Determinants of Food Bank from *Melientha suavis* Pierre in a Rural Community in Phrae Province, Thailand

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Abstract

This study aimed to understand the socio-economic characteristics of the communities living in close proximity a conservation forest and determine the factors impacting of communities participation in a forest based food bank using non timber forest products (NTFPs). The plant based food source assessed in this research is *Melientha suavis* Pierre and study participants were from rural communities in Phrae province, Thailand. In the study, the net return was calculated using economic values. Stepwise regression was done to analyze the factors in 0.05 significance level. The results of the study showed the relationship between household socio-economic characteristics and dependent on non-timber forest product (NTFPs) to secure their livelihoods. The products of *Melientha suavis* Pierre were approximately 2.33 kilograms/household/month in February-June, 2014 which consisted of consumption in household 0.73 kilograms/household/month and selling 1.6 kilograms/household/month with an average price of 186.77 baht/kilogram. Factors impacting community participation on the food bank were the month of harvesting and the sale of *Melientha suavis* Pierre. Both factors were incentives to obtain community participation *Malientha suavis* Pierre was found to be a NTFPs which can increase household income, thus improving quality of life parameters in participating communities. The results of this research highlight the benefits of obtaining a food supply from the forest. These benefits include an improved understanding of forest management practices and awareness among the villagers regarding development of ecology; socio-economic, cultural functions which help improve the communities well-being.

Keywords: *Melientha suavis* Pierre/ Food bank/ Participation/ Rural livelihood/ Determine factors

1. Introduction

Being concerned about global warming The eleventh National Economic and Social Development Plan (2012-2016) is the worldwide security of food energy which is now under intense threat. There is a significant rise in demand for food and energy as a result of significant increase in the global population. Additionally, agricultural supply and product availability has decreased due to limited arable lands. Technology has enabled crops to be used to increase conflicts over food and energy in the future (NESDB, 2011). Thus, Communities should plant trees around their homes and in public areas. Farmers should utilize sustainable agriculture and follow the philosophy of Sufficiency Economy for food security in their communities. Maejo University Phrae campus also is aware of the importance of food bank in the community, so separated the area for a conservation forest approximately 2,293 acres from total area of university. This area serves as a food bank of the community around the campus in Rongkwang district, Phrae province. It has ecosystem services that include food, water and other resources. The ecosystem services in this area provides resources and welfare for the community around the university campus. On the other hand, the community takes care of the forest in the area, nevertheless, the efforts in trying to preserve the forest usually lead to conflict and misunderstanding between the university and the community. The villager around the conservation forest can harvest *Malientha suavis* Pierre approximately 5 months per year (Feb-Jun). As a result, there is a long period for harvesting and research that demonstrate the total amount of food bank yield, consumption, and product sales within the community. The aims of participation in this study are to better understand basic products, socio-economic development and overall improvement of forest resources in which the government officials and the community could also help significantly (Yogesh, 2011) because the current price offered for Non Timber Forest Products (NTFPs) collected by the community is nominal)Luni et al., 2011(. NTFPs management should be understood as complementary to timber management and not as a substitute for the potential of timber (Banjade and Paudel, 2008). NTFPs is interested to see people collect natural resources within the forest area which the participation has a positive impact on farm forest development)Maurice, 2012(. The necessity of development and improvement of forest resources was community right (M. Schaafsma M. et al, 2014) and human welfare (Arun A. et al, 2013). Further recognition of community rights to the ecosystem services provided by forest, and development of the legal system to secure these rights. Combined with economic benefits, sustainably harvested forest resources, property rights may generate funds that would stimulate villagers to contribute to sustainable forest management.

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The knowledge of the villagers, who dependent on forest that combined wisdom and traditional knowledge. It can promote the conservation of forests for sustainable development guideline through community participation management. The community has to depend on the forest for food bank and sufficient economy due to the need of *Melientha suavis* Pierre for the food bank. *Melientha suavis* Pierre usually grows in the forest area but it has high price for selling due to the high demand in market. The products can add economic valuation from an ecosystem that still has some avenues to develop (Pearce D., 2001). However, the point to determine the total value of the current flow of benefits from an ecosystem to understand the contribution that ecosystems make to society (Stefano P. et al, 2004). Therefore, the aim of this paper is to find out about the socio-economics of the community around Maejo University Phrae campus in Rongkwang district, Phrae province and determine the factors impacting of communities participation in a forest based food bank using non timber forest products (NTFPs) which creates the awareness and consciousness of sustainable conservation of the forest within the community.

