



## Comparison the Sustainability and Rural Livelihood Assessment of Sang Yod Rice Production Groups in Phatthalung Province

Supaluk Sujatanond, Anisara Pensuk Tibkaew, and Malcolm Wayne Hickey

**Abstract**— A native strain known as Sang Yod rice originated in Phatthalung province, the major rice producing province of southern Thailand. Of the 21,600 hectare planted to rice in Phatthalung, Sang Yod rice represented 2,968 hectares (13.7 percent), most of it in Khuan Khanun district. Sang Yod rice was expected to obtain a market premium associated with ascribed properties, but receiving such premium is dependent on how the product is presented to the market. This study examined production processes in term of social, economic and environmental sustainability and farmer livelihoods in terms of human, social, physical, financial, and natural capital and product value by comparing two Sang Yod rice production groups, one that sells the grain direct and other that sells the rice as a completed package. A questionnaire survey of 323 random selected households was conducted in 12 sub-districts of Khuan Khanun district and data complemented by secondary from public documents. It was determined that Sang Yod rice producers that sold their product directly to traders. All vertically integrated producers relied on their own capital, held their title to their paddy land, practiced rain-fed rice cultivation, used one kilogram packaging, calculated sale prices on the basis of return on investment, and were profitable. In contrast, the group that sold grain direct to traders immediately after harvesting did so to repay debt for 65.3 percent of producers, and in most cases (71.4 percent) they were not members of a rice production group. Organized producer groups that vertically integrate their production and marketing achieve a higher level of livelihood in term of human, social, physical, financial, and natural capital, it is suggested that farmers need to have a stake in processing and marketing chain, or operate on a large holdings – both of which require capital investment that is lacking among small rice farmers. Niche markets that command a premium, such as expected for Sang Yod rice, do not appear to be realistic objectives for capital-poor small-holder and enticing such producers into debt for such an objective introduces risk that can impact negatively on income and livelihood.

**Keywords**— Livelihood, Phatthalung, Sang Yod Rice, Sustainability.

### 1. INTRODUCTION

Agricultural products generate considerable revenue for Thailand and are therefore critically important to the economic development of the country. Rice is the main economic food crop both within the country and internationally. However, rice cultivation in Thailand has faced issues of low productivity due to soil quality [1], pest problems [2], increasing costs of production, and uncertainty of the issue price. These and issues associated with climate change [3] have caused some rice farmers to abandon the paddy field or to change to other agricultural activities such as rubber plantation or oil palm plantation [4]. This has resulted in a decrease of land area under rice cultivation and an overall reduction of rice production that could have a significant socio-economic impact on Thailand.

For example in 2013/14, Thailand had an in-season rice cultivation area of about 9.93 million hectares, a decrease from 2012/13 of about 0.46 million hectares (4.43 percent). Production volume was about 27.09 million

tonnes in 2013/14, a decrease from 2012/13 of about 0.14 million tons (0.52 percent). The reduction in paddy field area was replaced by other crops including rubber, cassava, sugar cane, and oil palm, which generate higher returns [4].

Phatthalung province, is known as the breadbasket of the southern Thailand and is a major food production region. The area is a flat lowland with weather conditions, water, and land most favourable for rice cultivation particularly on the plain area between the Ban-Tad mountainous range and Songkhla-Phatthalung Lake. Phatthalung province's agricultural production therefore includes significant rice cultivation [5] in competition with other crops for land use.

Sang Yod rice is a native strain of rice, has been known and originated in Phatthalung province. It is considered to be the first rice breed to received full community protection under the law of Geographical Indication (GI) under the name Sang Yod Muang Phatthalung rice since June 23, 2006. In the rice production year 2015/16, Phatthalung province had a total rice planted area of about 21,600 hectares which was the Sang Yod rice planted area 2,968 hectares (13.74 percent). The most Sang Yod rice planted area was in the Khuan Khanun district 1,045 hectares (35.21 percent) of the total planted area for Sang Yod rice. For the distribution of Sang Yod rice in Phatthalung province categorized into 2 groups of sale; 1) most of the grain is sold and 2) transformed to be the coarse and unpolished rice wherewith they are different. The farmers mostly

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sell their rice to the merchant from the mills. Because the mill owners or processors designate the price of the rice, farmers face uncertain milling and processing cost estimates that will influence their returns.

