Agricultural resource potential for improving food security and community welfare in Penimbul Village, Karanggayam, Kebumen, Central Java

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Abstract. Indonesia is an agrarian country that has abundant natural resource potential, so that the agricultural sector becomes dominant. Agricultural is a sector has an important role in the national economy but also in regional economic development. Therefore the potential of the existing agricultural resources needs to be developed to improve the community welfare and fulfillment of community food security. The purpose of this study is to determine the potential of agricultural resources, the level of community welfare, food security and strategies in increasing agricultural production to improve the welfare of the people of Penimbul Village. The study was conducted using a baseline survey method to collect primary data through interviews with the local community and stakeholders in Penimbul Village. The data were analyzed with a quantitative descriptive method the results of which were visualized using tables, figures, and maps. The results showed the potential of agricultural resources in Penimbul Village, there were six commodities with the highest amount of production being cassava (449 kg/household) and the highest commodity price was chili (IDR 25,000/kg). The level of household welfare in Penimbul Village is classified as very poor (32.21%) with rice consumption of 181-240 kg/capita/year. Whereas the level of household resilience of Penimbul Village is categorized as food insecurity (89%). Given the majority of people in Penimbul Village are farmers, the improvement of community welfare and food security can be done by increasing agricultural production (use of superior varieties of seeds, balanced fertilizers, appropriate planting supervision, and post-harvest handling, and intercropping practices).

1. Introduction
Indonesia is an agrarian country with abundant natural resource potential so that the agrarian sector especially agriculture becomes dominant. About 70% of the Indonesian population lives in rural areas with the agricultural sector being the mainstay of their livelihoods, or in other words, agriculture is the sector with the highest labor absorption capacity (Pohan, 2011). Agricultural sector plays an important role in the national economy (Mubyarto, 1989) due to several factors, including 1) it has abundant and diverse resource potentials, 2) it has a large share in the national income, 3) the proportion of people who depends on this sector is substantial and 4) the basis of the national growth is in rural areas (Hanani AR et al., 2003). The reality shows, however, that the contribution of the agricultural sector to the national income has been decreasing, while the majority of Indonesian people still depend on the agricultural sector (Setiawan I, 2006).
Agriculture is a sector that not only has an important role in the national economy but also in regional economic development. The agricultural sector has proven to be able to survive relative to other sectors during the monetary crisis so that it can serve as a buffer for the national development (Sari, 2012). In addition to playing a role in national development, agriculture also has a contribution to the economic development in the forms of labor absorption and the national income by providing food, raw materials, and capital (Todaro, 2011). However, agriculture has been seen as merely playing a passive, supporting role in the economic development, while the process of economic development is one of the continual redefinitions of the roles of the agriculture, manufacturing, and service sectors (Todaro and Smith, 2006; Word Bank, 2008). The right strategy in the economic development of a country with a large agricultural sector is to prioritize the agricultural sector (Tambunan, 2010). The current condition of the agricultural sector in Indonesia has not been able to show maximum results in terms of its contribution to people’s welfare and national income. This is because some of the policies and programs made by the government are not goal-directed nor beneficial for this very sector.

Table 1. Five Regencies with Highest Poor Populations in Central Java in 2018

| Central Java | Poor Population (%) |
|--------------|---------------------|
| Central Java Province | 13.32 |
| Wonosobo Regency | 17.58 |
| Kebumen Regency | 17.47 |
| Brebes Regency | 17.17 |
| Pemalang Regency | 16.04 |
| Kabupaten Purwalingga | 15.62 |

Source: Jawa Tengah dalam Angka 2019, BPS

The number of poor people in Indonesia in March 2018 according to Statistics Indonesia (BPS) was 25.95 million (9.82 percent of the total population) with most of these poor people (13.34 million people or 8.94 percent of the total population) live in Java. Central Java has a relatively high number of poor people, as evident in the greater percentage of poor people relative to that of Java and Indonesia, which is 3.90 million people or 11.32 percent of its population. Kebumen Regency is a district in Central Java Province whose population welfare is considerably low. This is corroborated by the data from Statistics Indonesia of 2013 which shows that the percentage of poor people in Kebumen Regency is the second highest in Central Java Province (21.32 percent) following Wonosobo Regency (22.08 percent). As shown in Table 1, in 2018, the poor people percentage in Kebumen Regency decreased to 17.47 percent, although it remained the second-highest in terms of poor people percentage in this province with Wonosobo remained the highest despite the decrease this regency experienced (from 22.08 in 2013 to 17.58 in 2018). This decrease was due to the government’s efforts to reduce poverty by making it one of the priority programs of the regional government. The poverty data of Kebumen Regency 2013 to 2018 can be seen in Table 2.

