



LIVELIHOOD AND NEEDS ASSESSMENT OF WOMEN FARMERS IN ORMOC-KANANGA (OK) MOUNTAIN RANGES IN THE EASTERN VISAYAS REGION, PHILIPPINES

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Women are the backbone of development in rural and national economies. They play a vital and undeniable role in our lives which necessitates a proper assessment of their needs and current economic conditions. This project aims to assess the needs of women farmers in the Ormoc- Kananga (OK) mountain range and provide them with livelihood assistance to improve their standard of living. The city and municipal agriculturists of Ormoc and Kananga identified 13 barangays in the Ormoc-Kananga mountain ranges. All women farmers in the OK mountain range served as the population of the study. The sample size was drawn using Slovin's formula. A total of 502 women farmers were interviewed - 284 respondents from Ormoc City and 218 respondents from Kananga. Seventy-seven percent of women respondents were married. All of them had high school level of education. Aside from farming, being a hired farm worker for other farms was their main occupation. Seventy-eight percent of the farmers are actively participating in the farm decision-making. This implies that women farmers in the area played a role in planning and contribute in their farming operations. Seventy-two percent of the total annual earnings of the households (Php 44,446.60 or \$ 844.01) were from farm sources. For a family of five, this income level is far below the national set poverty line. To augment the family income, the respondents yearn for alternative sources. They also want to maximize farm production in order to raise farm income. Thus, the following courses of action were suggested to help the women farmers at the OK mountain ranges: 1) training on simple farm record keeping

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and farm profitability assessment; and 2) livelihood and farm enterprise development based on the endowments available in the area.

Keywords: women farmers, socio-demographics, livelihood, farm information, baseline study

1. INTRODUCTION

In today's world, women play a vital and prominent role in the economy. They don't just secure household needs, but they also perform activities beneficial to society. Women's contribution to agricultural production and development has proven to improve a nation's economic status (World Bank, 2003). However, women in comparison to men were often underprivileged in all aspects. Some of these gender inequality problems include issues in land ownership, security of land tenure, control over productive assets, and the inability of women to access credit and resources. There has been sufficient evidence that gender inequality limits economic growth directly and indirectly (Klasen, 2018; Gelb, 2001).

According to FAO (2011), women farmers work as efficiently as men if they have equal access to productive resources and services such as land, credit, and training. In this case, eliminating the gender gap in agriculture and policies with better information about their difficult experiences will help boost food and nutrition security globally. However, women farmers do not work only on the farm. They also have responsibilities in their respective families like child-rearing and doing household chores which are often unseen and unaccounted in GDP (Duflo, 2012). Most of the unpaid women workers belong to the agricultural sector (Philippine Statistics Authority, 2013).

Moreover, the same report from FAO revealed that women often receive benefits from extension and training services that help them improve their skills in agricultural farming. However, without addressing the causes of gender gap issues, the situation would worsen, leading to a negative implication on overall agricultural productivity. Hence, it is imperative to assess women's needs and current economic conditions to improve their wellbeing.

Although the Philippines has maintained to be in the top 10 countries globally in terms of gender equality, there are still challenges that exist because of poverty and vulnerability, especially in the rural areas (Sinha, 2017). As reported, many women still lack access to productive employment. Furthermore, unemployment rates for females in 2016 were noted to be at 5.2%. Specifically, in the same year, females employed in agriculture shared only 17.3% of the total

female employment in the country. In terms of agricultural wages, there is a wage differential in favor of the males. On average, female farmers received Php 260.78 daily wage while the males received Php 278.23, a Php 12.12 wage differential in favor of the male farmers (PSA, 2017). The Philippine Commission on Women (PCW) enumerated the pressing issues facing the women farmers of our country including (PCW, 2021):

1. *Unequal access and control of women and men in AFF to income, productive resources, credit, land rights and ownership, technical training, extension services, and fair markets.*
2. *Limited meaningful participation of women in AFF in the decision-making process and agriculture leadership at all levels.*
3. *Unequal distribution of unpaid care work/ household / domestic work results in less time and opportunity for women to engage in agricultural/ fisheries/ forestry work.*
4. *Role of women farmers/ fisherfolk/ foresters in agricultural/ fisheries/ forestry work insufficiently recognized.*
5. *Lack of accurate, regular and harmonized data and gender research within the AFF sector.*