This is clearly an important crop in Thailand and there is a need to ensure the sustainability of Sang Yod rice with respect to the social, economic, and environmental impacts associated with production. Central to this is the added dimension of farmer livelihood between the two different Sang Yod rice production groups; 1) those that sell grain direct and 2) those that sell rice as a completed package. The latter group includes strategies to promote or enhance the returns of Sang Yod rice production as a sustainable and competitive product with both export and niche market potential.

The objectives of the study are; 1) to assess the overall production process and to evaluate the sustainability (social, economic, environmental) and 2) to determine factors that affect farmer livelihood and product value of two different Sang Yod rice production groups (in the Khuan Khanun district, Phatthalung province);

1) the group that sells the grain direct: Farmer who sells the rice after harvesting immediately in rice form of grain and

2) the group that sells the rice as a completed package: Farmer who transformed the rice in a completed package with more attractive package such as brown rice polished rice in plastic bag or vacuumed bag for sale in supermarket, healthy mart or niche market.

Brundtland [6], Our common future, Sustainable Development as “development that meets the needs of present without compromising the ability of future generations to meet their own needs”.

Three fundamental components to sustainable development: environmental protection, economic growth and social equity. The concept of sustainable development focused on finding strategies to promote economic and social advancement in ways that avoid environmental degradation, over-exploitation or pollution, and sidelined less productive debate about whether to prioritize development or the environment.

Normally, there are 2 types of schemes in Thailand for selling rice;

1) paddy form: some farmers still sell rice in unmilled form as paddy, which attracts a lower price, and

2) grain form: sale of grain in the market can occur in four different ways;

2.1) the rice might be sold after harvesting to meet payment of debt,

2.2) the rice sells gradually into the market as they require fund or to sell when the price is high,

2.3) the rice sells on consignment to the mills or the group at the highest possible price, and

2.4) the farmer transformed the rice in a completed package to the niche market.

In this study we focused on selling rice in grain form which sell the grain direct as 2.1 and sell the rice as a completed package as 2.4 above.

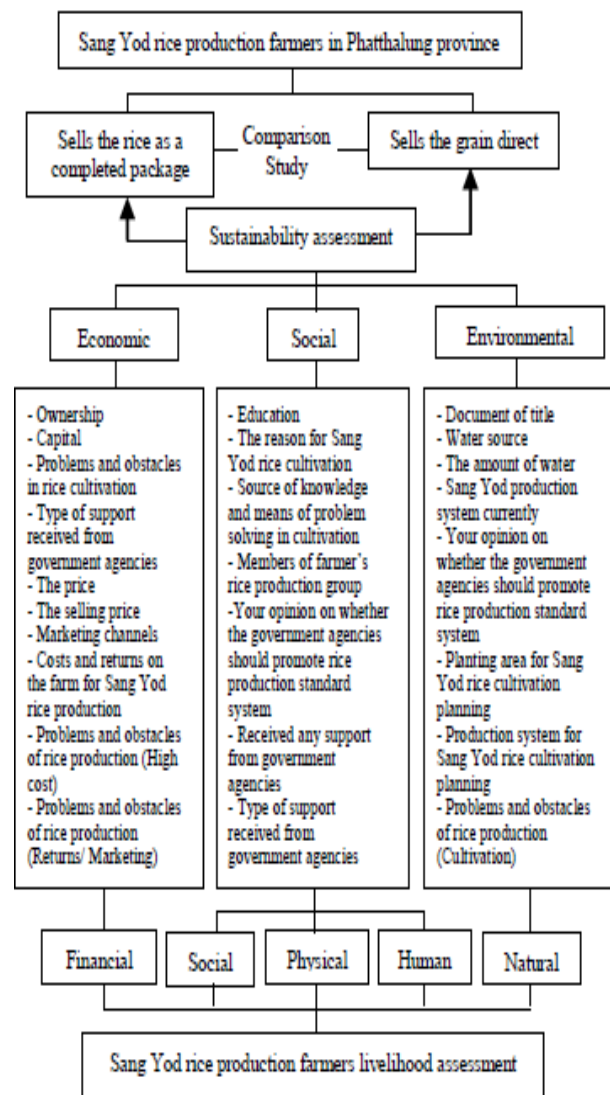


Fig.1. Conceptual Framework.

