

Vegetable Agro-forestry System: Baseline Survey Results in Songco, Lantapan, Bukidnon, Philippines, 2006

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VEGETABLE AGROFORESTRY SYSTEM: BASELINE SURVEY FOR SONGCO, LANTAPAN, BUKIDNON, PHILIPPINES, 2006

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I. INTRODUCTION

This baseline study is part of the SANREM CRSP “Agroforestry and Sustainable Vegetable Production in Southeast Asia Watersheds” (VAF) project. This was conducted in Songco, Lantapan, Bukidnon, an upland barangay located at the foot of the Mt. Kitanglad Range National Park in the Southern part of the Philippines, during January to February, 2007. The crop and household data pertain to January to February, 2006.

Primarily, this study was conducted to determine the socio-economic conditions of vegetable farmers in the study area as well as provide information on the current farming and agroforestry practices of the farmers. The survey results can serve as basis for impact studies by the VAF project.

The overall objective of the VAF project is to showcase how steeply-sloping, degraded watersheds may be converted to vibrant sustainable agroforestry systems with integrated vegetable production. The specific objectives include:

Technology: Develop economically viable and ecologically-sound integrated vegetable-agroforestry (VAF) systems to increase farm productivity, income, and food security.

Markets: Conduct market value chain research at the local, regional, and national levels that builds upon existing marketing strategies and develop interventions to overcome constraints and take advantage of opportunities.

Policy: Identify policy options and institutional frameworks that promote sustainable vegetable agroforestry production and reward provision of environmental services.

Environmental and socio-economic impacts: Assess the short and long-term environmental and socio-economic impacts of integrated vegetable-agroforestry systems.

Gender: Provide mechanisms to improve the socioeconomic well-being of women engaged in vegetable production and agroforestry enterprises, especially in terms of income and labor share, and to involve women in decisions that concern their welfare.

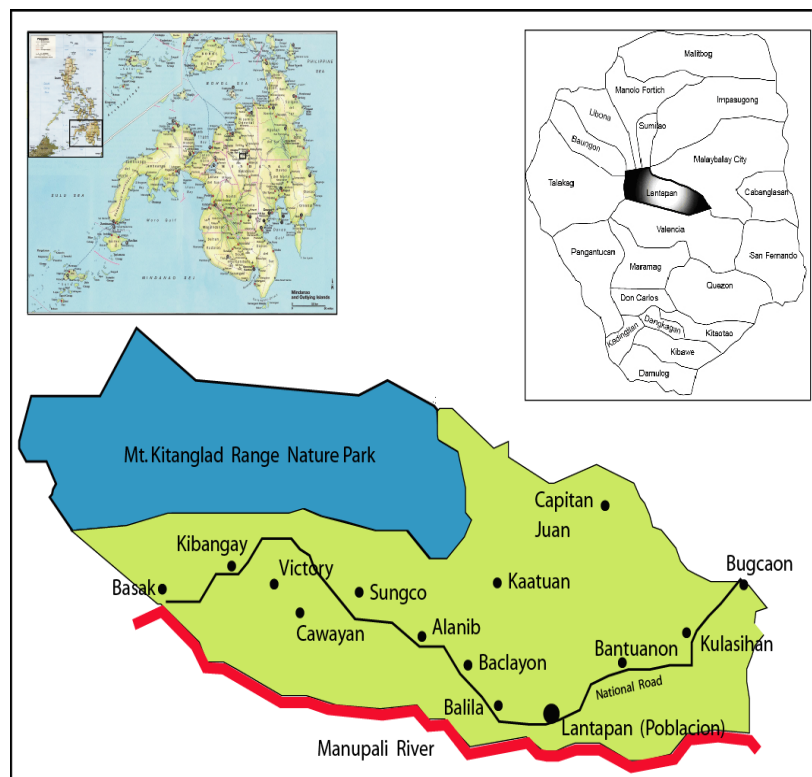
Scaling-up: Build host country capacity in managing integrated vegetable-agroforestry systems and packaging related technical, social/economic and institutional innovations for replication and scaling up to other watersheds in the region.

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II. METHODOLOGY

2.1 Study Site

Songco is one of the 14 barangays of the municipality of Lantapan, one of the municipalities of the Province of Bukidnon located in Mindanao. Barangay Songco is located at the foot of the Mt. Kitanglad Range Natural Park. It is surrounded by Mt. Kitanglad Range Nature Park in the North, Barangay Alanib in the South, Brgy. Kaatuan in the East, and Brgys Victory and Cawayan in the West and West-Southwest, respectively (Figure 1).



N.B. Maps of Bukidnon and Lantapan were adapted from: Cramb et 2003

Fig 1. Barangay Songco, Lantapan, Bukidnon, Philippines

2.2 Respondents

Respondents were selected from farmers living in Songco who were planting vegetables. Information on the size of their land was procured from the local agriculture office.

Of the total households in the village, 109 were planting vegetables. Randomly, 25 'poor' and 25 'rich' farmers were chosen as respondents of this baseline study. 'Poor' farmers consisted of those whose landholding was less than 1.5 hectares while 'rich'

farmers were those whose landholding was 1.5 hectares and above. Thus, the study has a total of 50 respondents (Table 1).

Table 1. Population and sample size distribution.

1. Village households		513		
2. Number of households growing vegetables in the study area		109		
3. Sample by land size (ha)		N pop	N samples	Percent
< 1.5		61	25	50
1.5 and above		48	25	50
Total		109	50	100

2.3 Data Collection and Analysis

The research instrument used for primary data collection was the questionnaire. Secondary information was sourced from the Municipality of Lantapan and Barangay Songco. Data analysis used mainly the descriptive method consisting of means and percentages as well as cross tabulations.

III. CHARACTERISTICS OF THE VILLAGE

3.1 Physical Characteristics

Songco has an area of 4,304 hectares. Timberland is estimated to be 2,702 hectares while A & D lands is estimated to be 1,602 hectares.

As to slope categories, the A & D lands of the Barangay have slopes ranging from 8% to over 51%. The Barangay is actually located at the foot of the Mt. Kitanglad Range Natural Park (MKRNP) and the land is best suited for high value crop production.

Table 2. Slope categories of A & D land in Songco, Lantapan, Bukidnon, Philippines.

Slope category	Land area (has)	Percent of total
8-18%	225	14
19-30%	504	31
31-50%	313	20
51% & over	560	35
Total	1,602	100

Source: CLUP of MOL in Nguyen (2005)

As to infrastructure, the village had 34.5 km of paved/asphalted road. More than forty percent of the village had electricity supply while water was available to almost 65% of the population. As to availability of schools in the area, there was an elementary school but none for high school. However, there was no health center in the village.

Table 3. Physical infrastructure and public utilities of Songco, Lantapan, Bukidnon, 2006.

Physical Infrastructures and Public Utilities	Unit	Ratio
Road Network		
Paved/Asphalted	34.5	
Graveled		
Dirt road		
Electricity	236	40.41%
No. of household connected with water supply of the town	332	64.72%
Education		
No. of elementary schools in Songco	1	
No. of secondary schools in Songco	0	

3.2. Demographic Characteristics

The total population of Barangay Songco was 2,921 in 2000 with a density of 68 persons per square kilometer. Majority of the village's population were Talaandigs, an indigenous group. Table 4 indicates that the population as well as the population density in the area was increasing. From 1990 to 2000, its population increased by 21.88% while from 1995 to 2000, the increase was 16.54%. Average rate of increase per year tend to be increasing.

Table 4. Population and density of the village, 1970 to 2000.

Year	Population	Density (per km ²)
1970	875	20
1975	1014	32
1980	1423	52
1990	2282	56
1995	2438	56
2000	2921	68
% change 90-00	21.88	
% change 95-00	16.54	

Source of basic data: MOL 2002 in Nguyen 2005

IV. CHARACTERISTICS OF RESPONDENTS

4.1 Demographic Characteristics

As exhibited in Table 5, household members of the respondents totaled 312 with an average household size of six. Of these, 53 percent were males and the rest were females. Four percent of them were extended family members. More than half of the total household members (63.14%) were in the labor force. Almost 36% (112) of the household members of respondents were below 15 years old while only about one percent (3) was above 65 years old. Thus, 115 household members were not in the labor force while 197 were members. The average labor force members per household were four (4). Dependency ratio then was 58.38%.

Table 5. Respondents' family size, age structure and labor force, Songco, Lantapan, Bukidnon, 2006.

Characteristic	n = 50	
Family member		
1. Total household members (persons)	312	
2. Sex Ratio		
Male	166	0.53%
Female	138	0.44%
3. Household Size		
1-4	11	22.00%
5-8	33	66.00%
>9	6	12.00%
4. Range of Household Size (persons/household)	2 – 13	
5. Average household size	6	
6. Nuclear family member	301	96%
7. Extended family member	11	4%
Age Structure		
< 15	112	35.90%
15-65	197	63.14%
> 65	3	0.96%
Labor Force		
- Proportion of Labor Force	197	63.14
- Average labor force per household	4	
Dependency Ratio	58.38%	

4.2 Socio-Economic Status

Income of the fifty household respondents were from on-farm, off-farm and non-farm sources. More than half of the households' income came from non-farm sources (50.30%) with 43 of 50 respondents earning from this (Table 5.1). Of the non-farm sources, 17 were on trading. Meanwhile, income from respondents' own-farm accounted for 40% of their total income. Off-farm sources (9.70%) were usually from working as farm laborer of other farms or as worker at the Mt Kitanglad Agri-Ventures, Inc. (MKAVI). This was a banana plantation in the nearby village. The largest source of income of respondents' households (50.3%) was from non-farm. These consisted of income working as employee, driver, trader or engaging in business.

Table 5.1. Income of respondents' household, by source, 2006.

Item	Songco		
	n	PhP	%
Agriculture			
Agricultural Income (Income from own farm)	50	168,820.00	40.00
Off Farm Income			
* Farm laborer	11	22,791.00	
* MKAVI worker	4	18,138.00	
Non-farm Income			
* Private company employee	5	29,420.00	
* Govt./Public employee	7	46,500.00	
* Trader/Dealer (veg., shoes)	17	47,500.00	
* Health services	2	15,667.00	
* Business	6	47,120.00	
* Carpenter	2	5,200.00	
* Motorcycle driver	1	6,000.00	
* Others	3	14,900.00	
Total Household Income	50	422,056.00	100.00

It is indicated in Table 6 that the major occupation of 70% of the respondents was farming, either as farmers or farm laborers. About 22% of them had farming as their secondary source of income. In addition, 38% of the household members were also farmers while 39% were unemployed. The table also indicates that 38% of the respondents had other sources of income.

As to educational attainment, all of the respondents had attended school, although only 18% had reached college. Similarly, their household members had attended school, although almost eleven of them were not in school age yet.

Table 6. Percentage distribution of respondents and family members, by occupation, 2006.

