Strategy of farmer households to survive in the gembong watershed, karanganyar regency, central java, indonesia

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Abstract. Farmers as inferior professions need a strategy to fulfill their needs. Survival strategies are carried out by adjusting the characteristics of farmers' welfare from physical, social and economic aspects. This study aims to determine the characteristics and survival strategies of farmer households in the Gembong Watershed, Karanganyar Regency, Indonesia. The method used in this study is scoring and qualitative descriptive analysis. Scoring method is used to assess farmers welfare characteristics from 'physical, social, economic aspects and access to public facilities' of farmer households. And, qualitative descriptive is used to reveal the strategies used by farmer households to fulfill their needs. The results of this study show 25% of farmers have a good level of well-being, 75% are moderate and 0% are less. And, the strategy to fulfill the needs for survival used by farmers includes active, passive and network strategies. Variations in the types of strategies used are influenced by the level of welfare of farmer households.

1. Introduction
Indonesia is an agricultural country with fertile agricultural land, so that most of Indonesia's population works as farmers. Data from population projections from [1] suggest that Indonesians who work as farmers are more than 35 million people. Community perspective on the profession of farmers is still considered an inferior profession [2]. This fact is not entirely wrong because at this time, the welfare of farmers is still quite low. Research conducted by [3] [4] and [5] points out that the level of welfare of the people who work as farmers are still relatively low. Although farmers are considered as an inferior profession, in reality there are still quite a lot of people who make a living as farmers. Even though what is caused by work in the agricultural sector does not require many conditions and can be done by anyone. Besides, [6] revealed that the agricultural sector plays a role in absorbing labor, creating jobs, reducing unemployment, and providing food. Agriculture as a sector that absorbs a lot of labor force, the proportion of labor absorption in agriculture is relatively unchanged significantly from year to year, as evidenced by the large number of agricultural business households in Indonesia. A report on the results of the 2013 agricultural census stated that the number of agricultural business households in Indonesia was recorded at 26.14 million households.[7]

The Gembong Watershed is a watershed located in Karanganyar Regency, Central Java. The watershed covers four districts namely Tawangmangu District, Jatiyoso District, Jumantono District, and Matesih District and there are 13 villages inside. The Gembong watershed has a strategic position in the water system because it has a number of springs that are used for various purposes, such as raw materials for drinking water, irrigation for agriculture, industry and tourism. The role of the watershed...
in sustaining food security is also very large because it is supported by a large number of water sources making the Gembong watershed a potential agricultural area.

Agriculture in the Gembong watershed as a sector that absorbs a large workforce faces several obstacles, namely the fragmentation of agricultural land and the conversion of land from agriculture to non-agricultural sectors. Transfer of land functions that occur from year to year results in reduced agricultural land area. [8] state that more agricultural land is controlled by urbanites and financiers for non-agricultural development purposes while farm households only work as smallholders and farm laborers, as well as living in poverty amid agricultural land that does not belong to them. The worse impact of the conversion of agricultural land is the change in land use makes farmers out of the land that has been owned for years and lost their livelihoods as farmers [9]. Furthermore, if the conversion of land, especially productive rice fields which absorbs a lot of labor, changes the function, there will be a decrease in employment opportunities, and subsequently an impact on the income of farmers. The decreasing income of farmers is then faced with the increasing necessities of life.

Scott (1989) in [10] argues that with the large living needs spurred farmers to behave as survival farmers to meet their needs. Scott said that farmers prefer to minimize the occurrence of disasters rather than maximizing their average income, this is what Scott calls risk averse. Farmers behave as survival farmers so that all demands for the survival of their families can be fulfilled. Existing limitations can force or spur farm labor households to carry out survival strategy activities so that their needs can be met from time to time and continue to survive in life. The living conditions of farm laborers' households in order to meet their daily needs are interesting studies to study.