## 2. METHODOLOGY

### Study area

Phatthalung province has three major agriculture crops; rice, rubber, and oil palm. In the cultivation year 2012/13 the total agricultural area was about 233,583 hectares. Rubber plantation was about 140,693 hectares (60.23 percent), rice cultivation about 33,784 hectares (14.46 percent), and the remaining land, about 59,105 hectares (25.31 percent) of the agricultural area, was utilized mainly for planting of fruits, vegetables, other minor crops, and areas not utilized [7].

The agricultural land use pattern of the three major economic crops; rice, rubber, and oil palm in Phatthalung province also changed in line with changes in Thailand overall during the 2002 to 2012 period. Land used for rubber production and for oil palm production increased and land used for rice production decreased. Economic factors were also evidenced and rice suffered from low price, price fluctuations, and high costs of production which would have contributed to change in land use pattern. At the same time it was considered that government

policies did not adequately support rice production in the region [8]. At the provincial level, Phatthalung province had reduced extension and other services in support of rice production, which further encouraged rice farmers to grow rubber and oil palm [4].

The study area is in Khuan Khanun district, Phatthalung province and is suitable for rice cultivation [5]. The greatest Sang Yod rice planted area is in Khuan Khanun district and this district supports a distribution of the different Sang Yod rice production groups in the proposed research programme.

**Data and sources**

Data was collected from both primary and secondary sources. Primary data was collected from farmers through a questionnaire survey, observation, and discussions with progressive farmers, farmers’ group, extension officials, women’s groups, and the mill’s owners. Secondary data was collected from public documents and websites of related agencies.

**Field survey and sampling group**

A field survey was conducted during the period August 2015 to February 2016 to gather household information and the cost of farming, production, and distribution.

Socio-economic data consisted of household level information such as age of farmer, level of education, family size, employment, financial resources, production and distribution, expenditure, and income.

Environmental data described the environmental quality of farming practices and specific farming processes such as use of fertilizers, herbicides, and pesticides.

Twelve sub-districts in the Khuan Khanun district of Phatthalung province were purposely selected to represent the study area. The sample size for the household survey was determined by using the formula given by Yamane [9]. Altogether, 323 households were surveyed from the each selected villages through a simple random sampling method.

**Data collection instrument**

A structured questionnaire which was administered to the sample to collect farm household data and interview can be separated into 5 sections below;

1. General information of the farmer;
2. The farmer’s opinion in rice cultivation;
3. Information about the cost of farming;
4. Information about Sang Yod rice production and distribution from August 2015 to February 2016 (in-season rice), and
5. Information about the problems and obstacles in rice production.

**3. RESULT**

**Sustainability assessment**

The sustainability assessment of the sampling farmers 323 respondents of two Sang Yod rice production groups (one that sells the grain direct and one that sells the rice as a completed package) in 12 sub-districts of Khuan Khanun district, Phatthalung province categorized into 3

parts; social, economic, and environmental aspect.

**Table 1. Comparison of the sustainable level in social aspect between the group that sells the rice as a completed package and the group that sells the grain direct**

Indicators	$\bar{X}$	S.D.	T	P
1. Education			1.799	0.106
- Package	3.08	1.505		
- Sells the grain direct	2.52	1.050		
2. The reason for Sang Yod rice cultivation			0.377	0.533
- Package	2.50	0.492		
- Sells the grain direct	2.26	0.393		
3. Source of knowledge and means of problem solving in rice cultivation suggested by			1.082	0.057
- Package	4.33	1.240		
- Sells the grain direct	4.63	0.826		
4. Members of farmer’s rice production group			-1.597	0.103
- Package	1.50	0.522		
- Sells the grain direct	1.29	0.453		
5. Your opinion on whether the government agencies should promote rice production system to meet GAP and organic standards			-1.422	0.000*
- Package	1.08	0.289		
- Sells the grain direct	1.73	0.443		
6. Received any support from government agencies			-2.005	0.000*
- Package	1.75	0.452		
- Sells the grain direct	1.46	0.499		
7. Types of support received from government agencies			1.030	0.149
- Package	2.33	1.303		
- Sells the grain direct	1.78	1.062		