2. Methodology

Primary data were collected using a prepared questionnaires and through face to face interviews by author with the help of undergraduate student volunteers. A total of 60 respondents were selected in the study site (Rongkwang district) using purposive sampling method. The secondary data was based on population data from Subdistrict Administrative Organization (SAO) and general information about the area in 2014.

2.1 Study site

The community at Maesai subdistrict, Rongkwang district at Phrae province.

2.2 Data analysis

Economic valuation was done by calculating the net return.

The net return = total revenue – total cost

Total revenue = cash revenue + non cash revenue

where

cost = fuel transportation of motorbike from house to forest

cash revenue = NTFPs for selling in local market

non cash revenue = NTFPs for consumption in household

In analyzing the factors affecting food bank, Stepwise Multiple Linear Regression was used at 0.05 significance level .(Crafton and Anthony, 2011)

$$y = constant + b_1x_1 + b_2x_2 + b_3x_3 + \cdots + b_nx_n$$

where

y = dependent variable

$b_1..b_n$ = coefficient

$x_1 \ldots x_n$ = independent variables

Therefore, the dependent variable was determined by the villagers who had received the benefit of food supply from *Malientha suavis* Pierre which indirect benefit include economic value and better quality of life standards in the community. Both reasons attracted the community to participate in the conservative forest. Understanding the factors that influence of communities participation in a forest based food bank was important to understanding what decisions are made. That was, the factors that influenced such as age, selling, month, indirect, nutrition, knowledge, job and NTFPs. The factors impacting the food bank equation was

PK = constant + $b_1$age + $b_2$selling + $b_3$month + $b_4$indirect + $b_5$nutrition + $b_6$knowledge + $b_7$job + b_8NTFPs where

Dependent variable

PK = products of *Malientha suavis* Pierre that harvest for consumption and selling (kg.)

Independent variables

Age = age of household head. (year)

Selling = revenue from selling the *Malientha suavis* Pierre all year. (baht)

Month = the period of month that people can harvest *Malientha suavis* Pierre in each month. (months)

Indirect = the knowledge and understand from people about indirect benefits of *Malientha suavis* Pierre (number)

Nutrition = the opinion in nutrition from people about the nutrition of *Malientha suavis* Pierre that was a dummy variable (yes=1, no=0).

Knowledge = people can transfer the knowledge of *Malientha suavis* Pierre to young generation that was a dummy variable (yes=1, no=0).

Job = income of household per year. (baht)

NTFPs = non timber forest product such as bamboo shoot, mushroom, ant eggs, fishes chicken etc. (number)

3. Results

3.1 Head of households' information

The average age of respondents were 52 years old and most (68.33%) farm paddy rice and maize. Average income for the farmers was 9,040.36 baht/household/year (Table 1). Most head of respondents graduated from primary school, approximately 80% and graduated from high school 20%. Average number of household members was approximately 4 persons/household with 2 having employment as farm labors (Table 2). The characteristics of household head and families (e.g. age, occupation, income, education, labor in household) showed family vision and communities had on villagers achievement.

Table 1: Demographic characteristics of household head and families

Demographic characteristics	Average	No. of respondents	Percentage
Mean age (years)	52.13		
Major occupation in agriculture			
Paddy rice, maize		32	53.33
Paddy rice		5	8.33
Maize		4	6.67
Paddy rice, maize, tobacco		4	6.67
Paddy rice, *Melientha suavis* Pierre[1]		1	1.67
Rubber		1	1.67
Buffalos		1	1.67
Non-timber forest products		2	3.33
Hirer		9	15.00
Unemployment		1	1.67
Total		60	100.00
Average main income	9,040.36		
Minor occupation			
Hirer		25	41.67
Non-timber forest products		10	16.66
Maize		4	6.67
Vegetables farm		1	1.67
Merchant		2	3.33
Make charcoal selling		1	1.67
No occupation		17	28.33
Total		60	100.00
Average minor income	5,551.11		

Note: *Melientha suavis* Pierre[1] means the planting 1 tree around the household that only 1 household to do it.

