

Breeder Behavior and Application towards Honeybee Cultivation in Protected Forest Edge

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Abstract

The honey bee that is popularly cultivated as a honey producer in Indonesia is the honey bee of the genus *Apis*. This honey bee is widely cultivated by the community on the edge of the protected forest in Pempatan Village, Rendang District, Karangasem Regency. This study aims to analyze the behavior and application of breeders to honey bee cultivation. Determination of the research location using the purposive method with the consideration that Pempatan Village, Rendang District, Karangasem Regency is one of the honey centers. The population in this study amounted to 63 people who cultivate honey bees. Sampling in this study using a purposive sampling method with the number of respondents as many as 30 people. The types of data needed in this study are primary data and secondary data. Primary data was obtained by conducting observations and interviews with respondents. The data analysis method used in this research is quantitative and qualitative descriptive analysis. Based on the results of the study showed that the level of knowledge of breeders regarding honey bee cultivation was in the high category as indicated by the average score of 82.00%. the score is 80.67% and the attitude of farmers towards honey bee cultivation is in the agree on category which is indicated by the average score of 81.33%, while the application of breeders to honey bee cultivation is in the good category which is indicated by the average size the achievement score is 85.33%. From the results of the study, it can be suggested that the role of the Government of Karangasem Regency is needed to facilitate farmers in providing counselling on honey cultivation techniques, farmers are expected to continue to

develop honey cultivation to make Pempatan Village a center for honey centers in Bali Province and breeders to prioritize honey quality, so that they can be exported to foreign countries.

Keywords: Behavior, Application, Honey Farmers

Introduction

As a country with a tropical climate, Indonesia has enormous potential in cultivating honey bees. Indonesia also has a high source of biodiversity in the form of flora and fauna. With a forest area of around 94.1 million hectares or 50.1 percent of the total land area, the forest products obtained are very abundant. The wealth of forest resources has a very high economic value that can support the welfare of the community. Non-timber forest products that are generally managed and utilized by the community are resins, essential oils and honey. Honey is a non-timber forest product that makes a very high contribution to the community around the forest.

The types of bees native to Indonesia include forest bees (*Apis dorsata*), local bees (*Apis cerana*), dwarf bees (*Apis florea*), small bees (*Apis andreniformis*), Borneo red bees (*Apis koschevnikovi*), mountain bees (*Apis nuluensis*), the local Sulawesi bee (*Apis nigrocincta*), and the stingless bee (*Trigona Sp.*) (Melati Anggraini, 2009). Honey bees are one of the rural industrial businesses that are able to play a role in meeting the economic needs of the family, so that they are able to support the community's economy. Honey is a food ingredient in the form of a thick liquid that has a natural sweet taste produced by bees made from flower nectar. Honey is rich in nutrients and has many benefits for human health. Forest honey production has started to be managed properly, because the potential for forest honey is quite large so that it can improve the economy of the community around the forest.

Honey bees have long been cultivated by the community on the edge of a protected forest in Pempatan Village, Rendang District, Karangasem Regency, both for personal consumption and as a product that can improve the community's economy. Honey is a non-timber forest product which is currently very potential to be developed because it has two main functions, namely: increasing the preservation of protected forests and also improving the community's economy. Based on the background, it is necessary to research the behavior of the community towards honey bee cultivation in the protected forest area of Pempatan Village, Rendang District, Karangasem Regency. The results of this study are expected to provide information about the knowledge, skills and attitudes of the community as well as the application of honey bee cultivation so that breeders are more concentrated in cultivating honey bees.

Research Method

This research was conducted in Pempatan Village, Rendang District, Karangasem Regency. The selection of this location was determined by purposive sampling, namely the technique of determining location samples intentionally or with certain considerations. The consideration is that Pempatan Village, Rendang District, Karangasem Regency is one of the honey centers in Karangasem Regency. The population in this study amounted to 63 people who cultivate honey bees. Sampling in this study using a purposive sampling method with the

number of respondents as many as 30 people. The method of data collection in this study was carried out by means of observation, interviews, literature study and documentation

The types of data needed in this study are primary data and secondary data. Primary data was obtained by conducting observations and interviews with respondents. Interviews were conducted in a structured manner with the help of a questionnaire. Secondary data was obtained by searching the literature related to the research. The data obtained will be analyzed qualitatively and quantitatively. Qualitative analysis was conducted to analyze the condition of honey bee farmers. Quantitative analysis is used to analyze the behavior and application of breeders of honey bee cultivation. The data collected was then tabulated and then analyzed to answer the research objectives. The data analysis method used in this research is quantitative and qualitative descriptive analysis. From the results of the questionnaire, a score was made to determine how much knowledge, skills, attitudes, and application of breeders to honey bee cultivation in the area of the protected forest edge, Pempatan Village, Rendang District, Karangasem Regency.