\*P < 0.05 significant

The data from table 1 shows the comparison of the sustainable level in social aspect indicators of the sampling farmers 323 respondents between the group that sells the rice as a completed package and the group that sells the grain direct in Khuan Khanun district, Phatthalung province below;

The education of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.106). The mean of the education of the group that sells the rice as a completed package was 3.08 and the mean of the education of the group that sells the grain direct was 2.52. It shows that the education of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

The reason for Sang Yod rice cultivation of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.533). The mean of the reason for Sang Yod rice cultivation of the group that sells the rice as a completed package was cultivation of the group that sells the grain direct was 2.26. It shows that the reason for Sang Yod rice cultivation of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

Source of knowledge and means of problem solving in rice cultivation of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.057). The mean of source of knowledge and means of problem solving in rice cultivation of the group that sells the rice as a completed package was 4.33 and the mean of source of knowledge and means of problem solving in rice cultivation of the

group that sells the grain direct was 4.63. It shows that source of knowledge and means of problem solving in rice cultivation of the sampling farmers of the group that sells the grain direct is higher potential than the group that sells the rice as a completed package.

The members of farmer’s rice production group of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.103). The mean of members of farmer’s rice production group of the group that sells the rice as a completed package was 1.50 and the mean of members of farmer’s rice production group of the group that sells the grain direct was 1.29. It shows that members of farmer’s rice production group of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

Opinion on whether the government agencies should promote rice production system to meet GAP and organic standards of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has not different in statistical significant (P=0.000). The mean of opinion on whether the government agencies should promote rice production system to meet GAP and organic standards of the group that sells the rice as a completed package was 1.08 and the mean of opinion on whether the government agencies should promote rice production system to meet GAP and organic standards of the group that sells the grain direct was 1.73. It shows that the opinion on whether the government agencies should promote rice production system to meet GAP and organic standards of the sampling farmers of the group that sells the grain direct is higher potential than the group that sells the rice as a completed package.

Received any support from government agencies of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has not different in statistical significant (P=0.000). The mean of received any support from government agencies of the group that sells the rice as a completed package was 1.75 and the mean of received any support from government agencies of the group that sells the grain direct was 1.46. It shows that received any support from government agencies of the sampling farmers of the group that sells the rice, as a completed package is higher potential than the group that sells the grain direct.

Types of support received from government agencies of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.149). The mean of types of support received from government agencies of the group that sells the rice as a completed package was 2.33 and the mean of types of support received from government agencies of the group that sells the grain direct was 1.78. It shows that types of support received from government agencies of the sampling farmers of the group that sells the rice, as a completed package is higher potential than the group that sells the grain direct.

**Table 2. Comparison of the sustainable level in economic aspect between the group that sells the rice as a completed package and the group that sells the grain direct**

Indicators	$\bar{X}$	S.D.	T	P
1. The capital			1.149	0.100
- Package	2.00	0.000		
- Sells the grain direct	1.90	0.296		
2. Problems and obstacles in rice cultivation			-0.616	0.724
- Package	1.92	1.311		
- Sells the grain direct	2.15	1.277		
3. The price			-3.960	0.822
- Package	1.75	0.452		
- Sells the grain direct	1.03	0.627		
4. The selling price			2.927	0.000*
- Package	3.00	0.000		
- Sells the grain direct	1.26	0.960		
5. Marketing channels			4.001	0.000*
- Package	4.00	0.000		
- Sells the grain direct	1.51	1.015		
6. Costs and returns on the farm for Sang Yod in-season rice production August 2015 to February 2016			-3.658	0.000*
- Package	3.00	0.000		
- Sells the grain direct	2.09	0.860		
7. Problems and obstacles of rice production (High cost)			-0.303	0.324
- Package	1.83	0.718		
- Sells the grain direct	1.89	0.607		
8. Problems and obstacles of rice production (Returns/ Marketing)			0.158	0.309
- Package	2.08	0.996		
- Sells the grain direct	2.04	0.892		