Table 2. The Poverty Data of Kebumen Regency from 2013 to 2018

| Years | Number of Poor Population (000 people) | Proportions of Poor Population (%) | Poverty Line (IDR/capita/month) |
|-------|--------------------------------------|-----------------------------------|-------------------------------|
| 2013  | 251.10                               | 21.32                             | 267,763                       |
| 2014  | 242.31                               | 20.50                             | 277,280                       |
| 2015  | 241.94                               | 20.44                             | 292,177                       |
| 2016  | 235.90                               | 19.86                             | 313,881                       |
| 2017  | 233.45                               | 19.60                             | 344,427                       |
| 2018  | 214.41*                              | 17.58                             | 579,745*                      |

*Interpolation result data

Source: Kabupaten Kebumen Dalam Angka 2018, BPS
A factor that can influence poverty reduction in a permanent way is economic growth. The economic growth of a region is influenced by its regional income. Agriculture is the most dominant sector in Kebumen Regency with a contribution of 34% or as much as IDR 3,940,281,560 to its total GRDP (BPS, 2018). This means that the increase in agricultural potential will trigger the economic growth of this region through the income from the agricultural sector. The increase in income will, in turn, affects the food security with people's ability to meet their needs for food.

According to Mosher (1987) income is one of the most important factors in people's welfare because the fulfillment of farmer families' needs depends on the household income they have. The larger the household income of farmers, the smaller the proportion of their expenditures on food. If the household income increases while the consumption does not change, the household will be more likely to prosper, but if the consumption increases with household income, the household will be less likely to prosper and they may even become unprosperous.

However, good economic growth will not mean a decrease in the number of poor people if it is not accompanied by income distribution (Wongdesmiati, 2009). Therefore the Kebumen Regency Government through the Regional Regulation of Kebumen District No. 23 of 2012 concerning the Spatial Planning of the Kebumen Regency (RTRW) Year 2011-2031, divides several regions into areas designated for food crops, one of which is in Karanggayam District, included in the Village of Penimbun. With the local regulation on RTRW and supported by Law No. 32 of 2004 on Regional Government, the potential of existing agricultural resources can be developed to the maximum so that it is able to improve the welfare of the community which is also in line with the fulfillment of community food security.

A low welfare level or a high poverty level will cause the community to have limitations in meeting their food, clothing, and shelter needs. Agricultural development efforts are needed to improve the welfare of communities in rural areas. However, there are various problems in the development of rural agriculture, including the low ownership of production capital accompanied by the dualism between traditional agriculture and modern agriculture. This condition will directly affect the level of agricultural production and indirectly affect the level of income and the level of household welfare, especially in rural areas. The income and welfare of a community will, in turn, affect its food security.

Gayamsari District in which Penimbun Village is located is designated for an agricultural area according to the RTRW of Kebumen Regency where the agricultural sector contributes 34 percent of its GRDP. This contribution is the biggest relative to the other sectors. Therefore it can be said that this particular area has great agricultural potential.

The development plan that will be implemented in an area should adjust to the potential of that area. Like development in general, improvement or development efforts related to increasing food security needs to involve the excellence of the respective regions. A commodity-based regional improvement and development are expectedly able to improve community food security, particularly in terms of food availability (being able to meet the regional food needs and even able to provide foods for other regions). The agricultural resource potential in Penimbun Village has the opportunity to support the achievement of improved community welfare and food security through agricultural resources optimization.

Based on the explanation above, it can be seen that Penimbun Village has potential resources, especially in the agriculture sector. This is evidenced by the dominant contribution of the agriculture sector to the GRDP. But in reality the people in Penimbun Village have not been able to make full use of the potential of these agricultural resources. So there are still many people in Penimbun Village who have low levels of welfare and food security. Therefore, the general objective of this research is to find out strategies that can maximize the potential of agricultural resources so that agricultural production, the level of welfare and food security of the Penimbun Village community increases.