Results and Discussion

Overview of Research Sites

Pempatan Village is one of 6 (six) villages in Rendang District with an area of 53.78 km², most of which are plantation land, which is 690 Ha, while the rest is designated as yard land, moor and others. The village of Pempatan is located at an altitude of 600-1100 m. Above sea level with a slope of 3 – 45o to the north. Meanwhile, the population of Pempatan Village is 11221 people (3194 families), with details of 5748 men, where the population density is approximately 174/Km² (Pempatan Village Profile, 2020).

The boundaries of the Pempatan Village area:

- North side: Bangli Regency
- West : Bangli Regency
- To the South: Menanga Village
- East side: Besakih Village

Pempatan Village has a sub-tropical climate with an average annual rainfall of 2000-2500 mm, namely the rainy season from October to April and the dry season from April to October. While the minimum air temperature is 23oC and a maximum of 26oC. The climate of Pempatan Village, like other villages in the territory of Indonesia, has a dry and rainy climate, this is due to the existing cropping pattern in Pempatan Village. (Profile of Pempatan Village, 2020).

Characteristics of Respondents

Based on the results of the research, there were 30 respondents in the Protected Forest Edge Area, Pempatan Village, Karangasem Regency. The identity of the respondents who were

also taken from this research section included age, education level, and occupation of the respondent which will be discussed as follows.

Age

The characteristics of the respondents in this study when viewed from the age of the respondents, it can be seen in the description of the distribution in Table 1:

Table 1
Frequency Distribution of Respondent's Age

No.	Age (TH)	Frequency	Percentage (%)
1	< 17	0	0,00
2	17-64	28	93,33
3	> 64	2	6,67
Total		30	100

Source: Data processed from survey results

The results showed that most of the respondents aged 17-64 years with a percentage of 93.33% while respondents aged > 64 years with a percentage of 6.67%. This shows that the respondents are still in the productive age category, namely the respondents still have good workforce potential in raising honey, so they can continue to develop honey livestock cultivation in the Protected Forest Edge Area, Pempatan Village, Karangasem Regency.

Education

Based on the results of the tabulation of data carried out according to the educational background of the respondents, the following Table 2:

Table 2
Frequency Distribution of Respondent's Education Level

No.	Education	Frequency	Percentage (%)
1	No school	0	0
2	SD (Primary School)	6	20,00
3	SMP (Junior High School)	5	16,67
4	SMA/SMK (Senior/Vocational High School)	18	60,00
5	Scholar	1	3,33
Total		30	100

Source: Data processed from survey results

The results of the tabulation of data carried out according to the educational background of the respondents, it can be seen that the education level of the respondents in the elementary category was 6 people with a percentage of 20.00%, the junior high school category was 5 people with a percentage of 16.67% and Bachelor's degree was 1 person with a percentage of 3,33% while the highest is SMA/SMK as many as 18 people or 60.00%. According to Suarta, 2020, the age group is still young, namely the age where the ability to communicate is good because there is still a great willingness to innovate to be able to improve performance. This shows that the education level of the respondents to cultivate honey bees is very high.

Occupation

The characteristics of the respondents in this study when viewed from the job, the description of the distribution can be seen in Table 3.

Table 3
Distribution of Respondent’s Occupation

No.	Occupation	Frequency	Percentage (%)
1	Non Job	1	3,33
2	Farmer/Breeder	20	66,67
3	Laborer	7	23,33
	Private sector		
4	employee	2	6,67
Total		30	100

Source: Data processed from survey results

Based on Table 3 above, the respondent's work as laborers is 7 people with a percentage of 23.33%, private employees are 2 people with a percentage of 6.67%, 1 person does not work with a percentage of 3.33% while the highest respondent's work is as follows: farmers and ranchers as many as 20 people with a percentage of 66.67%. This condition shows that most of the respondents are in the agricultural and livestock sectors so they can focus more on cultivating honey bees.

Farmer's Behavior Against Honey Bee Cultivation

Behavior is the result of all kinds of experiences and human interactions with their environment which are manifested in the form of knowledge, attitudes and actions. Behavior is the response/reaction of an individual to a stimulus that comes from outside or from within himself (Notoatmojo, 2010). In essence, individual behavior includes behavior that is visible (overt behavior) and behavior that is not visible (inert behavior or covert behavior) (Sunaryo, 2004).

Based on the results of the study, it showed that the average level of knowledge of farmers on honey bee cultivation in the edge of protected forest areas was in the high category with the achievement of a community knowledge level score of 82.00%. According to Soedijanto

(1978), Knowledge is a part of individual behavior related to his ability to remember the material studied and the ability to develop intelligence (Soedijanto 1978). In more detail, the frequency distribution of the community based on the level of knowledge can be seen in Table 4.

Table 4
Farmer Frequency Distribution Based on Knowledge Level

No.	Category	Frequency (person)	Percentage (%)
1.	Very high	8	26,67
2.	High	19	63,33
3.	Moderate	2	6,67
4.	Low	1	3,33
5.	Very low	0	0
Total		30	100

Source: Primary data analysis

Based on Table 4 above, it shows that most of the farmers have a high level of knowledge with a percentage of 63.33%. It is also seen that 26.67% of farmers have a high level of knowledge and 6.67%, farmers have a moderate level of knowledge. Meanwhile, farmers who have a low level of knowledge are 3.33%. This shows that the level of knowledge of farmers is mostly in the high category regarding honey cultivation in the Protected Forest Edge Area, Pempatan Village, Karangasem Regency.