\*P < 0.05 significant

The data from Table 2 shows the comparison of the sustainable level in economic aspect indicators of the sampling farmers 323 respondents between the group that sells the rice as a completed package and the group that sells the grain direct in Khuan Khanun district, Phatthalung province below;

The capital of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.100). The mean of the capital of the group that sells the rice as a completed package was 2.00 and the mean of the capital of the group that sells the grain direct was 1.90. It shows that the capital of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

Problems and obstacles in rice cultivation of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.724). The mean of problems and obstacles in rice cultivation of the group that sells the rice as a completed package was 1.92 and the mean of problems and obstacles in rice cultivation of the group that sells the grain direct was 2.15. It shows that problems and obstacles in rice cultivation of the sampling farmers of the group that sells the grain direct is higher potential than the group that sells the rice as a completed package.

The price of the sampling farmers between the

group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.822). The mean of the price of the group that sells the rice as a completed package was 1.75 and the mean of the price of the group that sells the grain direct was 1.03. It shows that the price of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

The selling price of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has not different in statistical significant (P=0.000). The mean of the selling price of the group that sells the rice as a completed package was 3.00 and the mean of the selling price of the group that sells the grain direct was 1.26. It shows that the selling price of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

The marketing channels of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has not different in statistical significant (P=0.000). The mean of the marketing channels of the group that sells the rice as a completed package was 4.00 and the mean of the marketing channels of the group that sells the grain direct was 1.51. It shows that the marketing channels of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

Costs and returns on the farm for Sang Yod in-season rice production from August 2015 to February 2016 of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has not different in statistical significant (P=0.000). The mean of costs and returns on the farm for Sang Yod in-season rice production from August 2015 to February 2016 of the group that sells the rice as a completed package was 3.00 and the mean of costs and returns on the farm for Sang Yod in-season rice production from August 2015 to February 2016 of the group that sells the grain direct was 2.09. It shows that costs and returns on the farm for Sang Yod in-season rice production from August 2015 to February 2016 of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

Problems and obstacles of rice production (high cost) of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.324). The mean of problems and obstacles of rice production (high cost) of the group that sells the rice as a completed package was 1.83 and the mean of problems and obstacles of rice production (high cost) of the group that sells the grain direct was 1.89. It shows that problems and obstacles of rice production (high cost) of the sampling farmers of the group that sells the grain direct is higher potential than the group that sells the rice as a completed package.

Problems and obstacles of rice production (the returns/marketing) of the sampling farmers between the

group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.309). The mean of problems and obstacles of rice production (the returns/marketing) of the group that sells the rice as a completed package was 2.08 and the mean of problems and obstacles of rice production (the returns/marketing) of the group that sells the grain direct was 2.04. It shows that problems and obstacles of rice production (the returns/marketing) of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

**Table 3. Comparison of the sustainable level in environmental aspect between the group that sells the rice as a completed package and the group that sells the grain direct**

Indicators	$\bar{X}$	S.D.	T	P
1. Water source			-0.191	0.051
- Package	5.00	0.000		
- Sells the grain direct	4.82	0.750		
2. The amount of water			0.367	0.476
- Package	1.08	0.289		
- Sells the grain direct	1.06	0.228		
3. Sang Yod rice production system			-1.961	0.420
- Package	1.83	0.622		
- Sells the grain direct	1.34	0.736		
4. Planting area for Sang Yod rice cultivation planning			-0.825	0.084
- Package	3.00	0.000		
- Sells the grain direct	2.93	0.472		
5. Production system for Sang Yod rice cultivation planning			1.030	0.149
- Package	1.42	0.515		
- Sells the grain direct	1.28	0.450		
6. Problems and obstacles of rice production (Cultivation)			0.158	0.309
- Package	2.17	0.835		
- Sells the grain direct	2.25	0.962		