**2. Methods**

This study was quantitative in nature and the obtained results were in the form of figures. Quantitative research is research that emphasizes numerical data (numbers) that are processed by statistical methods (Azwar, 2007). The location of the study was purposively determined in that the determination of
Penimbun Village as a research area is based on the consideration that this area is geographically flanked by hills: the Tanggulangin-Sempudoyong Hills in the west and the Sikaret-Batu Hills in the east. Penimbun Village area is divided by the Kalong River which is a tributary of the Kemit River. Given these conditions it can be said that this area has sufficient water sources for agriculture.

2.1 Types and Sources of Data
The type of data used in this study included primary data and secondary data. The primary data were obtained from interviews with households, whereas the secondary data were collected to substantiate the description of geographical, demographic, socioeconomic, agricultural and other related data. The secondary data were obtained from the publications of Statistics Indonesia (BPS).

2.2 Population and Samples
The population referred to in this study were households in Panimbun Village with a total of 596 households. The number of household population is then taken several samples. A sample is a portion of the population to be studied and is considered to represent the characteristics of the population (Fraenkel and Wallen, 1990). The size of the sample was determined using the Slovin method. The Slovin method was used in the sampling to have a size of sample which is representative of the population so that the obtained results are generalizable.

The Slovin formula for determining the size of the sample,

\[ n = \frac{N}{1 + Ne^2} \]  

(1)

Descriptions:
- \( n \): Sample size/number of respondents
- \( N \): Population size
- \( e \): Tolerable error margin of sampling (percent), \( e = 0.1 \)

There are some conditions to the use of the Slovin formula, namely:

- For a big population, the \( e \) value should be set 0.1 and thus the minimum size of the sample is 10 percent of the population
- For a small population, the \( e \) value should be set at 0.2 and the minimum size of the sample is 20 percent of the population

Therefore the range of of sample size that should be taken using the Slovin technique is between 10 and 20 percent of the population being studied. The results of sample size calculation using Slovin formula are shown in Table 3.

| RW | Population Size | Sample Size |
|----|----------------|-------------|
| RW 1 | 126            | 52          |
| RW 2 | 176            | 72          |
| RW 3 | 164            | 67          |
| RW 4 | 130            | 53          |
The sample was selected based on the probability sampling technique with simple random sampling, where the researchers provide equal opportunities for each member of the population (households) to be randomly selected as a sample regardless their strata in the population itself.

2.3 Data Collection Method
The data in this study was collected using the following research methods:
1. Observation
Observation is systematic surveillance and recording of the phenomena under investigation. Observation method results from active and mindful mental actions to realize the presence of some expected stimulus, or an intentional and systematic study of a social state or phenomenon and psychological symptoms through observing and recording (Mardalis, 1995). The data collected is processed and analyzed in a descriptive-qualitative way to be presented in detail to allow theoretical interpretations so that an adequate description and conclusion can be obtained.
2. Interview
Lexy J. Moleong (2013) defines interview as a conversation with specific purposes. The conversation is carried out by two parties: the interviewer who asks questions and the interviewees who responds to the questions asked by the interviewer. In this present study the researcher used the direct interview method with the informant subjects. The researchers used structured interviews which questions had been prepared before the actual interview conducted.
3. Literature Study
In the literature study, the authors collected and studied theories and basic concepts related to the problem under investigation. The theories and basic concepts were obtained by examining various text resources, including books, scientific journals, and other relevant sources.

2.4 Data Analysis Method
Data analysis is an activity of grouping data, generating tabulations of data based on some variables, and calculating and presenting data. The method of analysis used in this research was descriptive statistics. Descriptive statistics are statistics used to analyze data by describing the obtained data. The data analysis methods were used for analyzing the following:
2.4.1 Agricultural Resource Potential. The first objective of assessing the agricultural resource potential in the research location was done by analyzing secondary data such as agricultural production and productivity data. To make the analysis easier, the data were presented as charts, maps, and tables.
2.4.2 Community Welfare Level. The analysis of the household welfare level use Sajogyo’s (1997) household consumption outlays approach. According to Sajogyo (1997) the annual per capita expenditures of a household is the total household expenditures which include both food and non-food expenditures in a given year divided by the number of household dependents the result of which is then converted into a value equivalent to the price of rice per kilogram in order to know the poverty level. The rice equivalent value was set based on the local price of milled rice, i.e. IDR 9,375 per kilogram. Mathematically, the annual per capita and the annual per capita expenditures in rice equivalent can be formulated as follows (Sajogyo, 1997):

\[ \text{C/capita/year} = \frac{c}{\Sigma \text{household}} \] (2)

where C is the expenditure.

