advantage for farm environment.	2.89	0.97	MI
31. Using legume crops for rotation.	2.89	1.13	MI
32. Long term crop rotation.	2.87	1.00	MI
33. Proper care of animal health.	2.81	0.89	MI
34. Growing cover crops.	2.81	1.07	MI
35. After harvest not burning the crop residues.	2.64	1.04	MI

Source: Survey, 2014

4. Conclusion

The finding of the study is the documented evidence where Malaysia chilies farmers especially from East Coast Economic Region (ECER) were concern over the sustainable practices. They also show the importance of each agriculture sustainable practices. The study also revealed most of the chilies farmers give importance for each sustainable practice. Some of the findings of this study have agreed with the previous findings. The overall findings only revealed the importance of each agriculture sustainable practices of chilies farmers but further research needed to proof that the farmers applying the mentioned sustainable practices.

References

Abu Samah, B., J.L. D'Silva, H.A.M. Shaffril, Man, N. &Azman, A. (2012).Malaysian Contract Farmers' Attitude towards Sustainable Agriculture.*J.Basic Appl. Sci. Res.,* 2 (9) 9205-9210.

Aerni, P., A. Rae and B. Lehmann, 2009. Nostalgia versus pragmatism: How attitudes and interests shape the term sustainable agriculture in Switzerland and New Zealand. Food. Policy, 34: 227-235.

Alonge, A.J. & Martin, R.A. (1995). Assessment of adoption of sustainable agriculture practices: Implications for agricultural education. Journal of Agricultural Education, 3 (3), 34-42.

Bagheri, A. H. ShabanaliFami, A. Rezvanfar, A. Asadi and S. Yazdani (2008).Perceptions of Paddy Farmers towards Sustainable Agricultural Technologies: Case of Haraz Catchments Area in Mazandaran province of Iran American Journal of Applied Sciences 5 (10): 1384-1391.

Bell, S.And Morse, S., (1999). Sustainability indicators: measuring the immeasurable? Earthscan, UK: London.

Berentsen, P.B.M., G.W.J. Giesen and M.M.F.H. Schneiders, (1998). Conversion from conventional to biological dairy farming: Economic and environmental consequences at farm level. Bio. Agric. Hort., 16: 311-328.

Cobb, D., R. Feber, A. Hopkins, L. Stockdale and T. O`Riordan et al., (1999).Integrating the environmental and economic consequences of converting to organic agriculture: Evidence from a case study. Land Use Policy, 16: 207-221.

Conway, G.R., (1994). Sustainability in agricultural development: Trade-offs between productivity, stability and equitability. J. Farm. Sys. Res. Ext., 4: 1-14.

De Koeijer, T.J., Renkema, J.A. and Van Mensvoort, J.J.M., (1995). Environmental-Economic Analysis of Mixed Crop-Livestock Farming. Agricultural Systems 48: 515-530.

D'Silva, J.L., N. Man, H.A.M. Shaffril and B.A. Samah, (2011). Acceptance of sustainable agricultural practices: the case of crop farmers. Am. J. Agric. Biol. Sci., 6: 227-230. doi: 10.3844/ajabssp.2011.227.230

Fairweather, J.R. and H.R. Campbell, (2003). Environmental beliefs and farm practices of New Zealand farmers: Contrasting pathways to sustainability. Agric. Hum. Values, 20: 287-300.

Flora C.B (1992). Building sustainable agriculture: A new application offarming system research and extension. J Sustain. Agric., 2: 37-49.

Hardaker, J.B., (1997). Guidelines for the integration of sustainable agriculture and rural development into agricultural policies. FAO, Italy: Rome.

Heinen, J.T., (1994). Emerging, diverging and converging paradigms on sustainble development. International Journal of Sustainable Development and World Ecology 1: 22-33.

Jaeger, W.K., (1995). Is Sustainability Optimal – Examining The Differences Between Economists And Environmentalists. Ecological Economics 15: 43-57.

Karami, E.And A. Manosoorabadi, (2008). Sustainable agricultural attitudes and behaviors: A gender analysis of Iranian farmers. J. Environ. Dev. Sustain., 10: 883-898.

Kidd, C.V., (1992). The Evolution Of Sustainability. Journal of Agricultural & Environmental Ethics 5: 1-26.

Legg, W., (1999). Sustainable agriculture: An economic perspective. Paper Presented to ADAS Conference, University of Warwick, UK.

Lowrance, R., Hendrix, P.F. and Odum, E.P., (1986). A hierarchical approach to sustainable agriculture. American Journal of Alternative Agriculture 1: 169-173.

Muller S (1998). Evaluating the sustainability of agriculture.GTZ,Eschborn, Germany.

Parra-Lopez, C., J. Calatrava-Requena and T. De-Haro-Gimenez, (2008).A systemic comparative assessment of the multifunctional performance of alternative olive systems in Spain within an AHP-extended framework. Ecol. Econ., 4: 820-834.

Pretty, J.N. and R. Hine, (2001).Reducing food poverty with sustainable agriculture: A summary of new evidence. Final Report from the SAFE-World, The Potential of Sustainable Agriculture to Feed the World, Research Project, University of Essex.

Rao, N.H. and P.P. Rogers, (2006).Assessment of agricultural sustainability.Curr. Sci., 91: 439-448.

Rigby, D., P. Woodhouse, T. Young and M. Burton, (2001).Constructing a farm level indicator of sustainable agricultural practice. Ecol. Econ., 39: 463-478.

Rossing, W.A.H., J.M. Meynard and M.K. van Ittersum, (1997). Model-based explorations to support development of sustainable farming systems: Case studies from France and The Netherlands. Dev. Crop Sci., 25: 339-339.

Sadati, A.S., S.F, Hosain, A, Ali and S. Abolghasem (2010). Farmers' Attitude on Sustainable Agriculture and its Determinants: A Case study in Behbahan Country of Iran. *Research Journal of Apllied Sciences, Engineering and Technology, 2 (5): 422-427.*

Tatlidil FF, Boz I, Tatlidil H (2009). Farmers' perception of sustainable agriculture and its determinants: A case study in Kahramanmaras province of Turkey. Environ. Dev. Sustain., 11: 1091-1106.

Van Calker, K.J., Berentsen, P.B.M., Giesen, G.W.J. and Huirne, R.B.M., (2005). Identifying and ranking attributes that determine sustainability in Dutch dairy farming. Agriculture and Human Values 22: 53-63.