\* P < 0.05 significant

The data from table 3 shows the comparison of the sustainable level in environmental aspect indicators of the sampling farmers 323 respondents between the group that sells the rice as a completed package and the group that sells the grain direct in Khuan Khanun district, Phatthalung province below;

Water source of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant (P=0.051). The mean of water source of the group that sells the rice as a completed package was 5.00 and the mean of water source of the group that sells the grain direct was 4.82. It shows that water source of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

The amount of water of the sampling farmers between the group that sells the rice as a completed

package and the group that sells the grain direct has different in statistical significant ( $P=0.476$ ). The mean of the amount of water of the group that sells the rice as a completed package was 1.08 and the mean of the amount of water of the group that sells the grain direct was 1.06. It shows that the amount of water of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

Sang Yod rice production system of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant ( $P=0.420$ ). The mean of Sang Yod rice production system of the group that sells the rice as a completed package was 1.83 and the mean of Sang Yod rice production system of the group that sells the grain direct was 1.34. It shows that Sang Yod rice production system of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

Planting area for Sang Yod rice cultivation planning of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant ( $P=0.084$ ). The mean of planting area for Sang Yod rice cultivation planning of the group that sells the rice as a completed package was 3.00 and the mean of planting area for Sang Yod rice cultivation planning of the group that sells the grain direct was 2.93. It shows that planting area for Sang Yod rice cultivation planning of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

Production system for Sang Yod rice cultivation planning of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant ( $P=0.149$ ). The mean of production system for Sang Yod rice cultivation planning of the group that sells the rice as a completed package was 1.42 and the mean of production system for Sang Yod rice cultivation planning of the group that sells the grain direct was 1.28. It shows that production system for Sang Yod rice cultivation planning of the sampling farmers of the group that sells the rice as a completed package is higher potential than the group that sells the grain direct.

Problems and obstacles of rice production (cultivation) of the sampling farmers between the group that sells the rice as a completed package and the group that sells the grain direct has different in statistical significant ( $P=0.309$ ). The mean of problems and obstacles of rice production (cultivation) of the group that sells the rice as a completed package was 2.17 and the mean of problems and obstacles of rice production (cultivation) of the group that sells the grain direct was 2.25. It shows that problems and obstacles of rice production (cultivation) of the sampling farmers the group that sells the grain direct is higher potential than the group that sells the rice as a completed package.

**The rural livelihood assessment**

The level scores of each rural livelihood indicators of two Sang Yod rice production groups (one that sells the grain direct and one that sells the rice as a completed package) in Khuan Khanun district, Phatthalung province categorized into 5 capitals; human, social, physical, financial, and natural capital.

**Table 4. The rural livelihood assessment analysis in each asset between the group that sells the rice as a completed package and the group that sells the grain direct**

Livelihood Assets Indicators	Package		Sells grain direct	
	Total $\bar{X}$	Result	Total $\bar{X}$	Result
1. Human	10.08	Superior	9.29	Inferior
2. Social	13.49	Superior	13.15	Inferior
3. Physical	2.33	Superior	1.78	Inferior
4. Financial	24.41	Superior	17.78	Inferior
5. Natural	15.58	Superior	14.95	Inferior

The data from table 4 shows the comparison rural livelihood assessment in each asset of the sampling farmers 323 respondents between the group that sells the rice as a completed package and the group that sells the grain direct in Khuan Khanun district, Phatthalung province below;

The overall of the comparison rural livelihood assessment analysis in human capital indicators of the sampling farmers shows that the group that sells the rice as a completed package is better than the group that sells the grain direct. The determination of each indicator shows status and education of the sampling farmers of the group that sells the rice as a completed package is better than the group that sells the grain direct while age and occupation of the sampling farmers of the group that sells the grain direct is better than the group that sells the rice as a completed package.

The overall of the comparison rural livelihood assessment analysis in social capital indicators of the sampling farmers shows that the group that sells the rice as a completed package is better than the group that sells the grain direct. The determination of each indicator shows the reason for Sang Yod rice cultivation, received any support from government agencies, and types of support received from government agencies of the sampling farmers of the group that sells the rice as a completed package is better than the group that sells the grain direct while source of knowledge and means of problem solving in rice cultivation, members of farmer’s rice production group, and the opinion on whether the government agencies should promote rice production system to meet GAP and organic standards of the sampling farmers of the group that sells the grain direct is better than the group that sells the rice as a completed package.

