

Surviving Strategies of Rural Livelihoods in South Sumatra Farming System, Indonesia

Elisa Wildayana^{1,*}, Mustika Edi Armanto¹, Zulkifli Idrus², Iwan Adi Radiatmoko², Syuhada Adjiz Umar², Bella Syakina¹, Nursittah¹, Mubarika¹, Reszki Oktavia¹, and Eka Sari¹

¹Faculty of Agriculture, Universitas Sriwijaya, South Sumatra, Indonesia

²Environmental Study Program, Postgraduate, Universitas Sriwijaya, South Sumatra, Indonesia

Abstract. The research aimed to analyze surviving strategies of rural livelihoods in South Sumatra farming system, Indonesia. The research was conducted in January to April 2018 using the field survey, respondents were divided into two categories, namely the respondents for Analytical Hierarchy Process and Participatory Rural Appraisal. The collected data were analyzed to determine the significance at the level of 5%. The research resulted that the very poor and poor households focused on primary aspects (food and drink), while moderate and rich households emphasized on the fulfillment of social needs. Household income was different for each household rank and different at the 5% test level. Rich households earned income from various sources, such as on-farm (farming, plantation, livestock, fishery etc.) and off-farm, while very poor and poor households focused only on-farm income. All income sources were significantly different for each group households ranks. Surviving household can be done with three strategies, namely income-generating strategy; expenditure-reducing strategy; and migration. It is needed an Governmental intervention to help the very poor and poor households in their poverty alleviation, i.e. providing direct cash fund; involving in government projects; and making public policy in favor of these groups.

1 Introduction

Rural livelihood is the overall activities to exploit and to utilize the existing natural resources in the physical, social and cultural environment, which is manifested as rural activities in agricultural production, distribution and consumption [2, 5]. Rural livelihood is to earn money for a feasible living standard of households, in which the region to other regions differ according to the ability level of the population and demographic circumstances [4, 8, 10]. The rural livelihoods are divided into two groups, namely principal livelihood (on-farm) and side livelihood (off-farm). On-farm livelihood is the overall daily activities especially in agricultural sector to take advantage of existing resources for subsistence [12]. Off-farm is daily activity out of principal livelihoods that

*Corresponding author: ewildayana@unsri.ac.id

efforts to preserve life through income generating in all sectors of agriculture or non-agriculture.

Theoretically in South Sumatra Province, wealth conditions of agricultural resources are widely able to support rural households to live well [1, 3], but in reality only less than 35% of households are classified as well life (moderate to rich households), more than 65% of households (poor to very poor) are still living below the poverty standard line. Various research on the household life generally emphasized on the uncertainty of the economy because the difficulties are faced by rural household [6, 9].

Some social and poverty limitations of rural households are caused by complex factors. These factors are not only related to fluctuations in household income, limited human resources, lack of capital and access, as well as trading networks of agricultural products tend to be exploited by collecting traders, as well as the negative impact of the modernization of agricultural system [13]. These encourage the depletion of agricultural resources rapidly and excessively, as well as limited opportunities of households to execute work diversity, especially off-farm activities in the villages [7, 11]. Based on the above background, the issues to be studied in this research are: what are the livelihood opportunities that exist in the village to diversify the work as a strategy for survival? How do rural household efforts to diversify the livelihood? Variety of work whatever the households and anyone (family members) are involved in the work? Generally the research aimed to analyze surviving strategies of rural livelihoods in South Sumatra farming system.

2 Materials and Methods

The research has been conducted in South Sumatra Province (Figure 1) from January to April 2018. Purposive and cluster sampling was applied for taking field respondents, where the selection of sampling refers to groups. The respondents were divided into two categories, namely the respondent for Analytical Hierarchy Process (AHP) and respondents for Participatory Rural Appraisal (PRA). AHP respondents comprised of researchers, village leaders, offices and Governmental agencies, and the village elders. PRA respondents were heads of rural households allowing rural households to analyze their own situation by communicating directly with rural households also. Targeted respondents were the heads of household and their wives. Research parameters were recorded, such as land ownership, livestock, fishery, cultivated agricultural soils, type of work, number of children, wives, and others. The collected data were processed, and analyzed by the statistical method to determine the significance at the level of 5%, the results of statistical analyses are performed and described in the form of tables and analyses.



Fig. 1. Demarcation of South Sumatra Province, Indonesia (Source: Google website)

3 Results and Discussions

Result and discussion of this research focuses on aspects of constraints and household diversity by wealth level; household expenditure; household income; and surviving household in the crisis. We concentrated on elaborating of constraints and household diversity by wealth level; expenditure of households; income of households; and surviving households in the crisis.