Table 2: Education level of household head and family member

Education level	Average	No. of respondents	Percentage
Primary school grade 4		39	65.00
Primary school grade 6		9	15.00
Lower high school		6	10.00
Upper high school		6	10.00
Total		60	100.00
Mean number of family member	3.95		
Mean number of labor in agriculture	1.98		

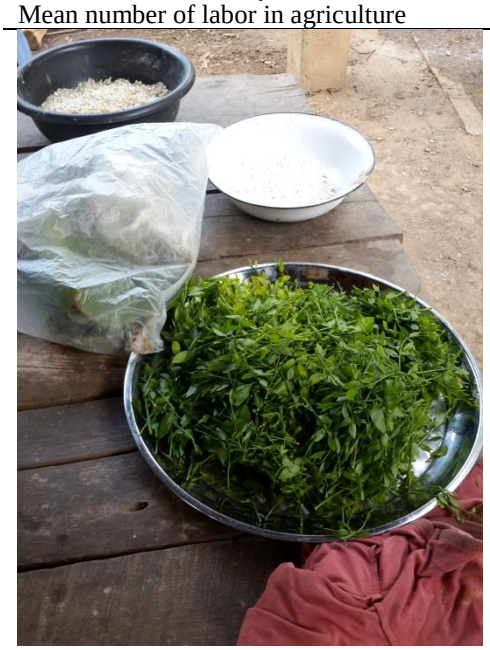

Figure 1: Leaf *Malientha suavis* Pierre

Figure 2 : Non timber forest products was ant eggs

3.2 Harvesting Malientha suavis Pierre at conservation forest

The harvesting period is usually from February to June. Most of the harvest is conducted in March (55%) then April (48.33%) and May (20%). The frequency of the harvest is around 5.88 times/month except in February when the harvest can be done for 10 times/month and the radius of harvesting area is around 7.24 kilometers/time. On average *Malientha suavis* Pierre yield (Fig 1), as gathered by the people, is 4.38 kilograms/household in February, 3.53 kilograms/household in April and 2.35 kilogram/household in March. Yields significantly decrease after April, the total amount in May and June is approximately 0.6 kilograms/household. Study participants kept approximately 0.73 kilogram of *Malientha suavis* Pierre yield for consumption and 1.6 kilograms/household for selling. Average price was 186.77 baht/kilogram (Table 3). Harvesting *Malientha suavis* Pierre yield at conservation forest explained it has high demand in market due to the high price for selling.

Table 3: Harvesting *Melientha suavis* Pierre in the conservation forest in 2014

Months	Households	Average					
		Frequency of harvest (times/ month)	Distance from house to forest (km.)	Total Yield (kg./hh)	Consumption Yield (kg./hh)	Selling Yield (kg./hh)	Price (THB/ kg.)
Feb	10 (16.67)	9.90	8.60	4.38	0.50	3.88	205.00
Mar	33 (55)	5.06	7.38	2.35	1.26	1.09	207.58
Apr	29 (48.33)	4.86	8.12	3.53	1.23	2.30	187.93
May	12 (20)	4.83	8.46	0.61	0.17	0.44	183.33
June	4 (6.67)	4.75	3.63	0.67	0.50	0.17	150.00

Note: hh = household
Number in the bracket is a percentage

3.3 Non timber forest products

Non-timber forest products collected were ant eggs (Fig. 2), at 41.67% during the period February to June and mole was 11.67%. Other foods from animals were field crabs, squirrels, jungle fowls, fish, river snails and birds (Table 4).

Table 4: NTFPs of animal food in Feb-June

Category of animanl food	No.of Households	Percentage
Egg ant	25	41.67
Field crab	2	3.33
Fish	1	1.67
Squirrel	2	3.33
Jungle fowl	2	3.33
Mole	7	11.67
River snail	1	1.67
Bird	1	1.67

Note: Multiple choices.

Aside from Malientha suavis Pierre, the most common vegetables collected by study participants in the forest were mushrooms(26.67%) bamboo shoots (Table5).

Participants cooked Malienha suavis Pierre with ant eggs(96.67%) and steam it with chilli sauce (93.33%) (Table 6). Non timber forest products described contributions to poverty reduction, enhance the food security of communities.