Occupation	Songco	
	% of n=50	% of n=262
Main Occupation		
1.Farmer/farm laborer	70.00	45.00
3.Private company employee		3.43
4.Government employee	4.00	2.33
5.MKAVI worker	2.00	2.33
6.Dealer	12.00	2.33
7.Health services		0.34
8.Business	6.00	2.33
9.Unemployed		39.00
10.Carpenter	2.00	0.74
11.Motorcycle driver	2.00	0.74
12.House helper	2.00	1.43
Total (%)	100.00	100.00
Other Occupation		
1.Farmer/farm laborer	22.00	4.00
3.Government employee	4.00	0.70
4.Dealer	10.00	2.70
5.Health services		0.70
6.Swertres tally	2.00	
Total (%)	38.00	6.10

Table 7. Percentage distribution of respondents and family members, by educational attainment, 2006.

Songco	
Respondents (number)	(50)
Incomplete Elementary	34
Completed Elementary	22
Incomplete High school	14
Completed High school	12
Incomplete College	16
College Graduate or other Higher Education	2
	100
Family members	(262)
Not yet of schooling age	10.73
Incomplete Elementary	40.23
Completed Elementary	8.43
Incomplete High school	18.77
Completed High school	8.04
Incomplete College	9.96
College Graduate or other Higher Education	3.83
	100.00

Physical attributes of the respondents' abode are indicated in Table 8. More than half of them had houses made of wood while the rest had houses made of wood and cement (32%), bamboo (8%) and brick and cement (2%). Roofing materials were usually of plant leaves or galvanized iron sheets (98%). The average floor width was almost 56 m².

Many houses of respondents had in-house toilet as well as bathroom (44%). However, these were not available to 56% of them.

Table 8. Percentage distribution of respondents' houses by physical attributes, 2006.

Physical Attribute	Songco n=50
1. Building Material	
Bamboo	8
Wood	56
Brick and cement	2
Wood and cement	32
2. Type of Floor	
Concrete	30
Wood	18
Bamboo	26
Wood and cement	8
Wood and bamboo	8
Dirt and bamboo	8
3. Type of Roof	
Plant leaf	2
Galvanized iron sheet	98
4. In House Bathroom	
Available	44
Not available	56
5. In House Toilet	
Available	44
Not available	56
6. Floor Width (m²)	
<25	22
26-50	37
51-75	8
76-100	22
101-125	2
126-150	6
>150	2
Floor Width Range (m ²)	11-156
Ave. Floor Width (m ²)	55.87
Ave. Floor Width per person (m ² /ps)	9.54

4.3 Land Tenure and Land Holding

Landholdings of respondents ranged from 1 to 3 parcels. One of the respondents had three parcels while four had two parcels. Close to 88% of them owned monoculture garden while the rest had pasture, agroforest, and fallow land (Table 9).

Size of landholdings was quite small ranging from 1,000 m² to six hectares. Average land size was 1.6 hectares (Table 9).

Table 9. Profile of surveyed households according to landholdings, Songco, Lantapan, Bukidnon, 2006.

Item	Songco		
	n	%	Ha
	N hh	50	
	N parcel	55	
1. Number of Parcel Owned			
1 parcel	50	100	82.60
2 parcel	4	8	2.50
3 parcel	1	2	3.00
2. Type of Land Owned			
Pasture	2	3.64	2.50
Monoculture garden	48	87.27	74.85
Agroforest	3	5.45	7.25
Fallow land	2	3.64	3.50
3. Land size (m ²) by household			
≤ 0.5	15	27.30	4.45
0.51 - 1.0	17	30.90	15.85
1.01 - 1.50	2	3.60	3.00
1.51 - 2.0	9	16.40	18.00
2.01 - 2.50	1	1.80	2.50
≥ 2.50	11	20.00	44.30
4. Descriptive statistics of landholding size			
Total Land Size Surveyed (ha)		88.10	
Ave. Land Size (ha/hh)		1.60	
Land Size Range (ha)		0.1 - 6.0	
Std. Deviation		1.49	

Respondents obtained their landholding through various ways, namely: opened from forest (3.64%), bought (32.73%), inherited (45.45%), using other person's land (14.55%), being a caretaker (1.82%), and mortgaged land (1.82%) (Table 10). Of the landholdings, close to 86% were owned by respondents. The others worked in the land as tenant, renter, lessee, and mortgaged land. Ownership of land was substantial since most of the respondents obtained their land through inheritance and procurement. Years of ownership of land were from less than five to more than 25 years (Table 11). Of the 55 parcels, almost 35% of these were owned by respondents for more than 25 years.

Contrasting the type of landuse before and during ownership by respondents, Table 12 indicates that most of the lands were converted to monoculture garden, particularly those formerly were pastureland, agroforest and fallow land. This shows that respondents had transformed the previously non-productive lands to productive. For a

closer look, 93.5% of previously pastureland had become monoculture garden. Similarly, 76.92% of previously agroforest and 71.43% of the land in fallow had been transformed into monoculture garden.

Table 10. Ways by which land was obtained by respondents, Songco, Lantapan, Bukidnon, 2006.

Ways of obtaining land	Privately owned			Tenant			Renter			Lessee			Mortgage			Total		
	n	%	ha	n	%	ha	n	%	ha	n	%	ha	n	%	ha	n	%	ha
Opened from forest	2	3.64	0.85													2	3.64	0.85
Bought	18	32.73	28.60													18	32.73	28.60
Inheritance	25	45.45	49.55													25	45.45	49.55
Using other person's land	2	3.64	0.85				4	7.27	5.25	2	3.64	1.5				8	14.55	7.60
Caretaker				1	1.82	0.5										1	1.82	0.50
Mortgage													1	1.82	1	1	1.82	1.00
	47	85.45	79.85	1	1.82	0.5	4	7.27	5.25	2	3.64	1.5	1	1.82	1	55	100.00	88.10

Table 11. Number of parcel according to years of ownership, Songco, Lantapan, Bukidnon 2006.

Number of years owning the land	N	Songco	%
0 - 5	9		16.40
6 - 10	7		12.70
11 - 15	5		9.10
16 - 20	11		20.00
21 - 25	4		7.30
> 25	19		34.50
Total	55		100.00

Table 12. Type of land use before owned and during ownership by respondents (%),2006.

Land use type before owned	Land use type now				
	pasture	monoculture garden	agroforest	fallow land	total
pasture	0.0	93.75	6.25	0.0	100.0
monoculture garden	0.0	100.00	0.0	0.0	100.0
agroforest	7.69	76.92	7.69	7.69	100.0
fallow land	14.29	71.43	0.0	14.3	100.0

4.4 Household Income

Income of respondents' households came from three major sources: on-farm, off-farm and non-farm. Half of their income came from non-farm sources while forty percent came from farming, and almost ten percent from off-farm. Average time spent in earning this income was 7.33 hours per day for the three income sources (Table 13).

The total household income per month ranged from PhP 960-27,280 per month (US\$ 1=PhP 48.0). On the average, household income was PhP 8,441.12 per month of which per capita income amounted to PhP 2,142.42/mo (Table 14). This was way below the current poverty threshold of the country, which at the time of the survey, was PhP 14,405 per household per month (NSCB 2006). In fact, 80% of the respondent households were way below the poverty threshold.

Table 13. Total household income and average time spent by source of income (per month), 2006.

Item	Songco		
	n	PhP	%
Agriculture			
Agricultural Income	48	168,820.00	40.00
Average time spent in agricultural activities (hrs/day)		7.17	
Off Farm Income			
Off Farm Income	15	40,929.00	9.70
Average time spent in off-farm activities (hrs/day)		7.2	
Non-Farm Income			
Non-Farm Income	34	212,307.00	50.30
Average time spent in non-farm activities (hrs/day)		7.61	
Total Household Income	50	422,056.00	100.00

Table 14. Family income of the respondents households, Songco, Lantapan, Bukidnon, 2006.

Particulars	Songco
Number of surveyed households	50
Number of family members	262
Total family income (PhP/month)	422,056
Range (PhP/month)	960-27,280
Average family income per household (PhP/month)	8,441.12
Income per capita (PhP/month)	2,142.42
Proportion of households below poverty line	80%
- Philippines (PhP14,405 capita per month)	

2006 Philippine Poverty Threshold: PhP14, 405.00

Source: National Statistical Coordination Board

4.5 Other Assets

Respondents had other assets in the form of household appliances, kitchen equipments and transport vehicles. For instance, 64 % of them had television, 46% had radio/karaoke, 44% had CD/DVD, and 16% had cassette player. It may be gleaned from this that respondents were music-loving people. Fourteen percent had vehicles consisting of elf, jeep, motorbike, and bicycle (Table 15).

Table 15. Other assets of respondents, Songco, Lantapan, Bukidnon, 2006.

Asset	Songco	
	N=50	Percent
Radio/Karaoke	23	46.0
Cassette Player	8	16.0
CD/DVD Player	22	44.0
Television	32	64.0
Refrigerator	9	18.0
Washing Machine	9	18.0
Gas Range	1	2.0
Guitar	1	2.0
Sewing Machine	1	2.0
Rice Cooker	1	2.0
Bicycle	1	2.0
Motorbike	4	8.0
Jeep	1	2.0
Elf	1	2.0

4.6 Household Expenditure

Table 16 presents the weekly and monthly expenditures of the respondent households in Songco, Lantapan, Bukidnon. Household expenditure includes basic needs of a family like food, clothing and health. It was noted that the proportion of income spent on food was greater than the proportion of income spent on non-food items.

On the average, the monthly expenditure of a household was lower than their family income. It can be observed that there was a small margin between average monthly household income and expenses. This suggests that almost all of their income were spent on purchase of the items listed. More than half (52.57%) of the expenditure of a household went to food. This was followed by farm inputs (16.86%) since the respondents were engaged in farming (planting vegetables and trees) which use external inputs like chemicals and fertilizers. Almost 15% of family expenditure went to education of children (13.66%), which indicates the family's preference on children's education. Eighty four percent (84%) of the respondents reported that education was part of their daily expenditure. Households' transportation expenses were mainly attributed to farmers working as vegetable dealer. This entails transporting their goods to the market once or twice a week. The going rate of transporting one sack of vegetables like eggplant from Songco to Cagayan de Oro was PhP30. This excludes paying for the transportation of the vegetables from the farm to the main road where vehicles to

Cagayan de Oro were accessible. The rest of the budget was spent on payment for water and electricity bill, medical expenses, clothing needs, and others.

The study revealed that half (50%) of the respondents had inadequate income (Table 17) since they spent more than their income for household and farm expenses. This means they have larger expenses compared to their household income. Meanwhile, eight households spent less than half of their income for household expenditures while the rest spent all of their income. It can be gleaned that close to 50% of the respondents had savings.

Table 16. Total households' expenditure by item (per month), Songco, Lantapan, Bukidnon, 2006.

Item	Songco					
	Per week			Per month		
	n	PhP	%	n	PhP	%
Food	50	55,251	55.92	50	213,918	52.57
Education	42	9,338	9.45	42	55,587	13.66
Water	33	1,091	1.10	33	4,363	1.07
Electricity	33	2,059	2.08	33	7,992	1.96
Health	35	1,750	1.77	35	6,997	1.72
Transportation	38	5,361	5.43	39	21,450	5.27
Clothing	45	4,356	4.41	45	18,250	4.48
Farm Inputs	40	17,152	17.36	40	68,610	16.86
Telephone/Cell phone	19	2,410	2.44	19	9,640	2.37
Others	1	30	0.03	1	120	0.03
Total households' expenditure	50	98,797		50	406,927	
Average expenditure per household		1,975.95			8,138.53	
Average family income					8,441.12	

Table 17. Percentage of respondents' household expenditure to income, 2006.