3.1 Constraints and Household Diversity by Wealth Level

Rural livelihood consists of activities in on-farm (agriculture, plantation, farming, fishing etc.) and off-farm (non-agricultural activities). Understanding of the rural livelihood is important in order to investigate how much the contribution of each livelihood source to the total household income of households, so that the total household income can be managed and controlled, especially the deficit in critical condition and what needs to be done especially in surplus conditions. Constraints and characters of rural livelihoods are reflected by internal factors and external factors of rural livelihoods because these two factors played a very important role in the utilization of agricultural resources and the ability of households to manage resources. Various constraints confronted by household turned out to vary and depend on household rank. Based on the results of research in the field, the various major constraints, among other concerns regarding asset, capital credit, fear to risk taking, lack of infrastructure, lack of knowledge and others (Table 1).

Very Poor Household, This group belongs to the poorest people living in rural households, whose voice is rarely heard by the village government or people representatives. In general, most of their life was in isolation from rural households. If this group has a piece of land, then the owned land are usually inherited by their parents or grandparents. Characteristic agriculture continuously deplete soil fertility because they do not give an input into agricultural land to improve soil productivity and chose to continue to cultivate unproductive soils because of the lack of livelihood opportunities elsewhere. In general they are very old and physically less power to be implemented in any kinds of field works. This group consists of elderly couple, where their sons and daughters already died or doing migration, some single parents (widows) who are financed by the family members or relatives, addicted teenagers to illegal drugs and alcohols. If they raise livestock, it is usually that owned assets are the only poultry and is very vulnerable to the food crisis.

Table 1. Some main constrains of various livelihoods (scoring 1-6)*/

Household rank	Major constraints					
	Asset	Capital credit	Fear of taking risk	Lack of infrastructure	Lack of knowledge	Other
Very poor	1	2	4	3	5	6
Poor	2	1	4	3	5	6
Moderate	4	3	5	3	1	2
Rich	6	5	4	3	2	1

Note: */ Scoring 1 is the top constraint, and 6 is the lowest constraint.

Source: Analyses of field survey data (2018).

Poor Households are mentioned as the households with multi-active and multi-skill in all daily rural local, so that they are able to participate in all productive activities that can generate cash money. But nearly every investment decision made is the nature of gambling, such as selling livestock to buy agricultural inputs or borrow money to cultivate farmland, but the investment they are doing is very worrying because of the bad weather and climate

can easy to cancel its investment in agriculture. It can be concluded that poor households are highly dependent on natural conditions and climate, the consequences of poor households accustomed to expenditure cuts and seasonal migration as the best way to reduce the stresses of life and avoid the risk of falling into the category of extremely poor. This group is usually a top aids to the group of rich households and groups vulnerable to the food crisis.

Moderate Households mostly have to do the work themselves and only seek help when other people do not have works, otherwise they have the chance to pay labor and maybe they get free hand from lower rank of rural people. They have enough food and are not vulnerable to the food crisis, but they cannot fulfill all their needs at the level that is more feasible. They may prepare sufficient food until the following year at least till harvesting day. Mostly they are able also to minimize the amount of food during periods of food crisis in order to sustain life. They were able to feed their family, agricultural inputs, to grow agricultural commodities at the true period, on-time harvesting, save the agricultural yields till the reasonable prices and are involved in rural activity.

Rich Households are economically classified as the most prosperous and the most influential in politics. Most of the wealth was generated from the legacy of their parents and have a large amount of fertile land at the site, has a livestock of parents and grandparents. Highly educated and rich households are generally quite high, having double the profession and not just as a farmer, but also works as a civil servant, political party members, teachers, active in politics party, village officials such as village leaders, village heads and others. Farmers in this group usually concentrates on various commodities not only food crops (rice, beans, corn, etc.), they also have oil palm or rubber plantations, in addition also to have cattle and aquaculture. They generally applied to making diversification of agricultural commodities in the broad sense or as large for the business needs of the commercial. They are usually the first people to undertake the soil cultivation with mechanization system, so as to increase the soil productivity, so they were the first people to take agricultural products and to take benefits of above average prices in agricultural markets. Agricultural inputs for plantation and food farming can be accessible. Mostly they function as middlemen or collecting traders to lower group and therefore they may be automatically to earn and to accumulate benefits in greater numbers.