Table 5: NTFPs of plant food without Melientha suavis Pierre in Feb-June

Category of Plant food	No.of Households	Percentage
Bamboo shoot	8	13.3
Mushroom	16	26.67
Lasia spinosa Thw.	1	1.67
H Amorphallus Bulbifera Bl.	2	3.33

Note: Multiple choices

Table 6: Menu of *Melientha suavis* Pierre

Menu	No.of Households	Percentage
Soup with egg ants	58	96.67
Steam with chilli sauce	56	93.33
Fried with oyster sauce	5	8.33
Bone pork soup	2	3.33
Steam	1	1.67

Note: Multiple choices

3.4 Knowledge of Malientha suavis Pierre

Approximately 33.33% of study participants have knowledge of the nutritional benefits of *Malientha suavis* Pierre, such as minerals and vitamins. Additionally, a small percentage of participants had knowledge of *Malientha suavis* Pierre properties that alleviate diabetes as well as high fiber with (1.67%). 40% of study participants did not have the knowledge of *Malientha suavis* Pierre nutritional benefits. A small number of participants believed *Malientha suavis* Pierre is a poisonous plant that cannot be eaten when drinking alcohol as it will cause sickness 1.67% (Table 7).

Study participants believed the indirect benefits of *Malientha suavis* Pierre were the benefits of having a food bank in, the community and also having organic food. The characteristic feature of *Malientha suavis* Pierre is that they are shade grown under the canopy of tall forests (85%). Forest ecosystem services made food security for community (78.33%)

The attitudes villagers about indirect benefits explained an expression of traditional knowledge or as a livelihood option for rural household needs (Table 8).

Table 7: Menu of *Melientha suavis* Pierre

Nutrition	No. of Households	Percentage
Vitamin	8	13.33
A lot of nutrition but they do not know	1	1.67
alleviate diabetes	1	1.67
Fiber	1	1.67
It cannot eat with alcohol	1	1.67
It cannot eat when you get sick	4	6.67
Do not have nutrition.	24	40.00
They do not know about nutrition	8	13.33

Note: Multiple choices.

Table 8: Attitudes of villagers about indirect benefits' *Malientha suavis* Pierre.

Attitudes of villagers about indirect benefits' *Malientha suavis* Pierre.	No. of Households	Percentage
To include in watershed	6	10.00
To increase biodiversity	39	65.00
To be shade grown under the canopy of tall forests	51	85.00
To support food for community	60	100.00
To be an organic food	59	98.33
To be forest ecosystem services made food security for community	47	78.33
To growth in drainage area	6	10.00
To be in nature resources	3	5.00
To growth by themselves	2	3.33
To growth near the mother tree	2	3.33

Note: Multiple choices.

3.5 Harvest and post-harvest techniques

If study participants were able to reach *Malientha suavis* Pierre's branches (Fig. 3), they picked the leaf two sizes between 4-5 cm. (21.67%) and from 5 up to cm. (43.33%) (Fig. 4). Approximately 30% of the participants were not able to reach the branches and subsequently had, to pull the tree branches down in order to harvest them 30 percent. Few participants, 8.33% cut down the branches for harvesting. Following harvest, 91.67% of participants let the tree grow back naturally. Additionally, emphasis by participants is to only harvest those trees that are

Table 9: Approach management about post-harvest of *Malientha suavis* Pierre in forest

Nutrition	No.of Households	Percentage
Do not take care	55	91.67
Do not cut branch	4	6.67
Harvest only mature tree	1	1.67
Total	60	100.00

Note: Multiple choices

fully grown (Table 9). Harvest and post-harvest techniques showed a key component of sustainable NTFPs management and conservation strategies.

3.6 Marketing

NTFPs were based on consumption in household and the over demand in consumption were selling in community. The distribution of selling *Malientha suavis* Pierre was found to occur in front of participants house at 28.34%, selling it at the Rongkwang market at 18.33%, and selling at the village market at 15%. 30% of study participants kept some amount for personal consumption within their household (Table 10). Pricing was dependent on the distance from house to destination and products of new season early harvest in February and March.