Meanwhile, Ormoc City and Kananga are neighboring cities and municipalities that belong to Leyte's province. Ormoc City is considered an independent component city in the province of Leyte. It is the largest city of Leyte in terms of land area of 613.6 km² and the second largest in Eastern Visayas (Philippine Cities, 2021). On the other hand, Kananga is not a city but one of the municipalities of the province of Leyte and is considered a first-class municipality. Generally, these places are considered agricultural since their contribution to the local economy is vital. The primary crops planted are rice, corn, root crops, vegetables, fruit trees/bananas, sugarcane, coconut, and abaca. The rest is planted with other crops, used livestock and poultry, or produced inland fishery products. Ten percent (10%) are forest land, twenty percent (20%) grassland, and the rest is for other purposes. This side of the country is eyed to be the salad bowl of the Eastern Visayas region. In fact, the Department of Agriculture in partnership with PNOC- Energy Development Corporation, developed a 20,000-hectare area with the aim of making farmers a major grower of semi-temperate vegetables and high-value crops (Official Gazette of the Philippine Government, 2011).

The Ormoc- Kananga (OK) Mountain Ranges in Eastern Visayas is home to several women farmers. Like any village agricultural community, the role of women farmers is vital (Cagasan & Centino, 2019; McDougall et al., 2019; Verdida et al., 2020). However, there are no known studies conducted in OK Mountain Ranges related to its women farmers. Hence this study would be a bold attempt to elaborate on the situation of the women farmers in the site. Specifically, this study aims to (1) describe the socio-economic characteristics of women farmers in the OK Mountain Ranges, (2) determine their farm-related activities, as well as problems encountered, and (3) list the extension and educational needs in order to suggest appropriate plan of action for the welfare of women farmers in the OK Mountain Ranges.

2. METHODOLOGY

Survey Design and Data Collection

The study was conducted in 2017 and used primary and secondary data. The primary data were collected through personal interviews using a pre-tested interview schedule. Secondary data were gathered from secondary sources such as previous surveys, literature, expert opinions, and research reports from various institutions, government offices, and agencies. Further, Philippine Peso (Php) monetary values were converted to US Dollar (\$) currency using the annual average exchange rate of \$ 1 = PhP 52.66.

All women farmers in the OK mountain ranges served as the population of the study. Following Centino and Vista (2017), the sample size was drawn using Slovin's formula:

$$n = \frac{N}{1 + N(e)^2}$$

where n is the sample size, N is the population size and e is the level of precision. The level of precision is sometimes called the sampling error. This is the range in which the true value of the population is estimated. The value is often expressed in percent form (e.g., ± 5 percent). In this study, 5% is used. Slovin's formula was used since the research team did not have enough information about the population behavior. After computing the sample size, simple random sampling

was performed. Table 1 shows the distribution of sample women farmers in the OK mountain range.

Table 1. Distribution of sample women farmers in the OK mountain range, 2017

Project Site	N	n
Ormoc City	985	284
Kananga	480	218

Focus Group Discussion

Focus group discussions (FGDs) were conducted to obtain other relevant information and verify the study results. The FGDs solicited narratives, experience and opinions of women farmers as to their role in the farming system.

3. RESULTS AND DISCUSSION

Socio-demographic Characteristics of Women Farmers

A total of 502 women farmers were interviewed in this study. More than half 284 (57%) of sample respondents came from the selected barangays of Ormoc City, while 218 (43%) were from Kananga.

The average age of the respondents is 44 years old. Women farmers in Kananga are a little bit older with 46 years old as the average age than farmers in Ormoc City with 42 years old. Women farmers in Ormoc City and Kananga more or less have the same educational attainment and household size. In terms of total land holding, women farmers in Ormoc City have a higher total land holding than those from Kananga. On average, women farmers spent their lives for 19 years. Ormoc City farmers spent about 18 years, while 20 years in Kananga with an average income of Php 77,824.29 (\$ 1, 477.86) and Php 41,328.04 (\$ 784.81), respectively (Table 4).