The classification of poverty according to Sajogyo (1997) is as follows:
a. Destitute = If the annual expenditure per household member is 180 kg rice equivalent or less.
b. Very Poor = If the annual expenditure per household member is between 181 and 240 kg rice equivalent.
c. Poor = If the annual expenditure per household member is between 241 and 320 kg rice equivalent.
d. Almost Poor = If the annual expenditure per household member is between 321 and 480 kg rice equivalent.
e. Moderate = If the annual expenditure per household member is between 481 and 960 kg rice equivalent.
f. Decent = If the annual expenditure per household member is above 960 kg rice equivalent.

2.4.3 Food Security. The analysis of food security in a study can be based on primary data. The calculation of food security which was based on primary data used the proportion of food expenditures to total household expenditures. According to Smith and Subandoro (2007) the proportion of food expenditures can be calculated with the following formula:

\[
\% \text{ expenditures for food} = \frac{PFoodExpenditures \times 100}{TotalExpenditures} \quad (3)
\]

Food insecurity indicators:
Food insecurity exists if the proportion of food expenditures is greater than 60 percent of the total expenditures.
Food security exists if the proportion of food expenditures is 60 percent or less of the total expenditures, or less.

2.4.4 Strategies to Improve the Agricultural Potential to Achieve Community Welfare. The data analysis method used to address the fourth research objective of identifying strategies to improve the agricultural resource potential in Penimbun Village was descriptive statistics. Descriptive statistics were used to analyze variables the results of which were in the forms of frequency distributions. The quantitative-descriptive analysis was carried out with computer software Microsoft Excel and SPSS to generate charts and others.

3. Results and Discussion

3.1 The Socio-economic Characteristics of Penimbun Village Households

The socio-economic condition of a community in a region characterizes the resource potentials of the people in that region. The benchmark of an individual’s human resource potential is the quality of his/her education and occupation. The higher the education level, the higher the human resource he/she has (Harini, 2018). Education is an important factor in a family. Education is a major capital to support the household economy. Figure 2 shows the levels of education of household members in Penimbun Village. While the figure shows that 0.32 percent of household members in this village has an undergraduate degree (S1), the proportion of people with low education is considerable high as 56.22 percent of the population have elementary education only.

*Figure 2. Levels of Education of Household Members in Penimbun Village*
The data processing results show that most people in Penimbun Village work in the agricultural sector (36.83 percent). This is because of the geographical location of Penimbun Village which is divided by the Kalong River, a tributary of Kemit River, which makes it suitable for agriculture. Household income is the sum of all incomes gained by family members in the form of cash as a result of their works. Household income includes family members’ incomes plus other gains. Household income plays a significant role especially in affecting the household standard of living. Income will affect household purchasing power in education, housing, etc. Figure 3 shows the annual household incomes of Penimbun Village people. It can be seen from the figure that the proportion of population with a monthly household income of less than IDR 900,000 is the biggest (44.5 percent), which is much lower than Kebumen Regency’s minimum regional wage of IDR 1.686.000. The total household income gained by a household depends on the income the household members gain from their main occupations and side occupations. The income of those households which have side occupation(s) is greater than that of households which rely on the main occupation only.

### 3.2 Agricultural Resource Potential in Penimbun Village

According to the research results, the average land area owned by households in Penimbun Village is 471 m2 (0.47 Ha), which does not meet the required minimum criteria to fulfill the needs of decent living, i.e. 0.73 Ha.

Table 4 shows the types, production, and prices of agricultural commodities in Penimbun Village. Based on the table, it is known that there are 6 types of agricultural commodities, namely rice, mung beans, corn, chili pepper, peanuts, and cassava. Rice is an agricultural commodity with the highest production with an average production of 492 kg per harvest per household for those households who have agricultural land. The production obtained by farmers depends on the area of agricultural land they have. Agricultural production, in general, is influenced by several factors including nature, labor, capital and management (Harini and Susilo, 2017). The commodity with the second-highest production is cassava with an average production of 449 kg per household. The productions of these two commodities are not much different from each other. This is likely to occur because the majority of agricultural lands in Penimbun Village are planted with rice and cassava.

| Commodities   | Production (Kg) | Price (IDR) |
|---------------|----------------|-------------|
| Cassava       | 449            | 1,400       |
| Rice          | 492            | 9,000       |
| Corn          | 23             | 2,800       |
| Mung bean     | 225            | 20,750      |
| Peanuts       | 37             | 15,000      |
| Chili pepper  | 5              | 25,000      |

Source: Primary data processing, 2019
Table 4 also shows the average price of agricultural commodities in Penimbun Village. From the table above it can be seen that the commodity with the highest price per kilogram is chili pepper the price of which is IDR 25,000/kg, followed by mung bean, IDR 20,750/kg. As for the commodity with the lowest price is cassava, IDR 1,400/kg. Agricultural commodities with relatively high production value and price can be used as potential commodities in Penimbun Village.