Percentage of expenditure to income (%)	Songco	
	n =50	%
≤ 50	8	16
51-75	9	18
76-100	8	16
> 100	25	50

4.7 Farming System

This section tackles the characteristics of the respondents' land as well as the farming and management practices they apply. It looked closer on the farms' production side focusing on vegetable production.

Physical Characteristics

As seen in Table 18, the land owned by the respondents had four land use types, namely: pasture, monoculture garden, agroforest and fallow land. Out of 55 parcels, 48 were monoculture garden (74.85 ha), two were pastures (2.5ha), three were agroforest (7.25 ha) and two were fallow lands (3.5 ha). Distance of these lands from the village proper ranged from less than 2,500 m to more than 5,000 m. Thus, time spent in going to the respondents' parcels ranged from a minute to more than one hour.

Majority of the respondents considered their parcel as less fertile. In fact, 72% of the households with monoculture garden and 66.67% of those with agroforest land reported that their plot was less fertile. Four respondents had plot which they considered not fertile at all but were used continuously to grow vegetables and trees. Regarding plot slope, households with pasture area said that their plot was gently sloping. Almost 70% of respondents said that their monoculture garden was on a relatively sloping area.

As for water source, only monoculture garden depended on potable water system, especially during dry season since vegetables need to be watered frequently. Fallow land depended on drainage as source of water for trees growing there. Rivers, rain, and springs were also important water sources for other plots like pasture and agroforest areas.

Based on Table 19, most of the respondents' parcels (63.64%) were situated more than half kilometer away from their residential area. Based on the survey, it takes 15 minutes for almost half of the farmers (48.15%) to reach their plot. Some of them (5.56%) needed more than an hour to get to their plot. These respondents were those who resided very far from their farm. Generally, farmers' parcels were located in flat to gently sloping areas. Nine percent of the respondents considered the soil in their farm as not fertile. The respondents' households believed that most of the lands were less fertile.

Table 18. Physical characteristics of parcel owned by household by land use type, 2006.

	pasture	monoculture garden	agroforest	fallow land
Number of parcels	2	48	3	2
Total area (ha)	2.5	74.85	7.25	3.5
1. Distance from village (m)				
<2500	50.00%	12.50%		
2500 - 5000		25.00%		
> 5000	50.00%	62.50%	100.00%	
2. Time needed to go to the parcel (minutes)				
1 - 15		51.06%	33.33%	50.00%
16 - 30	100.00%	31.91%	33.33%	
31 - 60		12.77%	33.33%	
> 60		4.26%		50.00%
3. Parcel fertility				
Quite fertile to very fertile		21.28%		50.00%
Less fertile	100.00%	72.34%	66.67%	
Not fertile		6.38%	33.33%	50.00%
4. Parcel slope				
Flat to slightly sloping		31.91%	33.33%	50.00%
Gently sloping	100.00%	68.09%	66.67%	50.00%
5. Water source for irrigation				
Drainage		21.43%	50.00%	100.00%
Potable water		57.45%		
River	100.00%	2.38%		
Rain		6.38%	50.00%	
Water spring		4.26%		

Table 19. Physical characteristics of parcels owned by respondents, Songco, 2006.

Item	Songco
Number of parcel	55
Total area (ha)	88.10
1. Distance from village (m ²)	
<2500m	13.64%
2500 - 5000m	22.73%
> 5000m	63.64%
2. Time needed to go to the parcel (minutes)	
1 - 15	48.15%
16 - 30	33.33%

31 - 60	12.96%
> 60	5.56%
3. Parcel fertility	
Quite fertile to very fertile	20.37%
Less fertile	70.37%
Not fertile	9.26%
4. Parcel slope	
Flat to slightly sloping	31.48%
Gently sloping	68.52%
5. Water source for irrigation	
Drainage	23.91%
Potable water	58.70%
River	4.35%
Rain	8.70%
Water spring	4.35%

V. VEGETABLE AND AGROFORESTRY SYSTEM (VAF)

5.1 Production and Area

Most of the plots of respondents were planted with vegetables. Only few farmers were planting trees alone. Fourteen species of vegetables were planted by respondents. As shown in Table 20, there were four dominant vegetable species planted by respondents, namely: Chinese cabbage (27.10%), cabbage (16.30%), tomato (15.10%), and beans (11.60%). These species were mostly cultivated in monoculture garden. Only one respondent planted vegetable in pastureland and another, in agroforest area. Both of them planted Chinese cabbage in their plot. The rest of the pasture and agroforest areas owned by five respondents were planted with trees only.

Table 20. Area planted for each crop (by landuse type), 2006.

Commodity	Pasture		Monoculture Garden		Agroforest	
	% of n=2	Area (ha)	% of n=48	Area (ha)	% of n=3	Area (ha)
Beans			11.6	4.76		
Broccoli			4.7	0.88		
Cabbage			16.3	4.80		
Carrot			1.2	0.50		
Cauliflower			1.2	0.25		
Celery			1.2	0.25		
Chinese cabbage	50.0	0.13	27.9	5.44	33	0.25
Eggplant			4.7	1.00		
Pakchoy			1.2	0.25		
Pepper			4.7	1.75		
Potato			5.8	1.90		
Squash			1.2	0.75		
Sweet peas			3.5	1.15		
Tomato			15.1	4.38		

Respondents usually planted timber trees like eucalyptus, mangium, gemelina, falcate, mahogany, musizi, and teck tree. Some of them also planted fruit trees such as jackfruit, santol, and lanzones (Table 21). There was also a combination of banana-Chinese cabbage. As mentioned earlier, farmers frequently cultivated Chinese cabbage even in a tree-annual crop farming system.

It is not a common practice for the farmer-respondents to have tree-annual crop farming system as shown in Table 21. Only 18% of the households applied this farming system in their land. Majority of them were planting vegetables only or trees only (Table 22).

Table 21. Trees and annual crop species planted by respondents, 2006.

Tree Species	Annual Crop Species
Eucalyptus	Broccoli, sweet peas, beans, Chinese cabbage, corn, tomato, potato, cabbage
Mangium	Potato, tomato, Chinese cabbage, sweet peas, beans
Gmelina	Broccoli, sweet peas, potato, tomato, Chinese cabbage, beans
Jackfruit	Broccoli, sweet peas, potato, tomato, Chinese cabbage, beans
Falcata	Broccoli, sweet peas, potato, tomato, Chinese cabbage, beans
Santol	Broccoli, sweet peas, potato, tomato, Chinese cabbage, beans
Banana	Chinese cabbage
Lanzones	Broccoli, sweet peas, potato, tomato, Chinese cabbage, beans
Mahogany	Broccoli, sweet peas, potato, tomato, Chinese cabbage, beans
Musizi	Broccoli, sweet peas, potato, tomato, Chinese cabbage, beans
Teck tree	Broccoli, sweet peas, potato, tomato, Chinese cabbage, beans

Table 22. Number of households experienced with Tree-Annual crop farming system, 2006.

Item	Songco	
	n	%
Household experienced	9	18.00
Household not experienced	41	82.00

VI. PRODUCTION OF VEGETABLE AND AGROFORESTRY SYSTEM

6.1. Inputs and Cost of Production

6.1.1 Labor and External Inputs

Based on Table 23, land preparation requires the highest labor input as compared to other activities in the farm. All landuse types tilled by the respondent households posted the highest number of mandays in land preparation. All respondents who owned monoculture garden stated that they needed to prepare the land prior to the next activity since all of them were planting vegetables. As observed in the table, the agroforest area required the highest number of labor inputs for land preparation. This is due to the fact that farmers need to clean the area (uproot weeds, cut trees, etc.) where vegetables will be planted.

Table 23. Respondents' labor input use per activity, Songco, Lantapan, Bukidnon, 2006.

Particulars	Pasture	Monoculture garden	Agroforest	Fallow land
No. of parcel	2	48	3	2
Total area (has)	2.5	74.85	7.25	3.5
Labor inputs				
<i>1. Land preparation</i>				
* Plot with land prep. activity (percent)	50	100	67	
* Average labor (manday/ha)	48	30.68	136	
<i>2. Nursery</i>				
* Plot with land prep. activity (percent)	50	100	100	
* Average labor (manday/ha)	16	6.24	1.33	
<i>3. Planting</i>				
* Plot with planting activity (percent)	50	100	67	
* Average labor (manday/ha)	32	31.79	88	
Crop Management				
* Plot with crop management activity (percent)	100	100	67	
* Average labor (manday/ha)	20	35.95	38	
<i>4. Fertilizing</i>				
* Plot with fertilizing activity (percent)	100	98		
* Average labor (manday/ha)	8	10.70		
<i>5. Pesticide Application</i>				
* Plot with pesticide application activity (percent)	50	100		
* Average labor (manday/ha)	8	4.93		
<i>6. Harvesting</i>				
* Plot with harvesting activity (percent)	100	100		
* Average labor (manday/ha)	20	25.46		
<i>7. Sorting</i>				
* Plot with sorting activity (percent)		23		
* Average labor (manday/ha)		8.88		
<i>8. Grading</i>				
* Plot with grading activity (percent)		4		
* Average labor (manday/ha)		5.8		
<i>9. Transporting</i>				
* Plot with transporting activity (percent)	50	81		
* Average labor (manday/ha)	16	8.17		
<i>10. Marketing</i>				
* Plot with marketing activity (percent)	100	92		
* Average labor (manday/ha)	2	4.15		

Planting, crop management activities (which includes weeding, watering and maintaining the farm) and harvesting were also some of the activities that required high labor requirements. On the other hand, fertilizing, chemical application and marketing of the products required minimum labor. It was also noted in the table that only households

with monoculture garden performed sorting and grading activities. Classifying vegetables according to grade is important to set reasonable price for the product.

It is interesting to observe in Table 24 the decreasing tendency of labor mandays required by a plot for all farming activities, from land preparation up to marketing, as its size increases. The intensity of labor applied by farmers may vary depending on the size of their land. Since most of the residents of Songco depended on agriculture for their source of income, farmers with small landholdings tend to practice a more intensive farming to produce more out of their land. In reality, larger sized farms have higher labor requirements than small sized ones. Availability of labor may be one of the reasons for this. There may not be enough labor available for farming since most of the residents have their own farm and the farmer himself could no longer exert additional effort to fulfill the labor gap. Moreover, most of the respondents had non-farm work attend to.

Table 24. Labor inputs by landholding size and landuse type, Songco, Lantapan, Bukidnon 2006.

Land size (ha) by household	Pasture	Monoculture garden	Agroforest
	Average labor Input/ha		
≤ 0.5	212	162	468
0.51 - 1.0		140	
1.01 - 1.50		219	
1.51 - 2.0	10	196	
2.01 - 2.50		81	
≥ 2.50		148	60

External inputs include chemical and organic fertilizers, pesticides, herbicides, fungicides and other chemical inputs. Table 25 shows the different types of fertilizers used by the respondents in their farm. Obviously, organic vegetable farming was not a practice in Songco since 98% of the respondents were using pesticides in growing vegetables. It was noted that farmers were using huge amount of manure to grow vegetables. As mentioned earlier, majority of the respondents reported that they own less fertile land. This is the reason why they were using substantial amount of organic fertilizers like animal manure to continuously increase the fertility of their land. This could also dampen the effect of using inorganic fertilizers, which tend to decrease soil fertility gradually.