2. Methods
This research is located in the Gembong watershed in Karanganyar Regency with a division into three morphologies including upper, middle, and lower slopes. Retrieval of respondents for each morphology based on weighted data of each morphology population which was calculated using the Slovin formula. The results of data retrieval are analyzed using the following methods:

2.1. Scoring Method
The scoring method is used to assess the welfare characteristics of farmers who are in the top, middle and bottom morphology of the Gembong watershed based on physical, social, economic aspects and accessibility to public facilities. The characteristic aspects are broken down into research variables consisting of 18 variables, including gender, education level, home ownership, condition of the house floor, condition of the wall of the house, ownership of the toilet, area of mastery of arable land, status of arable land, income as a farmer, income from other jobs, income of other household members, ownership of transportation equipment, ownership of electronic goods, ownership of livestock, access to health, education and economic facilities. Existing variables are given a numerical value according to the assessment indicators and three welfare classes are determined, namely good, sufficient and less.

2.2. Qualitative description analysis method
Descriptive analysis is used to analyze the strategies carried out by farm households in the Gembong watershed. Qualitative descriptive analysis was carried out after knowing the spatial relationship between farmers' characteristics and farmers' survival strategies in the Gembong watershed, analyzed by linking the trends of farmers' welfare classes in each watershed morphology to the dominance of survival strategies by farmers.

3. Results and Discussion
Characteristics of Farmer Welfare in Gembong watershed based on slope morphology
The characteristics of farmers in the Gembong watershed are used in determining the welfare class of farmers. Determination of the welfare class of farmers in the Gembong watershed uses the scoring method and divides it into 3 welfare classes. Scoring is done by grading criteria on the characteristics of farmers in the Gembong watershed. The scoring method scales the characteristics that have a big
role in supporting the welfare of farmers with a score starting from one, and the scoring is continued with a larger value until the criteria are gone. The total number of overall scores on these characteristics criteria of farmers is used as a benchmark in viewing the welfare class of farmers.

Based on the sum of the characteristics criteria scores used in the study, the highest score obtained by one farmer respondent is 97 and the lowest value is 26. Farmers with a smaller total score of all criteria indicate that the farmer is more prosperous than farmers who have a total total score of more big. Determination of welfare class is done by dividing the difference between the highest possible value and the lowest value with the desired welfare class, so that if divided into three welfare classes (good / Prosperous Family 1, sufficient / Prosperous Family 2, and less / Prosperous Family 3) then the interval between one the class with the other classes is 22.3 score points. The distribution and percentage of farmers' welfare can be seen in table 1.

Table 1. Farmer's welfare class on the morphological unit of Gembong watershed slope

| Number | Slopes Morphology | Welfare Classes | Amount | Percentage (%) |
|--------|-------------------|----------------|--------|----------------|
| 1      | Upper             | Good           | 2      | 10             |
|        |                   | Sufficient     | 18     | 90             |
|        |                   | Less           | -      | -              |
|        | Total             |                | 20     | 100            |
| 2      | Middle            | Good           | 7      | 27             |
|        |                   | Sufficient     | 19     | 73             |
|        |                   | Less           | -      | -              |
|        | Total             |                |        | 100            |
| 3      | Bottom            | Good           | 43     |                |
|        |                   | Sufficient     | 57     |                |
|        |                   | Less           | -      |                |
|        | Total             |                |        | 100            |

Source: primary research data analysis (2019)

