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Behavior of Vegetable Farmers in Responding to the Organic Vegetable Farming System in Agam and Tanah Datar Regencies of West Sumatra

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Abstract

This study aims to analyze the behavior of vegetable farmers in responding to information about the organic vegetable farming system and to analyze the factors related to the behavior of farmer in responding to information of the organic vegetable farming system. This study was conducted in Agam and Tanah Datar regencies of West Sumatra. The sample consists of 300 farmers who attended development programs of organic vegetable areas in West Sumatra. Data analysis was performed using descriptive statistics and correlation analysis. The results showed that the behavior of farmers reflected by the knowledge on the organic vegetable farming system are in the medium category, the attitude of farmers on the organic vegetable farming system are in the high category, and skills of farmers in practicing the organic farming system are in the low category. The factors associated with the behavior of farmers in responding to the organic vegetable farming system are internal characteristics of the farmers, intensity of learning of farmers and intensity of agricultural extension.

Keywords: behavior, knowledge, attitudes, skills, organic vegetable farming system.

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1. Introduction

The organic farming system is one of the agricultural systems that implement the sustainable agricultural system. Some research results indicated that by applying the organic farming system, farmers will get benefits, some of them are reducing production costs, getting a higher price than conventional products, increasing revenues, avoiding dependence from the input dealers, increasing the economic sustainability of the farmers and improving the health of the farmers and their families [1,11,12].

Various efforts have been made to socialize the organic farming system for farmers, such as the Go Organic 2010 program launched by the Department of Agriculture, which aims to develop, support and facilitate communities in implementing the organic farming system [3]. The government of West Sumatra as one of governments in Indonesia, where its region was appointed as a pilot area for the organic farming, has made various efforts for developing the organic farming in the community of farmers. One of the efforts for socializing the organic farming is by providing the Field School of Organic Farming (*Sekolah Lapang Pertanian Organik*, SLAPO) for vegetable farmers in the central areas of vegetables in West Sumatra. This activity aims to change the behavior of farmers in order to have the preferable knowledge, attitude and skill associated with the organic vegetable farming system.

The activities of socialization of the organic vegetable farming system have been done intensively in West Sumatra since 2008. Despite the efforts for socializing the organic farming system have been done in various ways intensively, but up to now the level of application of the organic vegetable farming system by farmers is still low. Low level of application of the organic vegetable farming system among farmers is indicated related to the behavior of farmers reflected by the knowledge, attitude and skill of farmers in practicing the organic farming system on land. Effendi [4] stated that in the context of Integrated Pest Management (*Pengendalian Hama Terpadu*, PHT), there are three pillars underlying the behavior of farmers to implement PHT in their farm land, namely knowledge, skill and attitude.

With regard to the conditions and problems of the organic agriculture, this study aims to: (1) analyze the behavior of farmers which includes knowledge, attitude and skill in the organic vegetable farming system and, (2) analyze the factors associated with the behavior of farmers in responding to the organic vegetable farming system**.**

2. Research Methodology

This study uses a quantitative research paradigm with a survey method. The research location is in Agam and Tanah Datar regencies of West Sumatra. From each of the two regencies was selected some sub-districts which are the development areas of the organic vegetables, and from each of the sub-districts was randomly drawn sample. The population of the research was vegetable farmers who had attended the development programs of the organic vegetable areas at the study site in 2008 until 2012. The population consisted of 541 farmers, consisting of 303 people in Agam regency and 238 people in Tanah Datar regency. The sample was set 300 people consisting of 168 people in Agam regency and 132 people in Tanah Datar regency. Sample distribution

in each research location was determined proportionally based on the population size and use the simple random sampling methode to draw a sample.

The research was carried out from September 2013 to January 2014. Primary data was collected by interviews using questionnaires and direct observations in the field, while the secondary data was obtained from the Department of Agriculture and Horticulture, Organic Certification Institute in West Sumatra, Central Bureau of Statistics, Center for Agricultural Extension, Fishing, Forestry and Food Security in each sub-district that is at the research site. Data analysis was performed using the descriptive statistics and the inferential statistics with a Spearman rank correlation analysis.