As observed in the table, monoculture gardens required different types of external inputs. This means that farmers with monoculture gardens had higher cost of production. This explains the large percent share of farm inputs in family expenditure presented earlier in Table 16 because majority of the respondents interviewed owned monoculture garden. On the other hand, respondents with pasture and agroforest areas applied pesticides, herbicides and fungicides but not much of fertilizers.

Table 25. Level of external input by land use type, Songco, Lantapan, Bukidnon, 2006.

	Pasture	Monoculture garden	Agroforest
No of plots	2	48	3
Total area (ha)	2.5	74.85	7.25
External inputs			
Chemical fertilizer			
* Urea (0-0-46)			
- Plot applying (%)		35	
- Average rate (kg/ha)		99	
* Complete (14-14-14)			
- Plot applying (%)		83	67
- Average rate (kg/ha)		340.35	250
* AmmoSul (21-0-0)			
- Plot applying (%)		10	
- Average rate (kg/ha)		230	
* Ammophos (16-20-0)			
- Plot applying (%)	50	13	
- Average rate (kg/ha)	400	188.89	
* Potash (0-0-60)			
- Plot applying (%)	50	35	
- Average rate (kg/ha)	200	339.83	
* Foliar spray			
- Plot applying (%)		8	
- Average rate (li/ha)		10.75	
* (18-46-0)			
- Plot applying (%)		4%	
- Average rate (kg/ha)		33.84	
* Zinc Sulfate			
- Plot applying (%)		2	
- Average rate (kg/ha)		14.67	
Organic Fertilizer			
* Lime			
- Plot applying (%)		4	
- Average rate (kg/ha)		412.22	
* Manure			
- Plot applying (%)	100	88	
- Average rate (kg/ha)	1800	2069.27	
Pesticide			
- Plot applying (%)	50	98	33
- Average rate (li/ha)	10	7.63	1
Herbicide			
- Plot applying (%)	50	77	33
- Average rate (li/ha)	12	9.59	0.25
Fungicide			
- Plot applying (%)	50	17	
- Average rate (li/ha)	8	4.33	

6.2. Main Production Problems

Based on the survey (Table 26), the top four production problems faced by respondents were insect and pest infestation (27.2%), weather condition (17.4%), lack of inputs (15.2%), and high price of inputs (10.9%).

Table 26. Production problems of vegetable-agroforestry system, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
Insects and pests infestation	25	27.2
Soil erosion	1	1.1
Blight	9	9.8
Stunted growth of crops	5	5.4
Water droplets of trees destroyed the leaves of crops	4	4.3
Lack of inputs	14	15.2
High price of inputs	10	10.9
Infertile land	3	3.3
Weather condition (drought, wilting of plants)	16	17.4
Distance of water source	1	1.1
Lower production	2	2.2
Low germination rate of plants	2	2.2

VII. MARKETING IN THE VEGETABLE AND AGROFORESTRY SYSTEM

7.1. Production and Sales

As presented in Table 27, Chinese cabbage was planted to most of the parcels. This was followed by cabbage, tomato, and beans. It is also exhibited in the table that while Chinese cabbage had the most number of plots planted, it was only next to squash and cabbage in terms of average yield. Only one parcel was planted with squash as well as carrot, cauliflower, celery and pakchoy. Pakchoy had the lowest yield at 100 kilograms. Almost all of the harvests of farmers were sold. The households consumed only 0.43% of beans they produced.

The baseline study revealed that Chinese cabbage, cabbage and tomato were among the most valuable crops in the area (Table 28). Among the vegetables planted by respondents, other potential ones were broccoli, celery, and pepper, since these three had the highest market price per unit next to sweet peas which was PhP 70/kg. Meanwhile, squash had the lowest price, which only cost PhP2 per kilogram.

Table 27. Farm outputs of respondents, Songco, Lantapan, Bukidnon, 2006.

Vegetable	Unit	n=parcel	Yield		Yield sold (%)	Yield consumption (%)
			Total	Ave. (per parcel)		
Beans	kg	10	11,546	1,155	99.57	0.43
Broccoli	kg	4	3,300	825	100	
Cabbage	kg	14	49,384	3,527	100	
Carrot	kg	1	1,000	1,000	100	
Cauliflower	kg	1	1,000	1,000	100	
Celery	kg	1	2,000	2,000	100	
Chinese cabbage	kg	26	74,635	2,985	100	
Eggplant	kg	4	5,250	5,250	100	

Pakchoy	kg	1	100	100	100
Pepper	kg	4	8,715	2,179	100
Potato	kg	5	5,950	1,190	100
Squash	kg	1	10,000	10,000	100
Sweet peas	kg	3	820	273	100
Tomato	box	13	2,067	159	100

Table 28. Farm income of respondents, Songco, Lantapan, Bukidnon, 2006.

Commodity	Unit	n=parcel	Ave. Price (PhP/unit)	Average Production (per ha)	Ave.Price x Ave. Production (per ha)	Actual Income ('000 PhP/ha)
Beans	kg	10	11.22	7,438.07	83,455.15	611.18
Broccoli	kg	4	30.00	3,700.00	111,000.00	426.00
Cabbage	kg	14	8.92	15,138.71	135,037.29	148.63
Carrot	kg	1	7.00	2,000.00	14,000.00	14.00
Cauliflower	kg	1	15.00	333.00	4,995.00	5.00
Celery	kg	1	20.00	8,000.00	160,000.00	160.00
Chinese cabbage	kg	26	6.24	14,419.24	89,976.06	188.53
Eggplant	kg	4	10.00	6,250.00	62,500.00	274.00
Pakchoy	kg	1	2.50	400.00	1,000.00	1.00
Pepper	kg	4	21.75	7,225.25	157,149.19	363.15
Potato	kg	5	16.00	3,024.00	48,384.00	200.80
Squash	kg	1	2.00	13,333.33	26,666.66	26.67
Sweet pea	kg	3	70.00	963.33	67,433.10	224.00
Tomato	box	13	155.00	756.96	117,328.80	1,111.97

Looking at the average production and price, the highest possible returns would be from the production of celery, pepper, tomato, cabbage and broccoli. Respondents' actual income per hectare were highest in the production of tomato, beans, broccoli, pepper and Chinese cabbage.

Table 29 indicates the perception of respondents on the changes in their income level for the past three years. Of the total respondents, 12.2 % perceived that their income increased for the past three years while 30.6% perceived that there was no change in their income. Those who felt that their income increased attributed this to the high price of produce, healthy crops, availability of technology, high value crops, good products and harvest, and good weather condition. Those who deemed that their income did not change for the past three years reasoned that this was due: high price of inputs, lack of capital, vegetable price is decreasing or fluctuating or the same and others.

Meanwhile, 57% of the respondents viewed that their income decreased for the past three years. These were attributed to: reduced or small area, no capital, low or fluctuating price of vegetables, high price of inputs, and low soil fertility among others.

Table 29. Income changes for the last three years of surveyed households, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
Experienced income changes		
No change	15	30.6
Increased	6	12.2
Decreased	28	57.1
Reasons for income changes:		
No Change		
High price of inputs	7	29.2
No inputs use for the past years	1	4.2
Lack of capital and inputs	8	33.3
Same income	3	12.5
Vegetable prices is low/fluctuating	3	12.5
Due to multiple cropping, able to get profit from other crops if price of 1 crop is low	1	4.2
Price of product is the same	1	4.2
Increased Income		
High price of produce crops	2	20.0
Healthy crops produce	2	20.0
Applied some new technologies/strategies	2	20.0
Shift to high value crops	1	10.0
Continuous planting and harvesting	1	10.0
Have good product and harvest	1	10.0
Good weather condition	1	10.0
Decreased Income		
Reduce/small area	12	26.1
No capital	2	4.3
Supporting college students	2	4.3
High price of inputs	9	19.6
Low/fluctuating price vegetables	13	28.3
Low soil fertility	4	8.7
No fallow	1	2.2
Production failure	2	4.3
Marketing problem (oversupply of product in the market)	1	2.2

7.2. Post Harvest and Marketing

Regarding marketing of farm commodities, respondents set the price of their vegetables by kilogram except for tomato which was generally sold by box. Farmers directly sold cauliflower and pakchoy to local traders (Table 30). This was due to large transportation cost of delivering these products to the market by the farmers themselves. As an alternative, they sold these to local traders. However, beans, carrots, celery, squash and sweet peas were sold to wholesalers. The rest of the vegetables were either sold to traders, wholesalers or retailers. Among the vegetables, cabbage, Chinese cabbage, pepper and tomato had the longest marketing chain. This has increasing effect on the market price as well as negative effect on quality of the vegetables reaching the consumers.

On the other hand, most of the farmers delivered the vegetables to wholesalers in Cagayan de Oro as seen in Table 31. Only few of them distributed their products to nearby towns and provinces like Malaybalay, Valencia, Lantapan, Aglayan and Davao. This demonstrates that farmers' participation in the market chain was not limited to mere production. They also participated in marketing of products. Majority of the respondents had adequate market access and sufficient information about the market.

Table 30. Marketable commodities and marketing chain used by respondents, Songco, Lantapan, Bukidnon, 2006.

Commodity	Collector/Trader	Wholesaler	Retailer	Wholesaler-retailer
Beans		100.0%		
Broccoli	25.0%	75.0%		
Cabbage	7.1%	85.7%	7.1%	
Carrot		100.0%		
Cauliflower	100.0%			
Celery		100.0%		
Chinese cabbage	7.7%	69.2%	11.5%	7.7%
Eggplant		50.0%	50.0%	
Pakchoy	100%			
Pepper	25.0%	75.0%		
Potato				
Squash		100.0%		
Sweet peas		100.0%		
Tomato	15.4%	69.2%	7.7%	7.7%

Table 31. Distribution of products by market, Songco, Lantapan, Bukidnon, 2006.

Commodity	Cagayan de Oro	Malaybalay	Valencia	Lantapan	Aglayan	Davao
Beans	10					
Broccoli	3					1
Cabbage	12	1		1	1	
Carrot			1			
Cauliflower	Pick-up					
Celery	1					1
Chinese cabbage	20		4	2	2	1
Eggplant	4		1			
Pakchoy	Pick-up					
Pepper	3					
Potato	3		1			
Squash	1		1			
Sweet peas	3					
Tomato	11					
Total	71	1	8	3	3	3

7.3. Main Marketing Problems in VAF

For more than fifty percent of the respondents (56%), the low and fluctuating price of vegetables particularly during harvest time was the major marketing problem.

Another was the high cost of labor (13.1%) while almost ten percent of them considered farm to market road as a marketing problem. Other problems were also mentioned such as oversupply of products in the market and the high cost of warehousing among others.

Table 32. Marketing problems of respondents in the VAF, Songco, Lantapan, Bukidnon, 2006.