The overall average annual income computed for both women farmers from Kananga and Ormoc City is Php 61,975.32 (\$ 1, 176.89). Among the total population, over $\frac{3}{4}$ of the respondents were married. The rest were common law/ live-in, widow, separated, and single (Table 3).

Table 2. Demographic characteristics of women farmers in Ormoc-Kananga mountain ranges

Variables	Ormoc	Kananga	Total
	Mean	Mean	Mean
Age (years)	42.00	46.00	44.00
Educational attainment (years)	7.70	7.4	7.57
Household size (count)	5.00	5.00	5
Total Land Holding (ha)	1.44	1.13	1.32
Years in farming (years)	17.97	20.53	19.06
Years of Residence in village (years)	21.43	32.44	26.25
Household Annual Income (Php)	77,824.29	41,328.04	61,975.32

Table 3. Civil Status (Other Women Farmers Characteristics)

Marital Status	Ormoc		Kananga		Total	
	n	%	n	%	N	%
Married	229	80.6	159	72.9	388	77.3
Widowed/Separated	12	4.2	23	10.6	35	7.0
Common Law/ Live-in	40	14.1	35	16.1	75	14.9
Single	3	1.1	1	0.5	4	0.8
Total	284	100	218	96	502	100

Household Annual Income

Table 4 shows the annual household income of women farmers in OK mountain ranges. Ormoc City with Php 77,824.29 (\$ 1, 477.86) is higher than those from Kananga with Php 41,328.04 (\$ 784.81). On average, their total annual income is Php 61,975.32 (\$ 1, 176.90), which is mostly sourced out from farming (Php 44,446.60 or \$ 844.01). This is followed by a non-farm income amounting to Php 6,596.18, other sources of income with Php 6,530.29 (\$ 124.01), and lastly, the off-farm with Php 4,402.25 (\$ 83.60). Ormoc farmers are earning more because they are cultivating high-valued vegetables. Further, the income turn-over from vegetable farming is comparatively faster than those in rice and corn production. Probably, there is a need for the Kananga farmers to venture into vegetable production to obtain more farm income. Given the right conditions, use of appropriate technology and support, vegetable production appears to be profitable (Castillo et al., 2021)

Farm income pertains to those obtained from the farm they are cultivating, while the off-farm income is obtained from activities beyond the farm. The non-

farm incomes are from salary, wages, pensions, and interest earned from private sectors. Moreover, other sources of income are from cooperatives, government, and non-government organizations (e.g. Tzu-Tzi & NCCP organizations). Since farm income has a great share of annual household income, helping farmers improve farming activity would increase their income and uplift their standard of living. This was highlighted by Giles et al. (2019) that farm income and enhancing agricultural productivity can contribute to welfare improvement among households in Eastern Visayas. Furthermore, according to McNamara & Weiss (2005), on-farm and off-farm diversification are close substitute strategies to reduce farm household income risk.

Table 4. Household annual income of women farmers in the OK mountain ranges

Annual household Income	Ormoc		Kananga		Total	
	Mean	SE	Mean	SE	Mean	SE
Farm	62,107.33	7,619.76	21,439.05	2,057.35	44,446.60	4,490.16
Non-Farm	5,324.87	1,560.24	8,252.39	811.00	6,596.18	951.77
Other Source of Income	7,389.67	640.94	5,410.73	483.11	6,530.29	420.84
Off-Farm	3,002.43	392.12	6,225.87	540.23	4,402.25	330.34
Total Household Income	77,824.29	7,778.26	41,328.04	2,125.65	61,975.32	4,564.79

Household Expenses

Table 5 presents the average monthly expenditures of the household-respondents. The average monthly household expense is Php 6,925.07 (\$ 131.51). More than 50% of this (Php 3,940.02 or \$74.82) goes to food consumption; Php 797.83 (\$ 15.15) for educational purposes; and Php 481.15 (\$ 9.14) for non-food expenses. Other expenses are utilities, transportation, household facilities, health, recreation, clothing, and communication. Other household expenses include expenses in baby supplies, livestock feeds, and load signal for television.