3. Results and Discussion

3.1. The behavior of vegetable farmers in responding to the organic vegetable farming system

The behavior of farmer in responding to the organic vegetable farming system is shown by indicators of the farmer's knowledge level about the organic vegetable farming system, the farmer's attitude towards the organic vegetable farming system and farmer's skill in practicing the organic vegetable farming system on land. The results of the research showed that the level of farmers' knowledge about the organic farming system is in medium category, the attitude of farmers towards the organic farming system is in the high category and the skill of farmers in practicing the organic vegetable farming system is in the low category. The mean score of each indicator of the behavior of farmers relating to the organic vegetable farming system is presented in Table 1.

Table 1. The mean score of the behavior of farmers in responding to the organic vegetable farming system

Variables / indicators	Measurement	Mean			Sign (Mann-Whitney u test)
		Agam	T. Datar	Total	
Farmer behavior					
Knowledge	Score[a]	60.13	53.81	56.97	0.000**
Attitude	Score[a]	85.33	85.36	85.35	
Skill	Score[a]	40.64	43.14	41.89	

Note: **significant at p<0.01

[a]Score: 0-25=very low, 26-50=low, 51-75=medium, 76-100=high

The results of the analysis of different test between Agam and Tanah Datar regencies show that there is a difference between the level of knowledge of farmers about the organic vegetable system in Agam and that in Tanah Datar. Mean score for Agam is higher than Tanah Datar, but in both these locations the level of knowledge of farmers about the organic vegetable farming system is in medium category. These results indicate that the knowledge, attitude and skill of farmers in responding to the organic farming system are not linear, in the sense that the higher knowledge is not always followed by a positive attitude and a high skill. However, the results showed that the positive attitude of farmers (high category) turned out to be followed by a medium level of knowledge about the organic farming system, and be followed by a low skill in practical aspects.

The results of this study reinforce what was stated by Prager et al. [7] that what is conveyed to farmers is not always heard by them, and if they heard, they do not always understand. If the farmers understand they do not necessarily agree with that, and even though they agree with what is conveyed, it turns out they do not necessarily do. And lastly if they apply what is presented, in many cases it turns out that the application of innovation is not always maintained or sustained.

3.2. Factors associated with the behavior of farmers in responding to the organic vegetable farming system

Variables which positively and significantly associated with the behavior of farmers in responding to the organic vegetable farming system are as follows: characteristics of individual farmers, intensity of learning of farmers and intensity of agricultural extension.

The characteristics of individual farmers which positively and significantly associated with all or some of the behavior of farmers (knowledge, attitude, skill) are as follows: formal education, non-formal education, cosmopolitan, and courage to bear the risk (see table 2). This means that if the higher formal education of farmers, the more often farmers follow the extension and training activities, farmers are more cosmopolitan and farmers are more courageous to risk in farming, then there is a tendency, the higher the farmers' knowledge about the organic farming system, the better the attitude of farmers towards the organic farming system and farmers increasingly skilled in applying the organic farming system. These results are consistent with the results of the study of Mulyandari [6] on the behavior of farmers in utilizing information technology, which is influenced by the characteristic factors of the farmers. Closeness of the relationship between the characteristics of farmers and the behavior of farmer in responding to the organic farming system are presented in Table 2.

The intensity factor of learning which is significantly positively correlated with the behavior of farmers in responding to the organic vegetable farming system is reflected by the following indicators: variety of learning methods, the suitability of learning materials, the frequency of learning, various sources of information, the intensity of interaction with members of the group and the intensity of interaction with learning resources. Closeness of the relationship between the intensity of learning of farmers with behavior of farmers in responding to the organic vegetable farming system is presented in Table 3.

Table 2. The relationship between the characteristics of individual farmers and the behavior of farmers in responding to the Organic Vegetable Farming System (OVFS)

Internal characteristics	Behavior of farmers		
	Knowledge of OVFS	Attitude toward OVFS	Skills practice of OVFS
Age	-0.120	-0.164*	-0.131*
Formal Education	0.072	0.194*	0.240**
Non-formal education	0.163*	0.013	0.244**
Area of land	-0.034	0.118*	0.046
Farming experience	-0.007	-0.138*	-0.032
Cosmopolitan	0.277**	0.147*	0.320**
Courage to bear the risk	0.187*	0.250**	0.209**
Motivation	-0.027	0.121*	0.118*