Marketing Problem		
Low/fluctuating price of vegetables during harvest	47	56.0
High cost of transportation	2	2.4
High cost of labor	11	13.1
Waiting for the buyer to buy their produce	2	2.4
Oversupply of product in the market	7	8.3
Lack of government support (lack of subsidies, many middlemen)	1	1.2
High cost of inputs	1	1.2
Vegetables are difficult to market because buyers are looking for a good product	2	2.4
Farm to market road	8	9.5
High cost of product warehousing	3	3.6

VIII. GENDER PARTICIPATION IN AGRICULTURAL ACTIVITIES

This part of the study presents the level of participation of men and women in undertaking agricultural activities.

Table 33 presents the different agricultural activities carried out by the respondent households along with the participation of both men and women, and even by children, in each agricultural activity. As seen in the table, women participation was limited to certain activities. Men dominantly performed agricultural activities in the pastureland. In monoculture garden, although majority of the activities were still dominated of men, women had significant contribution, especially in marketing farm commodities. There was a bigger percentage of women who conducted marketing than men. Since majority of the farmers had market access and sufficient market information, it was not difficult even for women to do marketing of vegetables.

Women participation in agriculture may be dependent on the availability of labor for the household. It may also vary depending on the capability of households to hire labor as well as the availability of labor.

Men frequently controlled the spending for agricultural inputs. They made decisions in purchasing inputs based on what they perceived as important requirements in their respective farms. Only 18% of women made decision on this matter. In addition, only seven respondents consulted their spouse or son on farm expenditure decision (Table 34).

Meanwhile, in marketing decisions, the husband also dominate in the decisions according to more than 50% of the respondents. These decisions include: mode of marketing and timing of harvest as well as attendance to post-harvest and marketing

related trainings (Table 35). However, almost all of the respondents always participated in marketing decisions of the households (Table 36).

Table 33. Average level of labor input by landuse type (per parcel), Songco, Lantapan, Bukidnon, 2006.

	Pasture	Monoculture garden	Agroforest	Fallow land
No of plot	2	48	3	2
Total area (ha)	2.5	74.85	7.25	3.5
Labor inputs				
Land Preparation				
- Proportion of male (%)	100	96.8		
- Proportion of female (%)	0	3.2		
- Proportion of children (%)	0	0		
Nursery				
- Proportion of male (%)	100	90.8		
- Proportion of female (%)	0	9.2		
- Proportion of children (%)	0	0		
Planting				
- Proportion of male (%)	100	77.0		
- Proportion of female (%)	0	20.9		
- Proportion of children (%)	0	2.1		
Crop Management				
- Proportion of male (%)	100	79.4		
- Proportion of female (%)	0	19.2		
- Proportion of children (%)	0	1.4		
Fertilizing				
- Proportion of male (%)	100	92.3		
- Proportion of female (%)	0	7.5		
- Proportion of children (%)	0	0.2		
Pesticide Application				
- Proportion of male (%)	100	94.8		
- Proportion of female (%)	0	5.2		
- Proportion of children (%)	0	0		
Harvesting				
- Proportion of male (%)	100	83.5		
- Proportion of female (%)	0	14.4		
- Proportion of children (%)	0	2.1		
Sorting				
- Proportion of male (%)	0	81.6		
- Proportion of female (%)	0	18.4		
- Proportion of children (%)	0	0		
Grading				
- Proportion of male (%)	0	100		
- Proportion of female (%)	0	0		
- Proportion of children (%)	0	0		
Transporting				
- Proportion of male (%)	100	92.5		
- Proportion of female (%)	0	1.3		
- Proportion of children (%)	0	6.3		
Marketing				
- Proportion of male (%)	100	47.5		

- Proportion of female (%)	0	52.5
- Proportion of children (%)	0	0

Table 34. Person in control of agricultural inputs expenditures, Songco, Lantapan, Bukidnon, 2006.

	Songco	
	N=50	Percent
Family head	33	66
Wife	9	18
Family head and wife	4	8
Family head and son	3	6
No agricultural expenditure	1	2

Table 35. Decision-making in marketing farm commodities, Songco, Lantapan, Bukidnon, 2006.

Item	husband		wife		male adult child		husband and wife		husband and male adult children		husband, wife and male adult child		others		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
	Attendance to post harvest-related training	26	54.17	2	4.17	1	2.08	15	31.25	1	2.08	1	2.08	1	2.08	48
Attendance to marketing-related training	26	54.17	4	8.33	1	2.08	13	27.08	1	2.08	1	2.08	2	4.17	48	100
Timing of harvesting	28	58.33	1	2.08	1	2.08	14	29.17	1	2.08	1	2.08	2	4.17	48	100
Mode of marketing	23	47.92	6	12.50	1	2.08	14	29.17	1	2.08	1	2.08	1	2.08	48	100

Table 36. Degree of participation of respondents in marketing decisions of the households, Songco, Lantapan, Bukidnon, 2006.

	Post harvest training		Marketing training		Harvesting time		Mode of marketing		Total	
	n	%	n	%	n	%	n	%	n	%
Always	46	95.83	46	95.83	45	93.75	44	91.67	45	94
Sometimes	2	4.17	1	2.08	2	4.17	3	6.25	2	4
Few times	0	0	1	2.08	1	2.08	1	2.08	1	2
Total	48	100.00	48	100.00	48	100	48	100	48	100

IX. GENDER PARTICIPATION IN VILLAGE ASSOCIATIONS

There were eleven types of associations in the village mentioned by respondents and they were members of these (Table 37). The top three in terms of respondents' membership were the landcare, religious organizations, and farmers' association. However, in terms of participation, men participated more than the women.

Table 37. Associations in the village and participation of men and women, Songco, Lantapan, Bukidnon, 2006.

Associations	Association member (n)	Association participants					
		Male (n)	%	Female (n)	%	Both (n)	%
1. Farmers Association	15	9	69.23	3	23.08	1	7.69
2. ATSAL	6	6	100.00				
3. Tigbantay Wahig	1	1	100.00				
4. Land Care	20	18	94.74	1	5.26		
5. Senior Citizen's Club	3	1	50.00	1	50.00		
6. Religious Organization	19	1	5.56	1	5.56	16	88.89
7. Youth Association	7	1	14.29	1	14.29	5	71.43
8. Credit/ micro-credit group	5	2	50.00	2	50.00		
9. Kitanglad Guard Volunteer	3	3	100.00				
10. Women's Group	12	7	58.33	2	16.67	3	25.00
11. Tribal Group	2	2	100.00				

X. FAMILY FOOD SECURITY AND NUTRITION

Vegetables and fruits are considered to be nutritious food and are actually a must in the nutritional requirements of individuals. The consumption of these may be dependent on the availability and affordability of vegetables and fruits. Almost 75% of the respondents consumed vegetables three times a day while 51% of them ate fruits once a day. As to the number of vegetables and fruits consumed daily, 38% of them consumed 4-5 vegetables a day while 36% consumed 6-7 fruits a day (Table 38).

Respondents grew, collected or purchased the vegetables and fruits they consumed. Of the respondents, 34% said that they grew 41-60% of the vegetables they consumed while 24.5% said that they grew 41-60% of the fruits they ate. Meanwhile, more than half of the respondents said that they collected about 21-40% of the vegetables they consumed and 28.6% of respondents contended that they collected the fruits they consumed. However, some of them also purchased the vegetables and fruits that they consumed. Majority of the respondents did not purchase their vegetables while 30.6% of them purchased 21-40% of the fruits they ate. Of those who purchased, they said that they spent more or less PhP 50 per week for vegetables (58.8%) and fruits (47.2%). On the average, respondents spent PhP 123 and PhP 126 every week for vegetables and fruits, respectively.

Table 38. Comparison of the surveyed households' consumption of fruits and vegetables, Songco, Lantapan, Bukidnon, 2006.

Item	Vegetables		Fruits	
	n	%	n	%
Times per day family eat				
< once			25	51.0
Once	2	4.0	12	24.5
Twice	11	22.0	7	14.3
Thrice	37	74.0	5	10.2
Number of fruits and vegetables consumed				
2-3	13	26.0	14	28.0
4-5	19	38.0	14	28.0
6-7	15	30.0	18	36.0
8	3	6.00	4	8.00
% consumed by the respondents				
Grown				
None	3	6.0	7	14.3
≤ 20	7	14.0	9	18.4
21-40	9	18.0	10	20.4
41-60	17	34.0	12	24.5
61-80	4	8.0	6	12.2
81-100	0	0	5	10.2
Collected				
None	1	2.0	13	26.5
≤ 20	8	16.0	10	20.4
21-40	26	52.0	14	28.6
41-60	6	12.0	9	18.4
61-80	5	10.0	2	4.1
81-100	4	8.0	1	2.0
Purchased				
None	32	65.3	12	24.5
≤ 20	8	16.3	11	22.4
21-40	6	12.2	15	30.6
41-60	1	2.0	1	2.0
61-80	1	2.0	1	2.0
81-100	1	2.0	9	18.4
Amount spent in purchase (PhP)				
≤ PhP50	10	58.8	17	47.2
51 - 100	4	23.5	7	19.4
101 - 150			3	8.3
151 - 200			4	11.1
>200	3	17.6	5	13.9
Minimum amount spent/week (PhP)	5		10	
Maximum amount spent/week (PhP)	500		500	
Average amount spent/week (PhP)	123		126	

Majority (63.3%) of the respondents viewed that food was sufficient for them for the whole year (Table 39). Of those who viewed that food was insufficient for them, said that this occurred within one to six months of the year. The major reason for the

deemed food insufficiency was that there were no funds to buy inputs. One of the ways to meet food needs was to borrow money for buying food (30%). However, to forty percent of them, their food consumption increased, while 22% perceived that it decreased. One significant reason for the perceived increase in food consumption was that because children are now grown up and high price of food. On the other hand, one reason for the deemed decrease in food consumption was that because children go to school. Some perceived that their consumption did not change because their income did not change also and because of the big family size.

Table 39. Respondent's food sufficiency, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
Food sufficient for whole year		
Yes	31	63.3
No	18	36.7
Number of months of food shortage		
1 - 6 months	19	95.0
7 - 12 months	1	5.0
Reasons for food insufficiency		
Limited land	5	11.1
Low land productivity	6	13.3
Infertile land	4	8.9
Poor water supply	5	11.1
No funds to buy inputs	13	28.9
Big family size	6	13.3
Money used to support students	1	2.2
Low price of vegetable crops	2	4.4
No exact harvest	1	2.2
Bad weather condition	2	4.4
Ways to meet food needs		
Buying from market	3	10.0
Borrowing money to buy food	9	30.0
Borrowing grain	5	16.7
Eat fewer meals	1	3.3
Eat different foods	3	10.0
Migrate for work	3	10.0
Budgeting	1	3.3
Plant root crops	4	13.3
Husband shift to carpentry	1	3.3
Difficulty managing food needs		
Not a problem	15	44.1
Relatively difficult	19	55.9
Food consumption changes		
No change	19	38.0
Increased	20	40.0
Decreased	11	22.0
Reasons for food consumption changes		
No Change		
No capital to expand	1	2.1
Someone give allowance to him every month	1	2.1
Additional consumption because children grown up	6	12.5
Small family size	5	10.4
Big family size	9	18.7
High price of food	4	8.3
Low land productivity	3	6.3
Vegetable prices is too low	1	2.1
More production in the farm	4	8.3

No change in income	9	18.8
Stable income come from other job	1	2.1
Eat less than before	1	2.1
Same number of family member	3	6.3
Increased Food Consumption		
Additional consumption because children grown up	2	18.2
Big family size	1	9.1
High price of food	5	45.5
Low land productivity	1	9.1
Children go to school	1	9.1
No stable source of income	1	9.1
Decrease Food Consumption		
Children go to school	1	50.0
Vegetable prices is too low	1	50.0
Increase illnesses than 5 years ago		
Yes	32	69.6
No	11	23.9
Same	2	4.3
Maybe	1	2.2

XI. TRAINING AND EXTENSION

Trainings and extension activities are necessary to upgrade the knowledge and skills of farmers, particularly on new agricultural technology as well as on capacity building of farmers who are members and officers of associations and cooperatives. In the village, respondents have attended various trainings related to agriculture, environment, capability building for organizations, religious activities, and others (Table 40). The top three trainings in terms of the percentage of respondents who attended were on: soil conservation (22.6%), capability building (21.0%), and vegetable production (14.5%).