The overall of the comparison rural livelihood assessment analysis in physical capital indicator ; types of support received from government agencies of the sampling farmers of the group that sells the rice as a completed package is better than the group that sells the

grain direct.

The overall of the comparison rural livelihood assessment analysis in financial capital indicators of the sampling farmers shows that the group that sells the rice as a completed package is better than the group that sells the grain direct. The determination of each indicator shows average monthly household income, capital, types of support received from government agencies, the price, the selling price, marketing channels, costs and returns on the farm for Sang Yod in-season rice production from August 2015 to February 2016, and problems and obstacles of rice production (the returns/marketing) of the sampling farmers of the group that sells the rice as a completed package is better than the group that sells the grain direct while problems and obstacles in rice cultivation and problems and obstacles of rice production (high cost) of the sampling farmers of the group that sells the grain direct is better than the group that sells the rice as a completed package.

The overall of the comparison rural livelihood assessment analysis in natural capital indicators of the sampling farmers shows that the group that sells the rice as a completed package is better than the group that sells the grain direct. The determination of each indicator shows water source, amount of water, Sang Yod rice production system, planting area for Sang Yod rice cultivation planning, and production system for Sang Yod rice cultivation planning of the sampling farmers of the group that sells the rice as a completed package is better than the group that sells the grain direct while opinion on whether the government agencies should promote rice production system to meet GAP and organic standards and problems and obstacles of rice production (cultivation) of the sampling farmers of the group that sells the grain direct is better than the group that sells rice as a completed package.

#### 4. DISCUSSION

All vertically integrated producers relied on their own capital, held their title to their paddy land, practiced rain-fed rice cultivation, used one kilogram packaging, calculated sale prices on the basis of return on investment, and were profitable. In contrast, the group that sold grain direct to traders immediately after harvesting they were not members of a rice production group. In concluding that organized producer groups that vertically integrate their production and marketing achieve a higher level of livelihood in term of human, social, physical, financial, and natural capital, it is suggested that farmers need to have a stake in processing and marketing chain, or operate on a large holdings – both of which require capital investment that is lacking among small rice farmers. Niche markets that command a premium, such as expected for Sang Yod rice, do not appear to be realistic objectives for capital-poor small-holder and enticing such producers into debt for such an objective introduces risk that can impact negatively on income and livelihood.

#### 5. CONCLUSION

Comparing the aspect of livelihood between groups and individuals was conducted more cursorily, yet has indicated that the capabilities, assets, income and activities required to secure the necessities of life [10] were not evident in the government programs with expectation of those in a group with resources to capitalize on benefits of direct marketing. As noted by Soini [11], of the diverse factors that affect livelihood changes in farming systems [12] may be the most significant. In this case, the changes were not major.

#### 6. RECOMMENDATIONS

##### *Policy recommendations*

The government agencies should have a mechanism of grouping the farmers, support in each farmer's rice production group equally, and bring the obstacles of each group considered that it should promote further to sustainability and livelihood, including the capability of each group to process into a finished product or recommend the entrepreneurs to organize this Sang Yod rice's business towards the venture's success and export to niche market.

##### *Recommendations for further research*

The sustainability and livelihood assessment in this study mainly focused on the rice production related issues; paddy land, capital, Sang Yod rice cultivation planning, water source for cultivation, processing into finished product, members of farmer's rice production group, and costs and returns on the farm. Therefore, the parameters and factors which used to be assessed in this study are related to mainly rice production point of view.

The assessment of sustainability as well as the livelihood analysis in this study was examined from some selected important indicators; social, economic, and environmental aspects but it would be desirable to assess other forms of farmer's rice production group which was the obstacle in this study. Hence, the assessment can be improved to cover the wide range of research purposes by incorporate some other indicators especially a mechanism of grouping the farmers, the support in each farmer's rice production group, and bring the obstacles of each group considered that it should promote further to sustainability and livelihood as the spatial representation helps in better understanding of the situations, causes, and problems more effectively.

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