Farm Involvement of the Women Farmer in Ormoc-Kananga Mountain Ranges

As shown in Table 6, the land ownership of women farmers in Ormoc differs from those of Kananga women farmers. More than half of the women farmers in Ormoc were cultivating their own land, while in Kananga, more than

half were considered share tenants. It is also prevalent in Kananga area that more than one-third (38%) of the respondents were classified as hired farmworkers compared to a small portion under the same category in Ormoc, about 12%. This disparity is probably because the majority of the agricultural lands in Kananga are mostly owned by huge political clans in the town.

Table 5. Average household monthly expenses of the respondents

Average Household Monthly Expenses	Ormoc		Kananga		Total	
	Mean	SE	Mean	SE	Mean	SE
Food	3,888.23	132.34	4,007.5	125.91	3,940.02	92.66
Education	766.90	73.70	838.13	128.16	797.83	69.48
Non-food (toiletries)	517.73	49.57	433.49	23.65	481.15	29.90
Utilities	386.49	54.01	332.1	26.48	362.87	32.64
Transportation	438.14	82.55	236.27	19.27	350.47	47.62
Repair and Maintenance	261.87	56.98	356.61	62.28	303.01	42.09
Health	286.46	53.46	151.7	20.62	227.94	31.66
Recreation	139.51	23.46	234.7	25.93	180.85	17.51
Clothing	161.68	15.12	113.78	11.11	140.88	9.87
Communication	86.82	12.31	54.86	6.80	72.94	7.59
Other Expenses*	54.15	14.24	83.98	24.57	67.10	13.37
Total	6,987.97	289.61	6,843.12	246.65	6,925.07	195.59

* other expenses include baby supplies, livestock feeds, and load signal for television.

Table 6. Tenurial status of women farmers in the OK mountain ranges

Tenurial Status	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Owner Cultivator	154	54.2	35	16.1	189	37.6
Share Tenant	72	25.4	117	53.7	189	37.6
Hired Farm Worker	33	11.6	82	37.6	115	22.9
Free Access/Use	46	16.2	21	9.6	67	13.3
Part Owner	9	3.2	8	3.7	17	3.4
Leaseholder	5	1.8	12	5.5	17	3.4
Landlord	2	0.7	2	0.9	4	0.8

Land area

As reflected in Table 7, the total land area of the respondents in the study site were more than 1 hectare (1.33 hectares). However, the area used for farming was only three-fourths (0.75ha) of the total agricultural land. It indicates that land area for farming was not fully maximized by the women farmers. Most of the

respondents' reason is due to lack of capital to cultivate the remaining areas knowing that they only rely on family labor and limited family income. A potential way to maximized land use is through integrated farming where women farmers can combine crop farming and animal raising. This strategy can provide additional income to the family. It can also reduce risk in farm income earning through diversification of income sources (Giles et al., 2019; Williams et al., 2021). However, engaging in this activity might need guidance from the expert and financial support from the group agency.

Table 7. Total land area cultivated by women farmers in OK mountain ranges

Land Area (hectares)	Ormoc		Kananga		Total	
	Mean	SE	Mean	SE	Mean	SE
Total Land Area	1.44	0.12	1.17	0.17	1.33	0.10
Total Agricultural Land	1.07	0.07	0.95	0.09	1.02	0.06
Total Land Area Devoted to Farming	0.74	0.05	0.77	0.06	0.75	0.04

Land Use of Women Farmer Respondents

It can be seen in Table 8 that there were different important crops in the two municipalities. For instance, in Ormoc, about 2% of the land areas were used for rice production, while more than half (53%) of the farming area in Kananga was planted with rice. Also, in Ormoc, a wider farming area is devoted to vegetables and spices, while in Kananga, only a small portion of the farming area is used for the same venture (62% and 7%, respectively). Other common crops in the area include corn, abaca, flowers, coconut, peanut, banana, and sugar cane.