Based on table 1, the upper, middle, and lower slopes of the Gembong watershed are dominated by farmers with sufficient welfare class characteristics. On each slope in the Gembong watershed there are no farmers with poor characteristics.
| Slopes Morphology | Welfare Classes | Pemenuhan Kebutuhan | Not Food | Education | Health | Settlement | Clotting |
|-------------------|-----------------|---------------------|----------|-----------|--------|-----------|----------|
| Upper             | Good            |                     | 1. Utilize Resources | 1. Borrow or Debt | 1. Buy at cheap prices | - | |
|                   |                 |                     | 2. Increase works hours | | 2. Borrow or Debt | - | |
| Sufficient        |                 | 1. Utilize Resources | 1. Take Advantage of Government Assistance | 1. Work Diversification | 1. Sell assets | - | |
|                   |                 | 2. Increase works hours | | | 2. Buy at cheap prices | 3. Borrow or Debt | |
| Less              |                 |                     | - | - | - | - | - |
| Middle            | Good            | 1. Utilize Resources | 1. Work Diversification | 1. Buy at cheap prices | - | |
|                   |                 | 2. Work Diversification | | | - | - | - |
|                   |                 | 3. Increase works hours | | | - | - | - |
| Sufficient        |                 | 1. Work Diversification | 1. Utilize Resources | 1. Buy at cheap prices | - | |
|                   |                 | | | | | | |
| Less              |                 | - | - | - | - | - | - |
| Bottom            | Good            | 1. Utilize Resources | 1. Take Advantage of Social Networks | 1. Utilize Resources | 1. Buy at cheap prices | - | |
|                   |                 | 2. Work Diversification | | | - | - | - |
|                   |                 | 3. Increase works hours | | | - | - | - |
|                   |                 | 4. Take Advantage of Social Networks | | | - | - | - |
| Sufficient        |                 | 1. Borrow or Debt | 1. Take Advantage of Government Assistance | 1. Utilize Resources | 1. Buy at cheap prices | - | |
|                   |                 | 2. Increase works hours | | | - | - | - |
|                   |                 | 3. Take Advantage of Social Networks | | | - | - | - |
If seen from the comparison between farmers with good and enough welfare, each Farmer on the upper slopes only 10% have good welfare and the remaining 90% occupy sufficient welfare. On the middle slope, the condition of farmers is almost the same as the upper slope, which is 73% good and 73% sufficient. While the lower slope has a ratio that is not much different that is good welfare by 43% and enough by 57%. The welfare characteristics of farmers, which are dominated by sufficient criteria, indicate that farmers in the Gembong watershed have a medium socioeconomic status.

The survival strategy of farmers in the Gembong watershed is based on slope characteristics

The survival strategy of farmers in the Gembong watershed is analyzed by linking the tendency of farmers' welfare classes to each watershed morphology with the survival strategies of farmers. Analysis of spatial relationships can be seen in table 2.

The results of the analysis of relationships based on table 2, on the upper slope of the strategy to meet the needs of families whose welfare is sufficient / Prosperous Family 2 has a more diverse strategy, this family also gets help from the government to get their education. On the middle slope of the strategy carried out by families with good and sufficient welfare classes is almost no different. Differences are seen in the non-food and education sectors. Families with good classes vary more in the active strategy used, whereas for education they do not have a problem / do not need a strategy. While families with sufficient status who are on the slopes of tengah they diversify work for educational needs. Farm families who are on the lower slopes also do not have much difference in their needs fulfillment strategies. The difference is only in the portion of the welfare class that is sufficient to use the debt strategy to meet the non-food needs.

Based on the results of interviews with respondon, several respondents said that the strategies used by farmers were not specific to non-food needs, educational needs, health needs, housing needs or the need for clothing. All available strategies are used directly for all needs, such as the results of using other family members to work not only to meet food needs but for other needs as well. So the strategies that exist on the top, middle, or bottom slopes are not much different.

4. Conclusion

The welfare characteristics of farmers in the Gembong watershed in Karanganyar Regency are analyzed based on the upper, middle, and lower slopes. On the upper slope of the Gembong watershed the welfare class of farmers is classified as good at 10% and quite 90% of the number of respondents on the upper slope. On the middle slope of the Gembong watershed the welfare class of farmers is classified as good at 27% and quite 73% of the number of respondents on the middle slope. Whereas the lower slope of the Gembong watershed, the welfare class of farmers is classified as good at 43% and quite 57% of the number of respondents at the lower slope.

Survival strategies of farmers' households in the Gembong watershed, with sufficient welfare status / Prosperous Family 2 Having a more diverse strategy in living life than a household ladder with a good welfare status. Whereas on the middle slope of farmer households with sufficient and good status have a strategy that is no different. Whereas on the lower slope, the difference between peasant households and only the portion of the household welfare class is enough / Prosperous Family 2 uses a debt strategy to meet non-food needs.

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