Ranchers' knowledge towards sustainable swiftlet ranching

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Abstract

The recent drastic increase of swiftlet bird houses can pose a serious threat to the sustainability in swiftlet ranching. The possible outcomes need proper attention, so that further growth of the swiftlet industry will not be constrained. The sustainability of this industry therefore is strongly associated with the rancher's knowledge of it. Thus, this study was aimed to investigate the knowledge of swiftlet ranchers towards sustainable swiftlet ranching. A total of 136 ranchers from Johor were selected as the respondents for this study. Results revealed that 71.3% of the respondents were highly knowledgeable about sustainable swiftlet ranching. Age, educational level, frequency of attending courses or seminars, years of operation and yield were found to be significantly related to the knowledge level of the respondents towards sustainable swiftlet ranching. The study recommends that both the government and private extension agencies need to play a vital role in contributing sustainable ranching knowledge to the ranchers. Their role in extension services need to be optimised in order to maintain and update the ranchers as highly knowledgeable players and thus keeping the industry sustainable for the long term.

Keywords: Edible bird nest, knowledge level, ranching, swiftlet, sustainability.

Introduction

The swiftlet industry is unique in the Malaysian agricultural sector. The main product for this industry is edible bird nest (EBN). The most expensive nest is white nest, which is produced by *Aerodramus fuciphagus* swiftlet species (Abdul Kadir, 2011). The swiftlet industry has existed in Malaysia since the 18th century, when the nests were collected from caves (Medway, 1969). Swiftlet nest is believed to have both aphrodisiac and medicinal property values among the consumers. Marcone (2005) described that edible nest as a highly nutritious glycoprotein with crude protein as high as 62% and carbohydrate at 27.26%. When the demand for edible bird nest increased with economic growth in the global market, the swiftlet ranching activity in Malaysia also increased (Lau and Melville, 1994). Currently, swiftlet ranching activity is conducted in man-made buildings (bird houses) that imitate cave-like environment in order to provide alternative nesting sites to lure the swiftlet birds (Koon, 2011). The birds are totally free on their own activities. The rancher does not control any of the bird's movements, breeding or even diet and its life remains natural without any interference from humans.

The swiftlet ranching activity is the best solution for investors to gain high profit with low operating costs. Investors usually convert empty shop lots or build separate units on agricultural land for swiftlet birds to nest (Merican, 2007). As a result, the number of swiftlet bird houses in Malaysia increased significantly in the past several years. According to Swiftlet Eco Park Group

of Companies, in 1998 there were only 900 units of bird houses in Malaysia but by the end of 2006 it increased drastically to 50,000 units. In 2010, the swiftlet bird species have been excluded from the list of protected animals under the Wildlife Department Law, Peninsular Malaysia (Kamarudin and Abd Aziz, 2011). The Malaysian government has included the swiftlet industry in the National Key Economic Areas (NKEAs) to boost the development of the bird nest base industry. However, the rapid increase in the number of bird houses in Malaysia has a high potential for several sustainable risks to the industry (Kamarudin and Abd Aziz, 2011).

The bird calling sound which is played day and night to lure the swiftlet birds can cause noise pollution to the surrounding residences. Besides that, the residents also had to face air pollution which is caused by the bird droppings (Kamarudin and Abd Aziz, 2011). Furthermore, the Department of Veterinary Services (DVS) Malaysia has received many complaints from the public regarding the way ranchers managed the swiftlet bird houses particularly on bird calling sound and improper harvesting methods. According to Koon and Cranbrook (2002) the wrong harvesting method will lead to decrement of swiftlet bird's population. Those sustainable risks clearly show that they are mainly contributed by the ranchers themselves. The sustainability of any industry strongly relies on the player's knowledge level of that particular industry. The same setting goes to the agricultural industry, where farmer's knowledge on sustainable agriculture plays a crucial role in sustainable farming (Röling and Jiggins, 1998). In the swiftlet ranching industry, the rancher's knowledge level is very important in order to maintain the sustainability of the industry. The present study aimed to investigate the swiftlet ranchers' knowledge level on sustainable swiftlet ranching practices in Malaysia and to test the relationship between ranchers' socio-demographic profiles and the level of knowledge on sustainable swiftlet ranching.