Note: * significant at $\alpha = 0.05$ and ** significant at $\alpha = 0.01$

Table 3. The relationship between the intensity of learning of farmers with the behavior of farmers in responding tothe organic vegetable farming system

The intensity of learning of farmers	Behavior of farmers		
	Knowledge of OVFS	Attitude toward OVFS	Skills practice of OVFS
variety of learning methods	0.271**	0.043	0.354**
the suitability of learning materials	0.497**	0.142*	0.315**
the frequency of learning	0.275**	0.081	0.418**
various sources of information	0.283**	0.075	0.337**
the intensity of interaction with members of the group	0.341**	0.201**	0.202**
the intensity of interaction with learning resources	0.185**	0.184**	0.265**

Note: * significant at $\alpha = 0.05$ and ** significant at $\alpha = 0.01$

The results of the correlation test in table 3 show that the variety of learning methods, the suitability of the learning materials, the intensity of the interaction with members of the group and with learning resources are significantly positively correlated with knowledge, attitudes and skills of farmers in responding to the organic vegetable farming system. This means that if the learning methods used by farmers are more various, the learning materials are more appropriate with the organic farming system, and the intensity of interaction with

members of the group and with learning resources are increase, then there is a tendency that knowledge, attitudes and skills of farmers in the organic farming system are also increase. This results are in line with the results of a study by Linga et al. [5] which states that the activities of farmers in a group significantly correlated with the behavior of farmers.

A learning approach is one of the theoretical approaches in social psychology, which means that the behavior is determined by what the individual has learned in the past [8]. Behavior or activity that is on an individual or an organism does not arise by itself, but as a result of the stimulus that is received by the individual or the organism [10]. Behavior is a response to the stimulus received by an individual or an organism. Behavior in humans can be distinguished on the behavior of reflexive and that of non-reflexive. The reflexive behavior is behavior that occurs spontaneously to the stimulus, whereas the non-reflexive behavior is behavior that is controlled by the centers of consciousness or brain. According to Walgito [10], non-reflexive behavior or so-called psychological behavior is the dominant behavior in human beings. This behavior is the behavior that is established, and that can be controlled, as it may change from time to time, as a result of the learning process.

The intensity of extension that is reflected by the following indicators: the accuracy of the method extension, suitability of extension material, suitability of the communication model in extension, competence of extension agent and frequency of extension, are significantly positively correlated with the behavior of farmers in responding to the organic vegetable farming system. Closeness of the relationship between the intensity of extension and the behavior of farmers in responding to the organic vegetable farming system is presented in Table 4.

Tabel 4. The relationship between the intensity of extension and the behavior of farmers in responding to the organic vegetable farming system

The intensity of agricultural extension	behavior of farmers		
	Knowledge of OVFS	Attitude toward OVFS	Skills practice of OVFS
The accuracy of extension methods	0.037	0.150**	0.023
Suitability of extension materials	0.149**	0.345**	0.162**
Suitability of the communication models	0.133*	0.166**	0.174**
Competence of extension agent	0.222**	0.231**	0.252**
frequency of extension	0.235**	0.197**	0.342**

Note: * significant at $\alpha = 0.05$ and ** significant at $\alpha = 0.01$

The correlation test demonstrates that the suitability of extension materials, suitability of extension models, competence of extension agent, and frequency of extension are significantly positively correlated with knowledge, attitudes and skills of farmers in the organic vegetable farming system. This relationship means that if extension materials are more appropriate to the needs and abilities of farmers, the communication models are

more appropriate to the ability of farmers, competence of extension agents as well as frequency of extension on the organic farming system are more increase, then there is a tendency that the behavior of farmers in organic farming is getting better, which is reflected by the following indicators: level of knowledge about the organic farming system, attitudes towards the organic vegetable farming system and farmers' skills in practicing the organic farming system. Influence of the intensity of agricultural extension on the behavior of farmers is in line with the results of research conducted by Cholid [2].

Sumardjo [9] states that education is essentially an attempt to improve the quality of a person or an individual, which includes cognitive, affective and psychomotor such that he/she has an individuality (human capital, not individualistic) that ready to realize the welfare of his/her family and community.