Male participation in training and extension activities was mostly on capacity building and soil conservation for both 'rich' and 'poor' respondents. Meanwhile, female participation among the 'rich' ones was on fishery and soil conservation while the 'poor' ones were on vegetable production and enterprise trainings. It can be gleaned here that 'poor' female household members were more interested in trainings which they deemed would have potential to improve their income. It was encouraging to find out that male household members were interested in the conservation of soil in the village.

Among the respondents, 68% said that they learned from the trainings they attended and that they applied what they learned (56%). Benefits from the training include: skills improvement, prevention of soil erosion, and increased cash income (Table 41). These trainings were supportive of both men and women in the village according to 85.37% of the respondents. Moreover, these trainings were also supportive of both better-off and poor households.

Table 40. Attendance to training, by economic status*, Songco, Lantapan, Bukidnon, 2006.

Type of Workshop/Training	Rich				Poor				No. reported **	% total
	Male		Female		Male		Female			
	n	%	n	%	n	%	n	%		
1. Livestock	1	5.0	0	0.0	2	6.3	0	0.0	3	4.8
2. Fishery	0	0.0	2	50.0	3	9.4	0	0.0	5	8.1
3. Vegetable Production	2	10.0	0	0.0	3	9.4	4	66.7	9	14.5
4. Tree/Forestry	2	10.0	0	0.0	2	6.3	0	0.0	4	6.5
5. Soil Conservation	5	25.0	2	50.0	7	21.9	0	0.0	14	22.6
6. Marketing	0	0.0	0	0.0	1	3.1	0	0.0	1	1.6
7. Enterprise	1	5.0	0	0.0	3	9.4	1	16.7	5	8.1
8. Capacity building of Organization	6	30.0	0	0.0	7	21.9	0	0.0	13	21.0
9. Fieldtrip/Farmer Field School	1	5.0	0	0.0	2	6.3	0	0.0	3	4.8
10. Religious Activities	1	5.0	0	0.0	0	0.0	0	0.0	1	1.6
11. Others	1	5.0	0	0.0	2	6.3	1	16.7	4	6.5
Total	20	100.0	4	100.0	32	100.0	6	100.0	62	100

Note:

Average household income/mo=PhP8441.12

** Multiple responses

Poor: # of households below average income/mo = 31

Rich: # of households above average income/mo = 19

Table 41. Benefits gained and supportiveness of training to surveyed households, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
1. Learned from the training		
Yes	34	68.00
No	16	32.00
2. Apply what have learned		
Yes	28	56.00
No	22	44.00
3. Benefits from the training		
Skills improved	22	52.38
Increased cash income	5	11.90
Family health improve	2	4.76
Employment generated	3	7.14
Soil erosion prevented	9	21.43
Farming	1	2.38
4. Supportiveness of training for men and women in the village		
Equal for men and women	35	85.37
More for men	6	14.63
5. Supportiveness of training for better-off and poor households		

Equal for better-off and poor households	22	53.66
More for better-off households	9	21.95
More for poor households	10	24.39

Aside from the trainings attended by respondents, they sourced their information on agriculture from various forms. Most of the information on agriculture by respondents was based on their personal experiences. Other sources of information were from: other household members, neighbors/ other farmers, school/NGO, government and private extension workers, input dealers/vendors, farmers' organizations, traders, and media (Table 42).

Table 42. Respondents' sources of agricultural information, Songco, Lantapan, Bukidnon, 2006.

Item	General Farming	Erosion control	Soil fertility mgt	Fertilizer application	Water conservation	New crop cultivation	New seed	Pest control	Animal husb.	Market and prices	Forest/Watershed mgt
Own experience	56.2	58.1	51.4	58.0	67.2	59.2	53.5	54.3	65.2	60.0	69.2
Other household members	8.2	9.7	6.9	7.2	7.8	8.5	8.5	7.1	7.6	7.7	7.7
Neighbors/ other farmers	9.6	9.7	8.3	7.2	9.4	9.9	9.9	10.0	7.6	10.8	7.7
School/NGO	8.2	8.1	6.9	5.8	6.3	4.2	5.6	5.7	7.6	6.2	7.7
Government extension workers	1.4	1.6	1.4	0.0	3.1	1.4	2.8	4.3	6.1	1.5	3.8
Private company extension workers	1.4	1.6	4.2	8.7	1.6	7.0	11.3	10.0	1.5	1.5	3.8
Input dealers	0	0	0.0	1.4	0.0	0.0	0.0	1.4	0.0	1.5	0.0
Radio/television	0	0	1.4	0.0	0.0	0.0	2.8	0.0	0.0	3.1	0.0
Farmers' organization	0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Newspaper/magazine/other print media	0	0	1.4	1.4	0.0	0.0	1.4	0.0	0.0	1.5	0.0
Training	15.1	9.7	18.1	10.1	4.7	9.9	4.2	7.1	4.5	3.1	0.0
Market vendor	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0
Traders	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0

XII. COLLECTIVE ACTION

Collective action was still strong in the village as evidenced by the number of community problems that respondents collectively addressed. This may be attributed to the composition of the village's population which was still largely Talaandigs.

Respondents participated in collective activities in the village, particularly on problems such as pest infestation, tree planting, environmental restoration, and water problems among others (Table 43). They performed these activities with family members, neighbors, and with the local government. It may be observed that

respondents in the village were more concerned with the environmental problems as can be gleaned in the problems which they collectively address.

Table 43. Problems in which respondents act collectively, Songco, Lantapan, Bukidnon, 2006.

Problem	n	Family member	Family member and neighbor	With neighbor	With LGU	With neighbor and LGU	All
Pest infestation	15	6.67	6.67	80.00	0	6.67	0
Lack of water	14	0	7.14	78.57	0	14.29	0
Hiring vehicle	5	0	0	100	0	0	0
Sandbags	5	0	0	100	0	0	0
Contour	3	0	66.67	33.33	0	0	0
Peace and Order	1	0	0	0	0	0	100
Tree planting	22	0	13.64	18.18	31.82	27.27	9.09
Environmental restoration	19	10.53	5.26	5.26	47.37	26.32	5.26

XII. FARMERS' PRACTICES AND PERCEPTION

13.1. Farming Practices

13.1.1 Soil Conservation

Soil conservation was practiced in the village. Majority of the respondents (66%) also practiced this. About half of them viewed that there was moderate soil erosion in the area (Table 44). Moreover, almost 75% of them experienced soil loss due to tillage and rain (93.6%).

Respondents perceived that soil erosion may be addressed through contour/mulching (52.6%) and making a drainage (36.8%). They also suggested some measures to soil fertility such as: contour hedgerows (21.6%), mulching (21.6%), adding animal manure (18.9%), and organic farming (18.9%) among others. They also attributed soil loss from tillage to plowing (34.5%), rolling area (31%), and continuous tillage (20.7%). Soil loss due to rain was attributed by respondents to heavy rains and runoff water. Sixty percent of them viewed that one major constraint to soil conservation measures was it being laborious.

Table 44. Soil conservation practices of the surveyed households, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
1. Experience soil erosion		
Yes	33	66.0
No	17	34.0
3. Seriousness of soil erosion		
Very serious	8	18.2
Serious	3	6.8

Moderate	22	50.0
None	11	25.0
5. Measure to soil erosion		
Make a drainage	14	36.8
Contour/mulching	20	52.6
Alley cropping	1	2.6
Tree planting	1	2.6
Make a hole to hold the top soil	1	2.6
Put a canal	1	2.6
6. Measure to soil fertility		
Add animal manure	7	18.9
Contour hedgerows	8	21.6
Composting	2	5.4
Lime application	3	8.1
Mulching	8	21.6
Organic residue preservation	1	2.7
Fallow	1	2.7
Organic farming	7	18.9
7. Experience top soil loss from tillage		
Yes	29	74.4
No	10	25.6
8. Experience top soil loss from rain		
Yes	44	93.6
No	3	6.4
9. Reason for top soil loss from tillage		
Rolling area	9	31.0
Plowing	10	34.5
Continuous tillage	6	20.7
No contour	1	3.4
Drainage	1	3.4
Soil is pulverize & easily get eroded	1	3.4
Continuous usage of synthetic fertilizers	1	3.4
10. Reasons for top soil loss from rain		
Heavy rain	31	68.9
Heavy rain and rolling area	3	6.7
Rolling area	2	4.4
Soil erosion due to run-off water	9	20.0
11. Constraint to adopt soil conservation measure		
Its laborious	3	60.0
Area is flat	1	20.0
Alley cropping	1	20.0

13.1.2 Water conservation

Almost 60% of the respondents said that they experienced water scarcity and this was considered very serious by 41% of them and serious by 20% of the respondents. They suggested (61.9%) to use containers and drums to conserve water. Using hose was also suggested by almost 20% of them. Constraints to adoption of water conservation measures included: no hose, no other source of water or far from the river or water source.

Labor shortage was already being experienced in the area. This was experienced by respondents' farm activities such as: land preparation, planting, and harvesting. They address this shortage through employing family members, hire labor, trying to do it by themselves, or wait for available labor.

Table 45. Water conservation methods and labor shortage of the surveyed households, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
1. Experience water scarcity		
Yes	29	59.2
No	20	40.8
2. Seriousness of water scarcity		
Very serious	16	41.0
Serious	8	20.5
Moderate	6	15.4
None	9	23.1
3. Water conservation measures		
Use of containers and drums in the area	13	61.9
Use hose and container drums	1	4.8
Use of hose	3	14.3
Getting water from the river	3	14.3
Make a hole & put cellophane to store water	1	4.8
4. Constraints to adopt water conservation measure		
No other source of water	1	16.7
There is sufficient water in the area	1	16.7
Far from the river/water source	1	16.7
No hose to get water	2	33.3
No need because the area of the farm is near the river	1	16.7
5. Experience chemical poisoning		
Yes	7	14.0
No	43	86.0
6. Operations in which labor scarcity is experience		
Land Preparation	1	9.1
Land Preparation and harvesting	1	9.1
Harvesting	2	18.2
Planting	4	36.4
Planting and harvesting	2	18.2
Planting and hilling up	1	9.1
7. Measures to overcome labor scarcity		
Hire labor	3	30
Family member work together	4	40
Make sacrifice to finish the job on my own	1	10
Wait for available labor	2	20

13.1.3 Changes in Crop Production Practices

Respondents (80.9%) did not experience any change in their crop production practices (Table 46). Among the nine respondents who experienced change, three practiced crop rotation (vegetables and corn), two shifted from vegetables to corn, two

integrated tree and vegetables, and the rest identified changes in terms of intercropping, planting distance, fallow system, and shift from tomato to pepper. The reasons for these changes were: to increase income and harvest, failure of corn, higher price of fruit trees, and others.