Farmers in the agricultural industry have acquired adequate knowledge from decades of experience and experimentation, as they have had to adapt their agricultural systems using limited resources under harsh and insecure conditions. Such knowledge is essential in understanding local realities of farmers and can be critical for the success or failure of agricultural development (Sandor and Furbee, 1996; Winklerprins, 1999). In swiftlet ranching industry, the ranchers are the important player. Thus, ranchers are required to acquire adequate knowledge level regarding the sustainable swiftlet ranching so as to maintain the industry for the long term. Sudheendra and Hirevenkanagoudar (2005) indicated that in joint management programmes in North Karnataka, India, extension contact and employment generation had a significant and positive association with knowledge level. Age, education, farm size, family income and level of aspiration had a positive association with the knowledge level. While Bharathamma *et al.* (2006) revealed that education, land holding, income of the family, social participation, mass media participation and training undergone were highly significant with empowerment of rural women. Age, marital status, family size, caste, material possessions were non-significant but positively related with empowerment of rural women in Gadag district of North Karnataka. It is proven that the socio-demographic profiles of farmers influence the level of knowledge on sustainable farming.

The phenomenon of sustainable swiftlet ranching is actually driven from sustainable farming in the agricultural industry. There have been many definitions about sustainability. During 1960s and 1970s

sustainable agriculture was not a major issue in the agricultural sector. The goal then was just to grow sufficient food and fibre (Brady, 1990). After being highly productive for more than a half-century, agriculture now aims at being sustainable. The three basic elements of sustainability are the natural environment, economic profit and the welfare of society. Thus, in the swiftlet industry, the sustainable swiftlet ranching can be described as the ranching activity in luring the swiftlet birds to nesting in man-made caves (bird houses) with ranching system that can be continued in the future (Hansen and Jones, 1996). Park and Seaton (1996) further indicated that sustainable swiftlet ranching allows the ability of natural environment and resources to produce edible bird nests into the future without depleting the available resources for subsequent generations. Den Biggelaar and Suvedi (2000) argued that sustainable activities must be accomplished with both economic and environmental objectives without losing prospect of social features such as family quality of life, human health, relationships with community, rancher's education and skills.

Methodology

This study was carried out in Johor, Malaysia. A list of ranchers' name and contact details was obtained from the Johor Department of Veterinary Services (DVS) 2011 Directory. A total of 136 ranchers were randomly selected as the respondents through stratified sampling method. Structured questionnaires through face-to-face interviews were carried out to collect data from the respondents. The reliability of the questionnaire was measured using Cronbach's alpha score. The Cronbach's alpha score for the pre-tested questionnaire was 0.893 which is acceptable according to Schmitt (1996). The collected data were analysed using descriptive analysis, chi-square analysis and knowledge level analysis. Descriptive analysis was used to describe the basic features of the collected data in this study. The chi-square analysis was used to determine whether there is a significant difference between the expected and the observed frequencies. The knowledge level analysis was calculated based on a calculated score for knowledge questions. There were 20 questions asked to the respondents with three choices of answers (true, not sure and false) related to sustainable swiftlet ranching. For each correct answer a score of one (1) was given while incorrect answer was given a zero (0) score. For those choosing 'not sure' as their answer, the score was also given zero (0) because this indicated that the respondents had less knowledge on the question. Scales of knowledge level were adapted from Appiah (2011) and employed in this study (Table 1).

Table 1. Scale for knowledge level

Knowledge level	Score
High	14-20
Moderate	10-13
Low	0-9

Source: Adapted from Appiah (2011)

Results and Discussion

Ranchers' socio-demograph

Table 2 describes the rancher's socio-demographic profiles. The results revealed that 96.3% of the respondents were male and 3.7% were female. Majority of the respondents were Chinese (97.8%) and only 2.2% of the respondents were Malay. Most of the respondents (40.4%) were categorised under the age group of 41-50 years old followed by 51-60 years old (36%). The level of education showed that 70.6% of the ranchers attended secondary level, followed by 19.9% who primary attended level and 9.9% of them were college graduates. The marital status showed 97.1% respondents were married while the remaining 2.9% were single. Among the ranchers, 75% of them had attended courses or seminars regarding swiftlet ranching 1 to 4 times while 11.8% attended 5 to 8 times in the past 3 years. However 3.7% of the ranchers never attended any courses regarding swiftlet ranching. With regard to years of operation, 58.8% of the bird houses had operated below 3 years, followed by 37.5% between 4 to 7 years and 3.7% more than 8 years. The annual raw EBN production showed that 14% of ranchers produced below 2 kg while another 14% produced 3 kg to 5 kg per year. About 19.9% of ranchers produced 6 to 8 kg while 52.2 % of ranchers produced more than 9 kg per year.