3.3 Community Welfare Level in Penimbun Village
Household expenditures are divided into food and non-food expenditures. To fulfill the need of food, the average expenditure per year is IDR 6,874,071 per household, while the annual expenditure for non-food is IDR 3,024,724. The allocation of income for different expenditures suggests that households in Penimbun Village tend to prioritize non-food needs.

| Table 5. Food Expenditures and Non-Food Expenditures |
|------------------------------------------------------|
| Types of Expenditures | Proportion (%) |
| A. Food | |
| Rice | 18.17 |
| Flour | 3.75 |
| Tubers | 1.25 |
| Fish | 3.17 |
| Meat | 5.56 |
| Egg | 6.24 |
| Milk | 3.51 |
| Vegetables | 10.55 |
| Nuts | 10.01 |
| Fruit | 2.50 |
| Cooking Oil | 5.95 |
| Beverage material | 6.50 |
| Seasoning | 5.41 |
| Noodles | 3.11 |
| Crackers | 0.39 |
| Instant foods | 2.26 |
| Non-alcohol beverage | 0.42 |
| Cigarette | 10.09 |
| Tobacco | 1.14 |
| **Total Expenditures Per Month** | **100** |
| B. Non-Food | |
| Rent/Contract | 9.49 |
| Home Maintenance | 8.31 |
| Electricity Bill | 12.15 |
| Telephone Bill | 4.89 |
| Various Goods | 9.09 |
| Health Cost | 2.40 |
| Education Cost | 10.78 |
| Transportation Cost | 12.38 |
| Services | 1.93 |
| Clothing | 5.88 |
| Durable Goods | 1.89 |
| Taxes | 6.31 |
| Retribution | 0.42 |
| Parties/Fiests | 14.07 |
| **Total Expenditures Per Month** | **100** |
The largest household food expenditure is for rice by 18.17 percent of the total food expenditure which indicates that the majority of households consume rice as a staple food. As for the largest expenditure on non-food needs is the expenditure for parties/festivals by 14.07 percent of the total non-food expenditure. See table 5 for more detail information.

Based on the results of household expenditure for food and non-food calculation, the poverty level can be measured based on Sajogyo’s criteria. According to Sajogyo, the poverty level is measured using the standard price of milled rice per kilogram. The price of rice per kilogram at the study location was IDR 9,375. Based on Sajogyo’s criteria, the data show that only 1.92 percent of households in Penimbun Village has a decent living. A decent living household is identified by a diversity of businesses which indicates that it does not depend on the main job and can optimize its agricultural production. On the contrary, almost one third (32.21 percent) of households are very poor with annual rice consumption of between 181 and 240 kg per capita as presented in the following table.

### Table 6. Distribution of Households in Penimbun Village by Annual Per Capita Expenditures Based on Sayogyo’s Poverty Classification

| No  | Poverty Classifications Based on Annual Expenditures in Rice Equivalent | Number of Households | Proportions (%) |
|-----|--------------------------------------------------------------------------|----------------------|-----------------|
| 1   | Destitute (< 180)                                                        | 46                   | 22.12           |
| 2   | Very Poor (181-240)                                                      | 67                   | 32.21           |
| 3   | Poor (241-320)                                                          | 37                   | 17.79           |
| 4   | Almost Poor (321-480)                                                    | 35                   | 16.83           |
| 5   | Moderate (481-960)                                                       | 19                   | 9.13            |
| 6   | Decent living (>960)                                                     | 4                    | 1.92            |

**3.4 Food Security Level in Penimbun Village**

The food security level can be calculated based on the proportion of food consumption expenditure, which is the percentage of food expenditure to the total household expenditure. The following table shows the proportions of household expenditures in Penimbun Village.