3.2 Expenditure of Households

Each household has a wide range of expenditure patterns of expenditure, which depends on seasonal time, physical environment condition of rural and economic conditions as determined by macro policy. Variations in expenditure patterns between households are dependent on the wealth level because it determines the expenditure type and amount to be made, whether for consumption or for investment (Table 2).

Table 2. Household expenditure based on ranking priority

Household rank	Expenditure type*/							
	Food	Cloths	Construction	Inputs	Services	Social	Fuels	Other
Very poor	1	2	3	6	4	5	7	8
Poor	1	2	4	5	3	7	6	8
Moderate	3	5	4	1	7	2	6	8
Rich	3	4	5	2	6	1	7	8

Note: */ ranking 1 is the top priority.

Source: Analyses of field survey data (2018).

Food expenditure includes all expenditure to buy food and drinks and form the largest part of the expenditure of each household, especially the agricultural yields of poor and very poor households are insufficient to provide food for themselves during a year, so expenditure on food covers more than 96% of respondents focus on consumption expenditure as the most frequently performed because it deals with important issues about nutrition and health. Rich and moderate households do not experience lack of food as a serious expense because they usually store food for whole year or keep it until the price highly sufficient to be sold profitably, so they put the foods on the third priority in expenditure.

Rich and moderate households placed clothing expenditure on fourth and fifth priority, while very poor and poor households need clothes and generally buy used clothes, therefore their clothing expenditure was in the second position. Construction expenditure is mentioned as the third requirement and an important component for supporting human life because it involves housing, therefore, very poor households placed in on the third priority. Meanwhile other households put it on the fourth and the fifth position.

Input expenditure includes all expenditure that cover all provision for agricultural production-increasing inputs, such as the purchase of fertilizer, pesticides, seeds, infrastructure as well as others. In rich household, input expenditure placed at both because these groups are sure to get high production, it must be followed by input is also high. At moderate household, provision of agricultural inputs to be the top priority in their lives because they think that the provision of inputs to increase agricultural production and ultimately to increase household income. Very poor household to put priority on the sixth because they did not carry out the provision of agricultural inputs to increase land productivity.

Service expenditure including expenditure on education and health is ranked fourth priority by very poor households because it will reduce their household asset. They do not pay special attention to all serious diseases requiring treatment through major surgery or very expensive medicines. Most of the treatment of common diseases will be referred to a local shaman with alternative medicine or spiritual reasons. The same thing is done for the education expenditure, children are forced or allowed to be out of school after a free education for nine years because they may not finance all types of education costs. Finally, children are involved in helping their parents in work to improve income households.

Social expenditure includes expenditures for activities ceremonies, parties, festivals, funerals and others. Rich and moderate households placed it on first and second priority, which includes expenditure for receptions, parties, charity, religious festivities and more. Very poor and poor households spent that this expenditure was assumed lesser role in their life, so they put on a priority in fifth and seventh order. Other expenditure includes all expenditure out of the primary purposes of the household, such as jewelry and luxury goods. All household put the expenditure on the final sequence or eighth order.

3.3 Income of Households

Total income of households is commonly earned from various sources depending on opportunities for each household. Some sources of households are generated from food farming, livestock and fishery, which are purchased in weekend markets. The average income of rich household is significantly different compared to moderate household moderate, poor and very poor. Each household rank showed significant differences with each other at test level of 5%. Rich households have total income at least three times higher than the poor households (Table 3 and Table 4).

Table 3. Average income range for household respondents

Household rank	Average household income (Rp Million/household/year)
Very poor	17.61 ± 5.921 ^d
Poor	26.23 ± 7.877 ^c
Moderate	32.49 ± 7.938 ^b
Rich	58.78 ± 8.742 ^a

Note: */ Means in the same column with the similar superscript do not differ significant at the significance level of 5%.

Source: Results of statistical analyses (2018).

Rich households have a very good livelihood with a high income and be able to finance other activities, so they have a multiplier effect. Work traders are their first rank, followed by plantation and other work, combined with agriculture and raising cattle and fish is good for the fulfillment of subsistent or a part of the business and commercial investment. Sales of livestock are an important source of income, especially in the traditional celebrations for all religions. Cattle prices fluctuate depending on market demand. The price fluctuations can cause poverty for poor and very poor household because they sell their cattle at the time in a crisis condition with low prices. But the livestock sale is utilized by rich households to improve funds and investment to the financing to other productive activities.