Table 2: Socio-demographic profiles of ranchers

Variables	Frequency (N)	Percentage (%)
Gender		
Male	131	96.3
Female	5	3.7
Race		
Chinese	133	97.8
Malay	3	2.2
Age group in years		
Below 30	4	2.9
31-40	14	10.3
41-50	55	40.4
51-60	49	36.0
Above 61	14	10.3
Level of education		
Primary	27	19.9
Secondary	96	70.6
Collage	13	9.9
Marital Status		
Single	4	2.9
Married	132	97.1
Family size		
1-3	38	27.9
4-6	74	54.4
Above 7	24	17.6

Variables	Frequency (N)	Percentage (%)
Number of courses attended		
0	5	3.7
1-4	102	75.0
5-8	16	11.8
Above 9	13	9.6
Years of operating		
Below 3	80	58.8
4-7	51	37.5
Above 8	5	3.7
Yearly Production (kg)		
Below 2	19	14.0
3-5	19	14.0
6-8	27	19.9
Above 9	71	52.2

Knowledge level analysis

Table 3 shows the result on ranchers' knowledge level. About 71.3% of the ranchers had high level of knowledge while the remaining 28.7% ranchers had moderate level of knowledge. A majority of the ranchers had attended courses and seminars regarding swiftlet ranching and these had provided relevant information and improved their knowledge on swiftlet ranching. The ranchers have developed strong relationship as they have work closely with their swiftlet association. Thus, this is also an excellent platform in the transfer of knowledge to the ranchers. The nationally developed guidelines by DVS Malaysia for swiftlet ranching have also exposed the ranchers to certain standards and levels of operating procedure that must be adhered to in respect to issues of noise, health, pollution and scope of renovation works. These findings are in line with Merican (2007) who stated that the swiftlet associations and proper developed guidelines would significantly contribute to rancher's knowledge about sustainable ranching activities.

Table 3: Ranchers'knowledge level towards sustainable swiftlet ranching

Knowledge level	Frequency (N)	Percentage (%)
High	97	71.3
Moderate	39	28.7
Low	0	0
Total	136	100.0

Knowledge level and socio-demographic profiles

Table 4 shows the results of chi-square analysis to test the relationship between knowledge level and socio-demographic profiles of the ranchers. The results revealed that there were significant relationships between age and level of education and knowledge level. The relationship between rancher's age and knowledge level was significant (P<0.05). The relationship between education level and knowledge level showed there was a significant relationship (P<0.10). Thus, age and education significantly contributed to the ranchers' knowledge on sustainable ranching which is supported by Tegegne *et al.* (2003).

The chi-square analysis was again conducted to investigate the relationship between a) knowledge level and course attended, b) knowledge level and years of operation, and c) knowledge level and yield. Table 5 shows the results of the chi-square analysis. Most of the ranchers responded that they had attended courses or seminars regarding swiftlet ranching. The result showed that there was a significant relationship between knowledge level and attending courses (P<0.05). Attending courses on swiftlet had contributed significant knowledge to swiftlet ranchers. It becomes a good medium for the ranchers to learn new technology, latest issues regarding the industry and the sustainable way to conduct the ranching activities. There was a a significant relationship between years of operation and knowledge level (P<0.05). The ranchers managed to gain knowledge throughout their experience in ranching activities. The raw EBN production also had a significant relationship with knowledge level (P<0.01). High level of knowledge about ranching activities also assisted most of these ranchers to increase EBN yield. These findings are in line with Appiah (2011).

Table 4: Relationship between knowledge level and socio-demographic profiles

Variables	Chi-SquareValue	df	Significant
Gender	0.191		0.662
Age	11.386		0.023**
Race	0.033		0.857
Marital status	1.657		0.198
Family size	6.676		0.502
Level of education	7.580		0.056*

*Significant at 10% level of significance
** Significant at 5% level of significance

Table 5: Relationship between knowledge level and course attended, years of operation and yieldVVariables

	Chi-Square Value	df	Significance
Course attended	12.911	1	0.000**
Years of operation	6.304	2	0.043*
Yield	23.618	3	0.000**

*Significant at 5% level of significance
** Significant at 1% level of significance

Conclusion

This study found that most of the swiftlet ranchers had high knowledge level regarding sustainable swiftlet ranching. There were significant relationships between level of knowledge and age, education level, attending courses, years of operation and yield. However a minority group of ranchers still had a moderate knowledge level regarding sustainable swiftlet ranching. Since swiftlet ranching totally relies on nature, all the players must understand about sustainable practises in swiftlet ranching. Thus, in order to maintain high level of knowledge, extension agencies both the government and private sector need to optimise their roles. The extension agencies need to deliver more advanced technical support and assist ranchers, so that together they can keep the industry sustained for the long term. Since this industry is entirely dependent on nature, an unsustainable practice can affect the productivity of the whole industry. Every rancher must be well knowledgeable regarding sustainable ranching activity. The rules and regulation for swiftlet industry must be enhanced and need to be updated from time to time. Proper law enforcement will ensure the ranchers are in line with rules and regulation.

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