Fig 3. *Malientha suavis* Pierre

Fig 4. Harvesting *Malientha suavis* Pierre

Table 10: The marketing channel of selling products

The markeiting channel of selling products	No.of Households	Percentage
At house	17	41.67
At village market	9	3.33
By bicycle around the village	3	1.67
By walking around the village	2	3.33
At district market	11	1.67
Do not selling	18	1.67
Total	60	100.00

3.7 Knowledge transfer about conservation of Malientha suavis Pierre through youth

61.67% of the participants did not transform the conservation into academic terms, however 26.67% of participants brought youths into the forest and showed them how to correctly harvest the resources. 6.67% (Fig. 5) of those participants conveyed to the youth the idea and knowledge of conservation (Fig. 6). Some participants conserved the resources by keeping the seeds, nursery and plant it (Table 11). 61.67% that the *Malientha suavis* Pierre from forest has a better taste than home grown (Table 12). 1.67% of participants believed that *Malientha suavis* Pierre cannot be eaten while it is fresh. In the contrast, 10% of participants thought there were no differences between *Malientha suavis* Pierre from the forest and home grown. However, knowledge of the older generation combined wisdom and traditional knowledge through youth that can promote the conservation of forests..

Table 11: Knowledge gained by farmers about conservation of *Malientha suavis* Pierre thru youth

Knowledge gained by farmers about conservation	No. of Households	Percentage
Do not transfer knowledge	37	61.67
Training by doing about harvesting	16	26.67
Teaching about nutrition of *Malientha suavis* Pierre	4	6.67
Teaching about harvesting seeds	1	1.67
Teaching about seedling nursing	1	1.67
Teaching about planting	1	1.67
Total	60	100.00

Table 12: Attitudes of respondents about difference *Melientha suavis* Pierre between planting in house and forest

Attitudes	No. of Households	Percentage
Do not difference	6	10.00
Yield from forest is more delicious from house	37	61.67
Yield from house taste look like Coccinia grandis	1	1.67
Cannot eat yield from forest but can eat yield from house	1	1.67
Missing value	15	25.00
Total	60	100.00

Fig. 5 Knowledge gained by farmers about conservation of *Malientha suavis* Pierre through youth

Fig. 6 Practice about conservation of *Malientha suavis* Pierre

3.8 Economic benefits' Malientha suavis Pierre

Economic benefits from *Malientha suavis* Pierre in February – June, 2014 was approximately 198.4 baht/household from February – April in non cash income. Non cash income was less than 100 baht in May – June.Cash income from selling *Malientha suavis* Pierre, which is a source of major cash income, in February averaged 795.40 baht/household and average cash income was 432.24 baht/household in April. Cash income averaged 226.20 baht/household in March and it was less than 100 baht in May – June. Most income from total yield between consumption and selling of *Malientha suavis* Pierre averaged 897.90 baht/household in February, and averaged 663.39 baht/household in April, respectively average 487.81 baht/household in March. Total yield of *Malientha suavis* Pierre in February – June was 2.31 kilogram/household/month. Participants used an average of 0.73 kilograms/household for self consumption and an average of 1.58 kilograms/household for selling at an average price of 186.77 baht/kilogram. The highest prices of the product were during the new season early harvest in February and March but the rest season had lower prices. Non cash benefit from consumption average was 140.27 baht/household and cash benefits average was 312.01 baht/household. The cost associated with harvesting was fuel transportation of motorbike on route from house to destination of approximately 7 kilometers, thus villagers did not have significant concerns regarding fuel costs. Total benefits were 452.29 baht/household in community around the conservation forestry area (Table 13). These economic benefits were a wealth of products from forest and can be an indicator of improvement in the communities well-being of this area.