Looking at the changes in terms of some farm activities, reasons for changes in land preparation were on the degree of plowing such as plowing twice, direct plowing and zero tillage. Meanwhile, changes in fertilizer application consisted of applying liquid fertilizer, using organic fertilizer, mixing fertilizer, and limits on the fertilizer applied. In terms of pest management, changes mentioned by respondents were trapping of pest through the yellow attractant and using biological control. For weed control, changes given were mulching/composting, Gramazone technology, spraying herbicides, and burning weeds. On irrigation change, the identified change was on drainage. Soil conservation changes, on the other hand were composting, contour farming, and organic farming. On soil fertility management, changes were composting/mulching, contour farming and organic farming. For harvesting changes, mentioned were use of the 'padala system' and direct selling to buyers.

Major reasons for changes were: for land preparation, controlling weeds; for fertilizer application, for better growth and development of plants and lack of capital; for pest management, to have healthier plants, produce safer products and because in the new method there is no need to apply chemicals; for weed control, reasons were less labor and to improve soil fertility; for soil conservation, reasons were to protect from soil erosion and to have healthier plants; for soil fertility management better soil management; and finally for harvesting were because of the high cost of transportation and to have higher income.

Table 46. Changes in crop production practices of the surveyed households, Songco, Lantapan, Bukidnon, 2006.

Item	n	%	
Cropping Pattern			
Experience change in crop production practices			
Yes	9	19.1	
No change	38	80.9	
Nature of change			
			% affected
Shift to vegetables from corn	2	18.2	75
Intercropping	1	9.1	50
Planting distance	1	9.1	62.5
Fallow system	1	9.1	100
Crop rotation(vegetables and corn)	3	27.3	75
Shift from tomato to pepper	1	9.1	100
Tree and vegetable integration	2	18.2	75
Reason for change			
Failure of corn	2	18.2	
For better income	4	36.4	
No competition for sunlight	1	9.1	
Healthy plants	1	9.1	
To have a good harvest	1	9.1	
It is longer crop	1	9.1	
High price of fruit trees	1	9.1	
Land Preparation			

Experience change in crop production practices			
Yes	5	10.4	
No change	43	89.6	
Nature of change			
Two times plowing	1	33.3	100
Zero tillage	1	33.3	100
Direct plowing	1	33.3	75
Reason for change			
To prevent weeds	1	100	
Fertilizer application			
Experience change in crop production practices			
Yes	6	12.2	
No change	43	87.8	
Nature of change			
Applying fertilizer in liquid form (hinubig)	2	33.3	100
Limitation on applying fertilizer	2	33.3	50
Turn organic	1	16.7	
Mixing fertilizer	1	16.7	
Reason for change			
No capital	1	33.3	
For soil management	1	33.3	
For better growth & development of plants	1	33.3	
Pest management			
Experience change in crop production practices			
Yes	6	12.2	
No change	43	87.8	
Nature of change			
Yellow trapping of attractant	3	75.0	50
More on biological control	1	25.0	100
Reason for change			
Healthy plants	1	33.3	
To produce safe products	1	33.3	
No chemical present in the new method	1	33.3	
Weed control			
Experience change in crop production practices			
Yes	14	28.6	
No change	35	71.4	
Nature of change			
Mulching/composting	3	25.0	83
Gramozone technology	2	16.7	50
Spray herbicides	6	50.0	27
Burn weeds	1	8.3	100
Reason for change			
For healthy soil, improve fertility of soil	2	20.0	
Good soil fertility	1	10.0	
For fast drying of leaves	1	10.0	
Use as fertilizer	1	10.0	
Less labor	5	50.0	
Irrigation/Drainage			
Experience change in crop production practices			
Yes	2	4.7	

No change	41	95.3	
Nature of change			
Use of drainage	1	100	50
Reason for change			
Water management	1	100	
Soil conservation			
Experience change in crop production practices			
Yes	10	20.0	
No change	40	80.0	
Nature of change			
Composting	1	12.5	50
Contour farming	6	75.0	65
Organic farming	1	12.5	
Reason for change			
Healthy plants	1	25.0	
Protect from soil erosion	3	75.0	
Soil fertility management			
Experience change in crop production practices			
Yes	12	24.5	
No change	37	75.5	
Nature of change			
Composting/mulching	4	33.3	100
Organic farming/use of organic fertilizer	6	50.0	70
Contour farming	2	16.7	
Reason for change			
Healthy plants & good production	1	20.0	
For good soil management	2	40.0	
To lessen the cost	1	20.0	
Improve soil fertility	1	20.0	
Harvesting			
Experience change in crop production practices			
Yes	4	8.2	
No change	45	91.8	
Nature of change			
Padala system	2	50	100
Direct selling (from farmer to buyer)	2	50	100
Reason for change			
High cost of transportation	1	50	
To have higher income	1	50	

13.2. Perception of Farmers of Their Agriculture and General Welfare

Respondents gave highest priority to availability of inputs (seeds, fertilizers, and agro-chemicals) (96%), variability of vegetable prices (96%), and low prices of vegetables (94%) (Table 47). In addition, respondents (80-88%) gave highest priority on soil fertility, insect pests and diseases, diversification of farm products, commercial vegetable cultivation, access to market, training on sustainable farm cultivation techniques, availability of technical information, lack of adequate food year-round, lack of money for children's education, lack of off-farm jobs/ labor wages, and poor

health/health care. They also gave highest priority to the following (60-78% of them): drought, weeds, security of land tenure and availability of labor. More or less half of the respondents gave highest priority to integrate trees in vegetable production in home garden (50%) and preservation of available production farmland/fallow (53%). Lastly, respondents also gave highest priority to integrate trees in the farm to improve income (44%) and access to credit (44%).

Overall, more respondents were very particular on prioritizing agricultural concerns than their welfare as can be noted in their priority list. To emphasize this, 88% of them gave high priority to lack of money for children's education, 84% of them gave high priority to adequate food year-round as well as health and health care while almost all of them gave high priority to input availability and price of vegetables.

Table 47. Priority level of respondents (%), Songco, Lantapan, Bukidnon, 2006.

Issues	No priority	Low	Moderate	High
1. Drought	12	6	4	78
2. Soil fertility and soil erosion	10	2	8	80
3. Weeds	6	4	12	78
4. Insect pest and diseases	6	0	8	86
5. Diversification of farm products	10	2	8	80
6. Integrate trees in vegetable production in home garden to improve farm nutrient	24	6	20	50
7. Commercial Vegetable cultivation to improve farm income	10	0	10	80
8. Integrate trees in the farm to improve income	30	10	16	44
9. Preservation of available production farmland/fallow	41	4	2	53
10. Access to credit	28	14	14	44
11. Security of land tenure	22	2	8	68
12. Availability of labor	24	2	10	64
13. Access to market	10	4	0	86
14. Availability of inputs (seed, fertilizers, and agro-chemicals)	2	0	2	96
15. Low vegetable prices	2	0	4	94
16. Variability of vegetable prices	4	0	0	96
17. Training on sustainable farm cultivation techniques	12	2	6	80
18. Availability of technical information	14	0	6	80
19. Lack of adequate food year-round	8	2	6	84
20. Lack of money for children's education	6	2	4	88
21. Lack of off-farm jobs/wage labor	16	4	0	80
22. Poor health and health care	13	6	0	81

XIV. LIVING CONDITIONS

Majority of the respondents (78%) had potable water system in their household. Almost 60% of them rated their house as 'good', four percent had 'very good' while

32.7% rated their house 'poor'. Firewood was used by 88% of the respondents for fuel while only three percent used commercial gas.

Table 48. House condition of the respondents' households, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
1. Source of water for home use		
Open well	1	2.0
River/stream/spring	4	8.0
River and potable water system	1	2.0
River and rain water	1	2.0
Ponds and potable water system	2	4.0
Rain water	2	4.0
Potable water system	39	78.0
2. Condition of house		
Poor	16	32.7
Fair	1	2.0
Good	28	57.1
Very good	4	8.2
3. Type of fuel usually used for cooking		
Firewood	44	88.0
Firewood and commercial gas	1	2.0
Commercial gas	3	6.0
Fire wood and bio-gas	1	2.0
Electricity	1	2.0

XV. CREDIT AVAILABILITY AND ACCESS

Less than half (40%) of the respondents borrowed money for the last twelve months (Table 49). Major purpose of loans was farming related. Average amount of loan was PhP 15, 764.71 payable after harvest or within a year. Sources of loans in the village were mainly from the bank or cooperative while others were sourced from friends and relatives, trader or farmer association.

Of those who availed of loans, 40% experienced not being able to pay which was mainly due to failure of crops or low price for their produce (Table 50). They (76%) also did not have difficulty of obtaining loans. Of those who had difficulty in obtaining loans (6), collateral requirement was the primary reason.

Table 49. Credit availment of the surveyed households, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
1. Borrowed money for the last 12 months		
Yes	20	40.0
No	30	60.0
2. Sources of loan		
Bank	7	35.0
Bank and credit for the poor	1	5.0
Credit for the poor	2	10.0
Local trader	1	5.0
Farmer association	1	5.0
Relatives, friends	2	10.0
Cooperative	6	30.0
3. Average amount borrowed		
< 5, 000	7	38.9
5, 001 - 10, 000	4	22.2
10, 001 - 15, 000	2	11.1
> 15, 000	5	27.8
Minimum amount borrowed	2, 000	
Maximum amount borrowed	100, 000	
Average amount borrowed	15, 764.71	
4. Duration of loan		
< 6 months	11	64.7
7 months - 1 year	3	17.6
> 1 year	3	17.6
5. Purpose of loan		
Farming	10	52.6
Off-farm	3	15.8
Farming and off-farm	1	5.3
Farming, off-farm and consumption	1	5.3
Bought a carabao	2	10.5
Medical expenses	1	5.3
Travel expenses	1	5.3
6. Lending conditions		
Payment after harvest	4	22.2
One year to pay	4	22.2
Moral character	1	5.6
Cooperative or tribe member	2	11.1
Land title	1	5.6
Motorcycle	1	5.6
Return the cow after giving birth to two calves	1	5.6
Savings	1	5.6
Salary	1	5.6
None	2	11.1

Table 50. Loan repayment of the surveyed households, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
1. Experience not paying loan		
Yes	4	40.0
No	5	50.0
Partially paid	1	10.0
2. Reasons for non-repayment		
Failure of crops, high cost of labor & inputs	1	25.0
Low price of product during harvest	2	50.0
Not yet due for the payment	1	25.0
3. Sources of credit		
sari-sari store	14	41.2
bodega	2	5.9
bank	7	20.6
relatives	5	14.7
vegetable financier	4	11.8
cooperative(FICCO)	1	2.9
local trader	1	2.9
4. Difficulties of obtaining loan		
Yes	6	24.0
No	19	76.0
5. Reason for difficulty of availing loan		
Afraid not been able to pay the loan	1	12.5
Need collateral for availment of loan	6	75.0
Never tried to borrow	1	12.5

XVI. ASPIRATIONS/QUALITY OF LIFE INDICATORS BY RESPONDENTS

As to the respondents' aspirations and quality of life desired, they were asked on three general aspects, namely: development of the farm, family situation in the future, and things they aspire in life (Table 51). The top three aspects under development of the farm, based on the mode were: variability of plants/products in the same area (26.1%), area expansion (23.9%) and to have own/additional capital to finance farming (15.2%). Meanwhile, as to their aspiration on family situation in the future, top three responses in terms of percentage were: professional children/brothers and sisters (39.6%), happy and peaceful family (20.8%), and stable work and money as well as good health (both 14.6%). As to the things that respondents aspire, top three answers in terms of percentage were: to have healthy, peaceful and happy family (27.3%), educate children (24.5%), and have a stable source of income (18.2%).