Suparno (2001) stated that skills emphasize motor skills in the psychomotor scope, namely working on objects or activities that require nerve and muscle coordination. Based on the results of the study, it was found that the average skill level of the community was in the high category. The high level of community skills is indicated by the average score of the maximum score of 80.67%. In more detail, the frequency distribution of people based on their skill level is presented in Table 5.

Table 5
Distribution of Breeders Frequency by Skill Level

No.	Category	Frequency (person)	Percentage (%)
1.	Very high	5	16,67
2.	High	21	70,00
3.	Moderate	4	13,33
4.	Low	0	0
5.	Very low	0	0
Amount		30	100

Source: Primary data analysis

Based on the data presented in Table 5 above, it shows that most people have a skill level in the high category with a percentage of 70.00%. There are 16.67% of breeders have a skill level in the very high category and 13.33% of the community have a skill level in the medium category. This shows that the community's skill level is still in the high category, so that the community is able to cultivate honey well in the Protected Forest Edge Area, Pempatan Village, Karangasem Regency.

Based on the results of research on 30 honey farmers in the Protected Forest Edge Area, Pempatan Village, Karangasem Regency, it was found that the average attitude of the community was in agreement, which can be seen from the average achievement score of 81.33% of the maximum score. This means that there is a positive attitude towards honey farmers in the Protected Forest Edge Area in the form of developing honey farmers. With so many honey breeders, it has benefits for the community both in terms of economy and health. The frequency distribution of the community in the honey farmer attitude category can be seen in Table 6.

Table 6
Distribution of Breeders Frequency Based on Attitude

No.	Category	Frequency (person)	Percentage (%)
1.	Strongly agree	4	13,33
2.	Agree	24	80,00
3.	Doubtful	2	6,67
4.	Disagree	0	0
5.	Strongly disagree	0	0
Total		30	100

Source: Primary data analysis

Based on Table 6 above, it can be seen that the highest percentage of attitudes is in the agree category, which is 80.00%. There are 13.33% of farmers have a strongly agree attitude and 6.67% of farmers have a doubtful attitude. Meanwhile, it is not seen that the community has an attitude of disagreeing and strongly disagreeing. This shows that most of the farmers' attitudes agree with honey cultivation in the Protected Forest Edge Area, Pempatan Village, Karangasem Regency.

Farmer's Application of Honey Bee Cultivation

Application is the implementation of a work that is obtained through a method so that it can be practiced in society. According to Lukman Ali (2007), application is practicing or pairing. While Riant Nugroho (2003), the application in principle is the method used in order to achieve the desired goal. So it can be concluded that the application is an action that is carried out both individually and in groups to achieve the goals that have been formulated.

Based on the results of the study, it was shown that the average application of farmers to honey cultivation in the edge of protected forest areas was in the good category with a score of 85.33% of the level of application of breeders. In more detail, the frequency distribution of people based on their skill level is presented in Table 7.

Table 7
Frequency Distribution of Farmer Applications for Honey Cultivation

No.	Category	Frequency (person)	Percentage (%)
1.	Very good	11	36,67
2.	Good	16	53,33
3.	Enough	3	10,00
4.	Not enough	0	0
5.	Very bad	0	0
Amount		30	100,00

Source: Primary data analysis

Based on the results of the research in Table 7 above, it can be seen that the percentage of the highest level of application is 53.33% in the good category. It can also be seen that 36.67% of farmers have a very good level of application and 10.00% of farmers have an adequate level of application. Meanwhile, there are no breeders who have a low or very low level of application. This shows that the level of application of breeders has a good level of application to honey cultivation in the Protected Forest Edge Area, Pempatan Village, Karangasem Regency.

Conclusion

Based on the results and discussion above, it can be concluded that:

- 1) The level of knowledge of farmers on honey bee cultivation is in the high category which is indicated by the average score of 82.00% of the maximum score.
- 2) The skill level of farmers towards honey bee cultivation is in the high category as indicated by the average score of 80.67% of the maximum score.
- 3) The attitude of farmers towards honey bee cultivation is in the agree category, which is indicated by the average score of 81.33% of the maximum score.
- 4) The application of breeders to honey bee cultivation is in the good category, which is indicated by the average score of 85.33% of the maximum score.

Suggestion

Based on the results of the analysis and discussion that has been carried out in this study, some suggestions can be given as follows:

- 1) The role of the Karangasem Regency Government is needed to facilitate farmers in providing counselling on honey cultivation techniques.

- 2) Honey farmers are expected to continue to develop honey cultivation to make Pempatan Village a center for honey centers in Bali Province.
- 3) Honey farmers must prioritize the quality of honey, so that it can be exported to other countries.

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