Table 13: Cash and non-cash income from *Melientha suavis* Pierre in 2014

Month	Total yield (kg/.hh)	Consumption in household (kg/.hh)	Selling (kg/.hh)	price (THB/kg)	Non-cash income	Cash income	Total income
Feb	4.38	0.50	3.88	205.00	102.50	795.40	897.90
Mar	2.35	1.26	1.09	207.58	261.55	226.26	487.81
Apr	3.53	1.23	2.30	187.93	231.15	432.24	663.39
May	0.61	0.17	0.44	183.33	31.17	80.67	111.83
June	0.67	0.50	0.17	150.00	75.00	25.50	100.50
Average	10.18	0.73	1.58	186.77	140.27	312.01	452.29

Note: hh = household

Table 14: Result of Stepwise Multiple Linear Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.975	.950	.949	6.675
2	.976	.954	.952	6.491

a. Predictors: (Constant), selling
b. Predictors: (Constant), selling, month

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49073.63	1	49073.631	1101.495	.000[a]
	Residual	2584.006	58	44.552		
	Total	51657.64	59			
2	Regression	49255.98	2	24627.991	584.512	.000[b]
	Residual	2401.654	57	42.134		
	Total	51657.64	59			

a. Predictors: (Constant), selling
b. Predictors: (Constant), selling, month
c. Dependent Variable: PK

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
(constant)	3.137	.898		3.493	.001
selling	.005	.000	.975	33.189	.000
(constant)	-.971	2.159		-.450	.655
selling	.005	.000	.970	33.841	.000
month	2.829	1.360	.060	2.080	.042

Excluded Variables

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	age	-.022	-.748	.458	-.099	.985
	month	.060	2.080	.042	.266	.993
	nutrition	-.039	-1.328	.189	-.173	.977
	indirect	.028	.947	.348	.124	.994
	knowledge	-.019	-.645	.522	-.085	.983
	job	.003	.108	.914	.014	1.000
	NTFP	.005	.186	.853	.025	1.000
2	age	-.026	-.916	.364	-.121	.981
	nutrition	-.033	-1.136	.261	-.150	.965
	indirect	.029	1.006	.319	.133	.994
	knowledge	-.028	-.962	.340	-.128	.965
	job	-.001	-.019	.985	-.002	.996
	NTFP	-.002	-.055	.956	-.007	.986

a. Predictors in the Model: (Constant), selling
b. Predictors in the Model: (Constant), selling, month
c. Dependent Variable: PK

3.9 Factor affecting to determine the participation of community around the conservation forestry area.

Stepwise Multiple Linear Regression was done at 0.05 significance level with eight independent variables such as age, selling, month, indirect, nutrition, knowledge, job, and NTFPs. The dependent variable was a PK. The dependent variable (PK) was determined by the villagers who had received the benefit on food supply from *Malientha suavis* Pierre which indirect benefit from the forest has made economic values and human well-being for the community. Both reasons are attractive selling points to the community to participate in the conservative forest.

Factors affecting to determine the community participation on the food bank were the month of harvesting and the sale of *Melientha suavis* Pierre (Table 14). The regression equation for predicting the food supply from *Malientha suavis* Pierre (PK) was:

PK = 0.005 + 0.971 -selling2.829 + month

The variables were sale of *Melientha suavis* Pierre and the month of harvesting which attracted the community to participate the forestry conservation because they had received the benefit of food supply from food bank in this area. Thus, it was indirect benefit that attracted the community to participate in the conservation of the forest. The participants do not care for *Malientha suavis* Pierre like other economically viable food based plant sources as they do not need to clear forested areas to plant the agricultural product. They can harvest *Malientha suavis* Pierre around five months period per year. These result in a longer period to collect yields and subsequently have an increase in profit, builds on the food bank supplies, and increase consumption. Other variables such as age, nutrition, indirect, knowledge, job and NTFPs were not significant in this equation.

4. Discussion

Malientha suavis Pierre total yield in February – June were as followed, March was 55%, April was 48.33%,and May was 20%. Total yield in February and June had a small yield as it is the beginning and end of the harvest period. These results were further backed from the research of Chiarawipa et al. (2010) which the indicated most *Malientha suavis* Pierre in southern Thailand in January – April and September - October. The highest weight yield was in March at 205.51 kilograms/tree. It is NTFPs requirement the yield only in the specificity season in March – May which most people harvested it around 4 – 5 times/month with 2.31 kilograms/household average weight.