Table 4. Average income sources of household respondents

Household rank	Source of household income (in percentage, %)				
	Farming	Plantation	Livestock	Fishery	Off-farm
Very poor	66.32 ^d	9.09 ^c	14.57 ^b	6.99 ^b	3.03 ^c
Poor	51.26 ^c	18.59 ^b	16.23 ^b	7.55 ^b	6.37 ^b
Moderate	36.77 ^b	35.57 ^a	8.78 ^a	4.39 ^a	14.49 ^a
Rich	39.34 ^a	34.11 ^a	8.36 ^a	2.45 ^a	15.74 ^a

Note: */ Means in the same column with the similar superscript do not differ significant at the significance level of 5%.

Source: Results of statistical analyses (2018).

Rich households are dependent on agriculture and plantation sector amounted to 39.34% and 34.11% of total household income, livestock and fishery generate income only at 8.36% and 2.45% respectively, while off-farm income accounted for 15.74%. Total income for moderate households was dominated by agricultural sector (36.77%) and plantation (35.57%), livestock and fishery accounted for 8.78% and 4.39% respectively and off-farm income of 14.49%. This data illustrated that for surviving of rural life, the rural household cannot simply rely on rural livelihoods alone, but many livelihoods are implemented together and integrated with each other and conditionally varied according to time and environmental conditions.

Poor and very poor households are doing exactly the opposite ways, they focused dominantly on the agriculture sector with a contribution of 51.26% for poor households and 66.32% for very poor households, agriculture only contributes to 16.23% and 14.57%, and fisheries provided income amounted 7.55% and 6.99% respectively. The most minimal was contributed by off-farm amounted 6.37% and 3.03% respectively. Food farming, animal husbandry and fishery in the poor and very poor households were not able to provide a high cash income.

Cash money was obtained by the poor and very poor households coming from daily wages. The wage procurement system was carried out in which workers are paid according to how many hours of work or called as daily labor wage payment. Unfortunately there are relatively few works offered, while the number of poor and very poor household as daily labor is plentiful, thus it is not difficult to imagine how much the wages received by rural workers. The poor and very poor households and their livelihood income increasingly concentrated on rural livelihoods only, however rural livelihood cannot generate sufficient income to ensure the survival of rural household. They need to find out works off-farm or any kind of works that they might be able to do.

Actually, most of the inability causes of households to earn extra income are that the most important main factors are not only due to the internal factors of the farmers, but it is often found that the rural locations are located in remote area and difficult to be reached or hardly accessible, so all kinds of information about work opportunities do not reach their ears. The main isolation cause is damaged public facilities (such as bad feeder roads, inadequate electricity, weak telecommunication system and others), even some villages have no road access at all and often flooded in the rainy season and drought or the water crisis in the dry season.

3.4 Surviving Household in the Crisis

To cope a crisis condition, surviving household depends on internal and external capabilities of each household. Surviving household can be done in three strategies, i.e. strategies in income-generating; expenditure-reducing; and migration (Table 5).

Table 5. Percentage of surviving households in the crisis (%)

Household rank	Strategies of surviving households*/			Total (%)
	Income-generating	Expenditure-reducing	Migration	
Very poor	40.93 ^b	47.70 ^c	11.37 ^b	100.00
Poor	12.61 ^c	23.01 ^b	64.38 ^c	100.00
Moderate	72.25 ^a	11.77 ^a	15.98 ^b	100.00
Rich	85.76 ^a	10.89 ^a	3.35 ^a	100.00

Note: */ Means in the same column with the similar superscript do not differ significant at the significance level of 5%.

Source: Results of statistical analyses (2018).

Income-Generating Strategies can be grouped in strategies of not only on-farm, but also off-farm. The strategy of on-farm can be done in the form of intensification and extensification as well as all activities in the agricultural sector that directly earn wages. The labor market offers opportunities in agriculture and non-agriculture, whereas the income earned from wages was distinguished by the consideration of education, skills, location and gender. If the wages in agriculture are below the minimum wage level, the household will work in off-farm sector. Increasing the added values of agricultural products before selling has become an important source of income increase. Off-farm activities offered in the labor market depend on household capability, for example in small trading, making bricks, repairing vehicles, driving and others. Works for men in general are in the field of construction, while women work in trading and manufacture of handicrafts.