4. Conclusion and Recommendation

4.1. Conclusion

1. The behavior of farmers in Agam and Tanah Datar regencies in responding to the organic vegetable farming system is reflected by the following: the level of knowledge about the organic vegetable farming system that is medium, attitudes towards the organic vegetable farming system that is high and the low level of skill in practicing the organic farming system on land.
2. Factors which significantly and positively correlate with the behavior of vegetable farmer in responding to the organic vegetable farming system are as follows:
    a. internal characteristics of farmers consisting of formal education, non-formal education, cosmopolitan, and the courage to bear the risk.
    b. the intensity of learning of farmers consisting of the following indicators: variety of learning methods, the suitability of learning materials, the frequency of learning, variety of resources, the intensity of interaction with members of the group and the intensity of interaction with learning resources.
    c. The intensity of agricultural extension consisting of the accuracy of extension methods, suitability of extension materials, suitability of communication models, competence of extension agent and frequency of extension.

4.2. Recommendation

Facilitation for improvement the intensity of learning of farmers and the quality of extension is important to be done by related parties as an effort to improve the knowledge and skills of farmers doing the organic vegetable farming system. This facilitation is the entry point to the implementation / adoption of the organic farming system on farmers' land.

References

[1] Beban. A. (2008). “Organic Agriculture: An Empowering Development Strategy for Small-Scall Farmer? A Cambodian Case Study.” A Thesis at Massey University, Palmerston North, New Zealand. Available http/orgprints.org/13687. [Jan 23, 2013].

[2] Cholid F. "Faktor-faktor yang Mempengaruhi Perilaku Petani dalam Mengoptimalkan potensi Sumberdaya Lahan melalui Usaha Budidaya ikan air Tawar (kolam) di kabupaten Tanggamas", *Jurnal Ilmiah ESAI,* vol. 2 no. 1, pp 37-44, 2008.

[3] Departemen Pertanian. "4 Tahun Go Organik 2010. Ditjen BPPHP". Internet: http://www.scribd.com/japandu/d/25074061-Go-Organik-2010-Departemen-Pertanian. 2009 [Jan 19, 2012].

[4] Effendi, Lukman. "Kinerja Pemandu dalam Pengembangan PHT dan Dampaknya pada Perilaku Petani di Jawa Barat". Ph.D Thesis. Graduate School of Bogor Agricultural University, Indonesia, 2009.

[5] Lingga K, Sulaiman A, Ikeu T. "Perilaku Petani dalam Produksi dan Penanganan Pangan Segar di Kabupaten Lampung Barat". *Jurnal Gizi dan Pangan,* vol 3(3), pp 239-243, 2008.

[6] Mulyandari Retno SH. "Perilaku Petani Sayuran dalam Memanfaatkan teknologi Informasi". *Jurnal Perpustakaan Pertanian*. vol. 20 no.1, 2011.

[7] Prager & Posthumus. "Adopting sustainable soil management the role of socio-economic factors". Paper for the 16th Annual International Sustainable Development Research Conference **.** 30 May – 1 June, 2010, Hong Kong, Track "Sustainable Agriculture". Internet: http://www.kadinst.hku.hk/sdconf10/Papers_PDF/p136.pdf . [Sept 17, 2011].

[8] Sears D O, Freedman J L, Peplau L A. *Psikologi Sosial*. Translated by Michael A dan Savitri S. Jakarta: Erlangga. 1985.

[9] Sumardjo. "Penyuluhan menuju Pengembangan Kapital Manusia dan Kapital Sosial dalam mewujudkan kesejahteraan rakyat". presented at scientific oration of professor, Bogor Agricultural University, Indonesia . 2010.

[10] Walgito, B. *Pengantar Psikologi Umum.* Yoyakarta Indonesia: Andi. 2005.

[11] Widiarta A, Adiwibowo S. "Analisis Keberlanjutan Pertanian Organik di Kalangan Petani". *Jurnal Sodality,* vol 5 no 1, 2011.

[12] Widodo, Y B. "Pemberdayaan Tenaga Kerja Perdesaan dalam pengembangan system Pertanian Organik: Dinamika Sosial Masyarakat Desa", in Final Report of Incentive Program for Researcher and Engineer in the Indonesian Institute of Sciences, Center for Research and Population of the Indonesian Institute of Sciences Jakarta. 2010.