Participants in this study shared the yield for consumption in household (average 0.73 kilograms/household) and for selling (average 1.58 kilograms/household) this are similar to the research of Ponpun (2009). Ponpun (2009) commented management in benefits of natural resources in community for protecting the effects of using resources in that area and yield average 2 kilograms/season. The average price is 186.77 baht/kilogram, which is the price agreement of the *Malientha suavis* Pierre planting promotion of Nakhon Ratchasima Agricultural Extension and Development Center (2013). The price of *Malientha suavis* Pierre was higher than other plants which cost an estimated 200 – 250 baht/kilogram. According to Ponpun research (2009), participants went to the forest for harvesting non timber forest products, on average, 1.36 hours/day in the period of March – December. They can harvest the highest amount of mushrooms in October and *Malientha suavis* Pierre, bamboo shoot were 50.5 39.1 and 33.2%, respectively. Most people believe that non timber forest products are very important for their living. The short NTFPs route from village to forest was 2.23 kilometers. This route provides both plant and animal based food for the village. However, due to its proximity of Kaeng Krachan National Park there is constraint on using this area as a community forest. The average NTFPs trail in this research was 7-10 kilometers with the same plants but different animal, due to different geographical conditions. Southern Thailand was tropical rain forest, but the research area of this study was dry dipterocarp forest. People can harvest plant based foods that consists of mushroom, *Malientha suavis* Pierre, bamboo shoot and animal based food such as ant eggs and, squirrel in dry dipterocarp forest.

The factor impacting community participation concerning forestry conservation were selling and month which attracted the community to participate in forestry conservation projects. The participants had awareness of the value of the forest which is very vital for their food bank and supermarket of the community that correspond to change of the factors that impact community forest management (Sairorkham, 2014). The change of five factors consist of forest ecology, expansion of land use on the forest, market economy, intensification of commercial production, and community collective effort have an impact on community forest usage and community forest management. These two concepts have gone through dynamic change in the dimension of time in each period. In the current situation changes of the five factors previously, mentioned, impact the relationship between the community and the usage and management of community forests. Firstly, the food bank of this forest is in agreement with Butaga (2012) research that it is most important to promote forest conservation in Donpujao, Saimoon subdistrict, Nampong district, Khonkaen province. Secondly, the community and the people who live in it want to directly utilize the resources from the forest, and also want to transform themselves into a natural learning and

environmentroom. Community participation concerning forestry development and management of Pornpapat focused on the people who earn income from planting forest labor and harvesting NTFPs around the community. NTFPs were bamboo shoots and mushrooms as part of the total yield from the participation of conservation in natural resources. Therefore, forest management is an important alternative strategy for conserving the biodiversity, and for allowing forest dwellers and larger stakeholders to benefit from the forest. This results in improved understanding of the forest managers and awareness among the people about development of ecological, economic and socio-cultural functions (Saikia, 2013). The benefits of a food bank and increase income from the forest that Vaseenonta (2012) supported is a main issue that youth can live in local community through interdependence, good leadership, network development, the natural resource of village, and opportunity from their family. On the other hand, the research of Josephine Kamene Musyoki et al (2013) mentions influencing factors, which included, distance of homestead from forest, sources of fodder, access to forest products, and awareness of forest. P. Coulibaly-Lingani et al (2011) mentions participant in forestry conservation people can lead to social welfare from conservation activities such as the increase in participation (D.B. Rahut et al, 2015) and more equitable benefit-sharing among user groups are essential in improving the success of the participatory forest management program.

An analysis of the food bank from *Melientha suavis* Pierre in rural communities indicated the decision making capacity of participating villagers in forest conservation and economic benefits. However, food security from plant-based foods can help to increase household consumption and reduce poverty and human well-being through properly using the forest as a food source collection. This practice will allow households in rural communities to improve quality of life through reduction of economic expenditures.

5. Conclusions

The results showed the relationship between household socio-economic characteristics and dependent on NTFPs to secure their livelihoods. Factors impacting community participation on the food bank were the month of harvesting and the sale of *Melientha suavis* Pierre. Both factors were incentives to obtain community participation *Malientha suavis* Pierre was found to be a NTFPs which can increase household income, thus improving quality of life parameters in participating communities. *Malientha suavis* Pierre can help to reduce poverty through a reduction of food expenditure per household. Additionally the benefits associated with additional food supply from the forest provides improved understanding of the forest managers and awareness among the villagers regarding development of ecology, socio-economic, cultural functions which, ultimately, improves quality of life standards. Recommendations of this research are to further increase villagers' knowledge about the benefits of a food bank through conservation and the threats resulting from the lack of forest management in this area.

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