Table 8. Land use of women farmer respondents in OK mountain ranges

CROPS PLANTED	Ormoc		Kananga		Total	
	Mean	SE	Mean	SE	Mean	SE
Rice	1.45	0.46	53.09	3.16	21.28	1.71
Coconut	1.93	0.59	4.81	1.22	3.04	0.60
Vegetable/Spice	61.74	4.15	7.11	1.46	40.76	2.90
Corn	34.58	5.4	29.72	4.54	32.5	3.63
Flowers	5.19	1.21	1.28	0.55	3.69	0.78
Abaca	8.77	1.33	9.14	1.59	8.91	1.02
Root crops	0.55	0.4	0.27	0.16	0.45	0.25
Fruit	-	-	1.29	0.69	0.49	0.27
Other crops*	1.37	0.57	9.02	1.53	4.31	0.70

* other crops planted include peanut, banana and sugar cane

Farm Characteristics of Women Farmers in Ormoc-Kananga Mountain Ranges

Table 9 shows information related to the farm characteristics and cropping system. Most of the farmers were cultivating in hilly areas (90%) and flatland (51%). The soil type was commonly loam (36%) and clay type (34%). The sources of water for farming purposes came from rain (66%), creeks (65%), water tanks, hoses, and faucets (38%). This shows that water facilities are not that established and accessible to farms in the community. Other sources include irrigation and boreholes with a known water source deep down in the area. In terms of the cropping system, most women farmers were practicing mono-cropping (58%) and intercropping (35%). Enerlan and Bulayog (2020) reported that intercropping is one of the potential agricultural practices that can help maximize productivity despite limited farm area.

Table 9. Farm characteristics of women farmer respondents

Farm Characteristics*	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Topography						
Hilly	36	12.7	12	5.5	451	89.8
Flatland	138	48.6	116	53.2	254	50.6
Rolling/Steep	161	56.7	85	39	246	49
Soil Type						
Loam	120	42.3	58	26.6	178	35.5
Clay	89	31.3	82	37.6	171	34.1
Sandy	81	28.5	58	26.6	139	27.7
Silt	7	2.5	1	0.5	8	1.6
Source of Water						
Rain	221	77.8	110	50.5	331	65.9
Creek	169	59.5	158	72.5	327	65.1
Water tank/Hose/faucet	154	54.2	17	7.8	171	34.1
Irrigation	3	1.1	34	15.6	37	7.4
Hole (Water stock)	2	0.7	-	-	2	0.4
Cropping System						
Mono-cropping	147	51.8	145	66.5	292	58.2
Intercropping	115	40.5	60	27.5	175	34.9
Multi-storey	14	4.9	-	-	14	2.8
Crop Rotation	10	3.5	-	-	10	2.0
Relay Cropping	9	3.2	-	-	9	1.8
Sequential	5	1.8	-	-	5	1.0
Ratooning	1	0.4	-	-	1	0.2

* multiple response

Farm Practices of Women Farmers in the Ormoc–Kananga Mountain Ranges

Table 10 shows the farming practices of women farmers in the area. It shows that women farmers in the area were commonly using traditional varieties (75%). Around half of them were also using hybrid varieties bought from sellers in the nearby markets (48%). Meanwhile, the land preparation activities of the interviewed farmers include clearing (54.6%), plowing (48.6%), burning (5%), and zero tillage (4%). The planting method adopted by the farmer respondents were transplanting (67.3%), direct seeding (58.2%), and ratooning (6.4%).

Table 10. Farming practices of women farmers in the OK Mountain Ranges

Crops Information*	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Crops Variety						
Traditional Variety	273	96.1	103	47.2	376	74.9
Hybrid	185	65.1	56	25.7	241	48.0
HYV-Inbred	26	9.2	80	36.7	106	21.1
Land Cultivation						
Clearing	176	62.0	98	45.0	274	54.6
Plowing	130	45.5	114	52.8	244	48.6
Burning	16	5.6	9	4.1	25	5.0
Zero Tillage	15	5.3	5	2.3	20	4.0
Planting Method						
Transplanting	200	70.4	138	63.3	338	67.3
Direct Seeding	191	67.3	101	46.3	292	58.2
Ratooning	27	9.5	5	2.3	32	6.4
Plant Distribution						
Rows	190	66.9	79	36.2	269	53.6
Uniform Broadcast	100	35.2	142	65.1	242	48.2
Hills	66	23.2	16	7.3	82	16.3
Pot	3	1.1	1	0.5	4	0.8
Weeds Control						
Hand Weeding	257	90.5	173	79.4	430	85.7
Hoe	21	7.4	1	0.5	22	4.4
None	15	5.3	4	1.8	19	3.8
Plowing	15	5.3	3	1.4	18	3.6
Spray Herbicide	5	1.8	2	0.9	7	1.4