Expenditure-Reducing Strategies can be carried out on all aspects of the expenditure of rural households, for example, reducing expenditure on sectors of agriculture, health, nutrition, education and social activities. In order to survive especially in a crisis situation, what is being done by poor households are gambling because each activity always begins with debt and selling assets. So when their efforts failed due to climatic factors and natural

disasters, then they are bonded debt or loss of assets. The best option is to utilize the available income with the wisest way, reducing the amount of household expenditure and looking for a livelihood that does not require too much capital and labor-intensive. In agricultural sectors, they reduce applying fertilizer use, limiting lime for plants, single regime weeding, burying grass and other residues for composting, use of fire to land clearing, using family labor instead of machines, harvesting early before the plant reaches maturity in order to solve the hunger season, and forming alliances with other farmers to assist in the cyclical distribution of labor. Various simple ways to reduce spending in a crisis situation are to manage household food supplies, for example consuming food produced by our selves, mixing the food with foodstuffs which are relatively slow to digest, avoiding the food consumption from overseas, and others. It is advisable to restrict the purchase of clothing, reducing non-essential travel, using the remains of the harvest as a fuel for cooking, delaying marriage and any kind of party and feast and reducing the use of means of transportation. As much as possible to help others, so it is possible to obtain cash money in the form of wages or getting food directly.

Migration is already commonly practiced in rural households. The lack of employment opportunities in the agricultural sector has led members of the household to go out of villages in order to take a part in active labor market and employment opportunities usually offered in other places is much more profitable. In cases where the circumstances of life can hardly be met by its own agricultural produce, the seasonal migration may occur and cannot be avoided because the household require additional income in order to sustain life. Although livelihood diversification has been done, but it is not followed by an increase in household income, then migration will still occur anywhere.

Very poor household is too old and weak to do migration and they normally do not keep contacts with some people in the urban area. Poor households migrate to earn cash money to survive, so that poverty is the primary driver of poor people to migrate. More poor people than rich people migrate. Moderate and rich households also do migrating with reasons to enhance the dignity of the higher life, for example for reasons of children's education and business factors are more interesting. They normally have relatives and children in urban areas, they want to study further or working with good income works.

4 Conclusions

Very poor and poor households focus on primary aspects (food and drink needs), while moderate and rich households emphasis more on the fulfillment of social needs. Household income is different for each household rank and different at the 5% test level. Rich households earned income from various income sources, such as on-farm (farming, plantation, livestock, fishery etc.) and off-farm income (out of agriculture activity), while very poor and poor households focused only on farming income. All income sources are significantly different for each group households ranks. Surviving household can be done with three strategies, namely income-generating strategy; expenditure-reducing strategy; and migration.

Acknowledgments

Many people have contributed to do field research and data analyzes, especially the staffs of the Faculty of Agriculture, Sriwijaya University, undergraduate and postgraduate students. For this all we would like to say thanks. Special thank you is sent to Sriwijaya University, which has given research funds through "Penelitian Unggulan Profesi" to conduct this research and to give us permission to publish this paper.

References

1. Sarno, R.A. Suwignyo, Z. Dahlan, Munandar, M.R. Ridho, N. Aminasih, Harmida, M.E. Armanto, E. Wildayana. *Biodiversitas* **18**, 3 (2017)
2. F. Ellis, E. Manda, *World Development* **40**, 7 (2012)
3. K. Hassan, R. Yusof, N. Abdullah, *International Journal of Business and Society* **17**, 3 (2016)
4. E. Wildayana, D. Adriani, M.E. Armanto, *Sriwijaya Journal of Environment* **2**, 1 (2017)
5. R.H. Zakaria, N.I.M. Jaafar, N.A. Ishak, *International Journal of Business and Society* **18**, 3 (2017)
6. M.E Armanto, M.A. Adzemi, E. Wildayana, M.S. Imanudin. *Journal of Sustainability Science and Management* **8**, 1 (2013)
7. E. Wildayana, M.E. Armanto. *Journal of Sustainable Development* **11**, 3 (2018)
8. E. Wildayana, M.E. Armanto. *Journal of Sustainable Development* **11**, 2 (2018)
9. M.E Armanto, M.S. Imanudin, E. Wildayana, H. Junediand M. Zuhdi. *Sriwijaya Journal of Environment* **1**, 3 (2016)
10. E. Wildayana. *Bulgarian Journal of Agricultural Science* **23**, 6 (2017)
11. E. Wildayana, M.E. Armanto. *Bulgarian Journal of Agricultural Science* **24**, 2 (2018)
12. I. Zahri, D. Adriani, E. Wildayana, Sabaruddin, M.U. Harun. *Bulgarian Journal of Agricultural Science* **24**, 2 (2018)
13. D.Adriani, E. Wildayana. *Jurnal Sosio humaniora* **18**, 3 (2015)