Table 51. Respondents' aspirations for their family and farm, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
1. Development of the farm		
Area expansion	11	23.9
To be an agroforest area	1	2.2
Farm to be rented out by other farmer because owner can no longer do the farming	1	2.2
To have own land	3	6.5
Adopt new farming system	1	2.2
Return soil fertility & have good production	1	2.2
Variability of plants/products in the same area	12	26.1
Stable income/production from the farm	6	13.0
To cultivate all the area	2	4.3
To find another land which is fertile	1	2.2
To have own/additional capital to finance farming	7	15.2
2. Family situation in the future		
Stable in terms of work and money	7	14.6
Improve living condition	3	6.3
Professional children/brothers and sisters	19	39.6
All family member will be married and blessed with more grandchildren	1	2.1
Good health	7	14.6
Eat three times a day	1	2.1
Happy and peaceful family	10	20.8
3. Things farmer aspire*		
To educate the children	27	24.5
Improvement of living condition	1	0.9
To be a millionaire	7	6.4
Help the poor	1	0.9
Build a church	1	0.9
Healthy, peaceful and happy family	30	27.3
Good harvest/staggered production	4	3.6
Always high price of vegetables	1	0.9
Stable sources of income	20	18.2
Improve farming system	1	0.9
To be married	1	0.9
Eat 3 times a day	6	5.5
To own/improve the house	8	7.3
To own a vehicle	1	0.9
To have kids	1	0.9

* Multiple responses

XVII. VAF AND NRM POLICIES

Generally, not all respondents were aware of vegetable agroforestry as well as natural resource management policies (Table 52). They were least aware of policies on vegetable production (91.8%) and combining trees and vegetables together in a farm (89.6%). Close to 42% were not aware of soil management policies while 32% were unaware of tree farming policies. Meanwhile, only 26.5% of them were unaware of water management policies as well as natural resource management policies (28.6%).

In Table 53, they were again asked on the policies they knew. Of the 50 respondents, only two knew about vegetable planting for home consumption, 19 about planting trees, six on non-cutting of trees, one each for zero tillage and soil fertility, ten on natural resource management, maximum of four on water management and 13 on soil management.

As to their involvement in policy formulation, 67.7% said that they were unable to participate. Of the ten respondents who were able to participate in policy formulation, accordingly they were able to attend barangay consultation, seminar about the policy and public hearing. They believed that benefits they derived from these policies were: improved farming system (6), financial support (5), and the chance to participate in training, seminars and exposure trips (4). Other benefits mentioned by respondents were: access to new farming technologies (1), access to market (1), improve vegetable production (1), and improved life as a whole (1).

Table 54 presents the ranking by respondents on the policies needed by farmers to adopt/promote integration of trees and vegetable farming system. Top three in their ranking were: enhancing the marketing system for farm production, promotion of sustainable farming technologies, improving the extension support of the LGU.

Table 52. Farmers' awareness of local policies, Songco, Lantapan, Bukidnon 2006.

Local Policies	Aware		Not aware	
	n	%	n	%
Vegetable production	4	8.2	45	91.8
Tree farming	34	68.0	16	32.0
Combining trees and vegetables together in one farm	5	10.4	43	89.6
Natural resource management	35	71.4	14	28.6
Water management	36	73.5	13	26.5
Soil management	28	58.3	20	41.7

Table 53. Respondents' participation in policy formulation, Songco, Lantapan, Bukidnon, 2006.

Item	n	%
1. Policies known by the respondents' households		
Vegetable Production		
Plant vegetable for home consumption	2	50.0
Crop rotation	1	25.0
Control on using vegetables	1	25.0
Tree Farming		
Planting of trees	19	70.4
No cutting of trees	6	22.2
Control soil erosion	1	3.7
Improve natural resources	1	3.7
Combining trees and vegetables together		
Planting of trees	1	33.3
Improve soil fertility	1	33.3
Zero tillage	1	33.3
Natural Resource Management		
Conserve water	1	4.8
Planting of trees	5	23.8
No cutting of trees	10	47.6
Manage the environment	2	9.5

Proper disposal of waste	2	9.5
No cultivation in a buffer zone area	1	4.8
Water Management		
Conserve water	3	13.0
Planting of trees	1	4.3
Payment for the use of water	4	17.4
No cutting of trees	2	8.7
Free from pollution	3	13.0
Clean water	3	13.0
Prevent water pollution	4	17.4
Proper disposal of waste	3	13.0
Soil Management		
Protect and give care	1	4.5
Organic farming	5	22.7
Manage well the soil by clean fallow method	3	13.6
Contour farming for hilly/sloping areas	13	59.1
2. Involvement in the formulation of policies		
Yes	10	23.3
No	33	76.7
3. Ways of participating in the formulation of policies		
Attended a seminar and public hearing (municipal and barangay level) and formulate policy	1	12.5
Attended a barangay consultation	5	62.5
Attended a seminar about the policy	2	25.0
4. Topics discussed in consultations and seminars		
Water and soil conservation	2	40.0
Water consultation	1	20.0
Contour farming	1	20.0
Tree Farming/NRM	1	20.0
5. Benefits gained from these policies		
Gained access to new farming technologies	1	5.3
Able to participate in training, seminars and exposure trips	4	21.1
Received financial support	5	26.3
Gained access to market	1	5.3
Improved own farming system	6	31.6
Improve vegetable production	1	5.3
Improve life as a whole not only in farming	1	5.3

Table 54. Ranking of policies needed by farmers to adopt/promote integration of trees and vegetable farming system, Songco, Lantapan, Bukidnon, 2006.

Item	Rank	n
Enhancing the marketing system for farm production	1	17
Promotion of sustainable farming technologies	2	22
Improving the extension support of the LGU	3	17
Subsidies/Tax concessions	4	9
Infrastructure support	5	16
Credit assistance	6	14
Land use rights	7	21
Institutional arrangements	8	29

XVIII. SUMMARY AND CONCLUSION

This baseline study in Songco, Lantapan, Bukidnon was conducted to determine the socio-economic conditions of vegetable farmers in the study area as well as provide information on the current farming and agroforestry practices of the farmers. Songco in Lantapan, Bukidnon was the study site. There were fifty vegetable farmers as respondents who were randomly selected.

Sources of secondary data were the Municipality of Lantapan and the local government of the village while primary data were collected through the survey.

The average household size of respondents was six of which four were members of the labor force. Incomes of respondents were from on-farm, off-farm and non-farm sources with more than half of them earning from non-farm sources. Farming was either the major or the secondary source of income of respondents. On the average, household income per month was PhP 8,441.12. Per capita income per month was estimated to be PhP 2, 142.42. The prevailing poverty threshold in the country is PhP 14,405 per month, and 80% of the respondent households were below this level. The average monthly expenditure of a household was about PhP 8,000. People were spending all that they earn, on the average.

Landholdings of respondents ranged from 1 to 3 parcels while size of landholdings ranged from less than half hectare to six hectares with an average of 1.6 hectares. Most of the plots of the respondents were planted with vegetables alone. Only few farmers were planting trees alone. Majority of them were planting vegetables only and some planted trees only.

Among the farm activities, land preparation required the highest labor input as compared to other activities in the farm with agroforest area requiring the highest number of labor inputs for land preparation. Planting, crop management activities (includes weeding, watering and maintaining the farm) and harvesting also had high labor requirements. It was noted that there was a decreasing tendency of labor mandays required per unit of land in farm activities as its size increases. Farmers with small landholdings tend to practice a more intensive farming than those with bigger ones. Big size farms may have availed of mechanized systems in some operations.

Chinese cabbage was planted to most of the parcels. Based on the survey, the top four production problems faced by respondents were insect and pest infestation, weather condition, lack of inputs and high price of inputs while marketing problems were low and fluctuating price of vegetables, high cost of labor and farm to market roads. Cagayan de Oro was the major outlet of respondents' produce.

Majority of the respondents' households consumed vegetables and fruits daily. While most of the respondents viewed that food was sufficient for them for the whole year, there were those who perceived that food was insufficient and this they attributed to lack of funds to buy inputs. They addressed this through borrowing money to buy food.

Men dominantly performed agricultural activities but women participated more in marketing. Respondents have attended various trainings related to agriculture, environment, capability building for organizations, religious activities, and others. Their

knowledge on agriculture was mainly from their experience as farmers as well as from trainings. Respondents participated in collective activities in the village, particularly on problems such as pest infestation, tree planting, environmental restoration, and water problems, among others.

Soil conservation was practiced in the village. The respondents perceived that there was moderate soil erosion in the area and this may be addressed through contour/mulching and making a drainage system. Most of them viewed that one major constraint to soil conservation measures was its being laborious. There was also water scarcity in the area which was considered serious to very serious by a substantial proportion of the respondents.

Meanwhile, more respondents were very particular on prioritizing agricultural concerns than their welfare as can be noted in their priority list. Aspirations of respondents on the development of their farms were variability of plants/products in the same area, area expansion and having own/additional capital to finance farming. As to their aspiration on family situation in the future, top three responses in terms of percentage were: professional children/brothers and sisters, happy and peaceful family, and stable work and money as well as good health. As to the things that respondents aspire in general, top three answers in terms of percentage were: to have healthy, peaceful and happy family; educate children; and have a stable source of income.

Generally, not all respondents were aware of vegetable agroforestry as well as natural resource management policies. They were least aware of policies on vegetable production and combining trees and vegetables together in a farm. Majority of them were aware of soil management policies, tree farming policies, water management policies as well as natural resource management policies. However, most of them were unable to participate in policy formulation. Of those who participated, their involvement was through attendance in barangay consultation, seminar about the policy and public hearing. They also believed that they derived benefits from being involved in policy formulation e.g., improved farming system, financial support, and the chance to participate in training, seminars and exposure trips. In their ranking of policies needed by farmers to adopt/promote integration of trees and vegetable farming system, respondents identified the following: enhancing the marketing system for farm production, promotion of sustainable farming technologies, improving the extension support of the LGU.

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