* multiple response

In terms of planting distribution, many farmers employed the row method (53.6%), especially in Ormoc area (67%), followed by the uniform/broadcast type of distribution (48.2%). The row methods can help protect the plants from floods and soil erosion, according to the farmers. With regards to weed control, farmers were into manual measures like hand weeding (85.7%), using hoe (4.4%), and plowing (3.6%). There were respondents answered who answered none or no weeding activity (3.8%), and a small part of the population used herbicide (1.4%).

Pest Control on Selected Crops

Table 11 and 12 shows the major crops planted in the chosen municipalities and the severity of the pest infestation in the area. Control measures done by the farmers were also recorded and presented in these tables. The presence and severity of pest infestations were also rated by the farmers in the area. It is reported in Ormoc that, on average, pest infestation is moderate (Table 11). This implies that they have probably adopted effective control mechanisms for this kind of problem. The commonly employed pest control strategy in Ormoc is the use of chemical spray.

Table 11. Pests Control on Selected Crops in Ormoc City

Ormoc City	Native onion		Native pechay		Chinese pechay		Cabbage		Sweet pepper	
	n	%	n	%	n	%	n	%	n	%
Pest infestation & Diseases										
None	11	12	5	6	2	3	1	2.0	4	10.0
Slight	29	33	32	37	13	19	8	16.0	15	37.5
Moderate	33	37	35	40	27	40	23	46.0	16	40.0
Severe	16	18	15	17	26	38	18	36.0	5	12.5
Total	89	100	87	100	68	100	50	100	40	100
Control Applied for pest infestation & diseases										
None	25	28.1	15	17.2	3	4.4	3	6.0	1	2.5
Chemical spray	59	66.3	64	73.6	60	88.2	44	88.0	37	92.5
Botanical spray	2	2.2	5	5.7	3	4.4	2	4.0	-	-
Physical control	1	1.1	2	2.3	1	1.5	-	-	-	-
Combination of chemical & physical	2	2.2	1	1.1	1	1.5	1	2.0	2	5.0
Total	89	100	87	100.0	68	100.0	50	100	40	100

In Kananga, Leyte, most farmers revealed that the severity of pest infestation in the area ranged from slight to moderate, and they used chemical sprays to control

these pest problems (Table 12). Meanwhile, it is important to note that a significant proportion of the population does not employ control measures related to pest and diseases. This suggests a need for them to be aware and updated on new, safe, and environmentally friendly technologies to control pest infestations.

Table 12. Pests Control on Selected Crops in Ormoc City in Kananga

Crops Planted in Kananga	Rice		Banana		Cassava		Coconut		Corn	
	n	%	n	%	n	%	n	%	n	%
Pest infestation & Diseases										
None	2	2	23	44	20	83	6	25	8	38
Slight	30	24	22	42	3	13	10	42	8	38
Moderate	83	65	5	10	1	4	5	21	4	19
Severe	12	9	2	4	-	-	3	13	1	5
Total	127	100	52	100	24	120	24	100	21	100
Control Applied for pest infestation & diseases										
None	14	11	44	85	24	100	16	67	10	48
Chemical spray	112	88	2	4	-	-	2	8	11	52
Botanical spray	1	1	-	-	-	-	-	-	-	-
Physical control	-	-	4	8	-	-	6	25	-	-
Combination of chemical & physical	-	-	2	4	-	-	-	-	-	-
Total	127	100	52	100	24	100	24	100	21	100