### Table 7. The Proportions of Household Expenditures in Penimbun Village

| Types of Expenditures | Monthly Expenditure on Average (IDR) | Proportions |
|-----------------------|--------------------------------------|-------------|
| Food Expenditure      | 579,539                              | 70%         |
| Non-Food Expenditure  | 225,008                              | 30%         |
| Total Expenditure     | 824,900                              | 100%        |

Source: Primary data processing, 2019

Total expenditure includes expenditures for food consumption plus non-food expenditures. The average amount of total expenditure is IDR 824,900 per month per household. Based on the above table it can be seen that the average monthly food expenditure is IDR 579,539 per household, or 70 percent of the total expenditure, whereas the average non-food expenditure is IDR 225,008 per household per month, or 30 percent of the total expenditure. Aside from being used as an indicator of food security, the proportions of food and non-food expenditures are also used as indicators to determine the household welfare level. The greater the proportion of food expenditure, the lower the welfare or food security. The results of data processing show that the expenditure on food is greater than that of non-food, which means that the household welfare level is low because the household prioritizes the use of income to for meeting basic needs first.
Household welfare is very influential to household economic access to food. This is consistent with Engel's law that the proportion of the total expenditure allocated to food will decrease with the increase in income. An increased income would allow a household can buy better quality food.

Food security can be seen from food availability, distribution, and consumption. In this research, food security was seen in terms of consumption and its relationship with the proportion of food expenditure. The household food security categories can be seen in Table 7.

### Table 8. Food Security Status in Penimbun Village

| Food Security Categories       | Criteria                           | %   |
|-------------------------------|------------------------------------|-----|
| High-security status (secure) | The proportion of food expenditures is ≤ 60% | 11  |
| Low-security status (insecure)| The proportion of food expenditures is > 60%  | 89  |

Source: Primary data processing, 2019

Table 8 shows the household food security status in Penimbun Village. The vast majority (89 percent) of households’ food security status in this village is low (insecure). This is because of the high proportion of food expenditure. Households still spend more on food consumption because of limited income. Under such circumstances, the improvement of household welfare level would be dependent on the increase in income. On the contrary, only 11 percent of households has high food security status. A high food security status means that the proportion of household food expenditure is low. These households do not merely rely on their main occupation as farmers, but also have side jobs to increase their household income and meet their food needs. Households whose main occupation is as farmers generally have relatively lower incomes and thus their welfare levels are lower too. As a consequence, to meet their needs, these households prioritize the fulfillment of their food needs regardless of their nutritional quality.

#### 3.5 Strategies Used to Improve Agriculture Resource Potential to Achieve Welfare

Maximizing or optimizing agricultural production to achieve prosperity, food security and sustainable development requires the use of capital resources. The optimal use of resources is expected to increase agricultural production (Harini, R., et al, 2019). One of the efforts to raise capital resources to increase productivity by increasing the use of seeds of superior varieties, the use of balanced fertilizers and planting monitoring through pest control and reducing yield losses through postharvest handling in line with the recommendations of the Directorate General of Food Crops of the Ministry of Agriculture. Besides, it can also be done with Tumpang Sari Tanaman Pangan (Turiman) (intercropping system) to take advantage of land competition among commodities. Intercropping can also serve to mitigate crop failure risks.

The implementation of such strategies is expected to increase agricultural production which in turn increases household income. With an increased income, household welfare would likely increase as well and thus enable the fulfillment of food needs (improved food security).

### 4. Conclusions

The agricultural resource potential in Penimbu Village includes 6 commodities with cassava as the commodity with the highest production (449 kg/household) and chili pepper as the commodity with the highest price (IDR 25,000/kg). The existing resources potential if not supported by sufficient land ownership (the minimum requirement is > 0.73 ha) and other incomes from the non-agricultural sector will only have an impact on the total amount of household income which, in turn, would also affect the levels of household welfare and food security. In terms of household welfare level, almost one third (32.21 percent) of households in Penimbun Village can be classified as very poor with annual rice consumption of between 181 and 240 kg per capita. As for the level of household food security, the vast majority (89 percent) of households in Penimbun Village are in the low food security category (insecure) because the proportion of food expenditures is greater than that of non-food expenditures. Considering that the main occupation of most people in Penimbun Village is as farmers, the improvement of welfare...
and food security in this village can be done by increasing agricultural production through the use of superior varieties of seeds, the use of balanced fertilizers, and planting monitoring and post-harvest handling, and the implementation of intercropping system (Turiman).

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