Farm Expenditure

The list of farm input expenditures by women farmers in the Ormoc-Kananga mountain ranges is shown in Table 13. Results show that farmers in the area are using synthetic fertilizers profoundly. Synthetic fertilizers are artificial combinations of chemical and inorganic substances where respondents spend an average of Php 3,207.97 to sustain the plant nutrients need. Since most women farmers do not own the land, especially in Kananga (refer to Table 6), and serve as share tenants, women farmers pay rent on the farm either in terms of cash or crop yields. Women farmers in Kananga spend Php 5,704.33 on farm rent while Ormoc farmers only spend around Php 453.44 per cropping. Other farm expenditures of women farmers include seeds (Php 1,154.54), pesticides and insecticides (Php 1,016.68), organic fertilizers (Php 606.38), herbicides (Php 57.21), and water facilities (Php 16.08). In terms of pesticide and insecticide, Ormoc had higher expenditure compared to Kananga (Table 13). For water facilities, Kananga

women farmers pay around Php 20.52 per cropping. Women farmers need to pay for water facilities maintenance like irrigation since most of them are rice farmers.

Table 13. Farm expenditures incurred by women farmers in the OK mountain ranges

Farm Expenditure	Ormoc		Kananga		Total	
	Mean	SE	Mean	SE	Mean	SE
Inorganic Fertilizer	3,177.75	324.86	3,260.79	554.26	3,207.97	288.36
Farm Rent	453.44	193.57	5,704.33	1,558.62	2,364.00	592.30
Seed	1,235.45	136.80	1,013.08	142.50	1,154.54	101.33
Pesticide/insecticide	1,233.28	122.31	638.00	105.95	1,016.68	87.89
Organic fertilizer	941.66	141.65	20.2	11.40	606.38	92.74
Herbicide	21.61	11.06	119.46	49.20	57.21	19.34
Water Facilities	-	-	44.21	20.52	16.08	7.52

Farm Assets

Table 14 shows the different farm assets of the women farmers. They referred to these assets as important tools used in their farming activities. Results show that the commonly used tools were bolo, shovel, hoe, sprayer, sickle, and plow. These farm implements are deemed to be very basic. These tools were acquired with an average of 5 years. Given this, the use of obsolete farm implements may hamper agricultural production. Other farm assets include net, tarp, knife, coconut gouge, Armstrong scale, flashlight, scythe, power wash, water sprinkler, seedling tray, shredder, slicer, wheelbarrow, and nylon thread (Table 14).

Common Farm Problems Encountered by Women Farmers

Table 15 shows the different problems encountered by women farmers in the area related to their farming activities. The top five issues that confront women farmers are the following; (1) pest/ rat infestation, (2) typhoons or heavy rains, (3) lack of financial capital, (4) drought, and (5) negative profit. Other issues also need attention, such as theft, soil/landslide, and strong winds. It can be noted from the results that climate change impacts such as floods, typhoons, and drought are indeed affecting farming business in the selected study sites (Table 15). Chandra et al. (2017) and Ruales et al. (2020) highlighted the potential for small scale farmers to adopt climate resilient farming practices to improve farm production amidst changing climate and weather patterns.

Table 14. Farm Assets used by women farmers in the OK mountain ranges

Farm Asset	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Bolo	275	96.8	215	98.6	490	97.7
Spade/shovel	213	75.0	108	49.5	321	63.9
Hoe	201	70.8	86	39.5	287	57.2
Sprayer	110	38.7	46	21.1	156	31.1
Sickle	16	5.6	110	50.5	126	25.1
Plow	42	14.8	62	28.4	104	20.7
Axe	53	18.7	28	12.8	81	16.1
Container ^a	41	14.4	2	0.9	43	8.6
Harrow	5	1.8	30	13.8	35	7.0
Hose	12	4.2	-	-	12	2.4
Crowbar	4	1.4	6	2.8	10	2.0
Water Pump	9	3.2	-	-	9	1.8
Tractor	-	-	8	3.7	8	1.6
Thresher	-	-	6	2.8	6	1.2
Other Farm Asset ^b	15	5.3	6	2.8	21	4.2
Average Farm Asset (years)	4		6		5	

* multiple response

^a container means basket, drum, plastic gallon, and bucket

^b other farm assets include net, tarp, knife, coconut gouge, armstronge scale, dohong, flashlight, scythe, power wash, water sprinkler, seedling tray, shredder, slicer, wheelbarrow, and nylon thread

Sources of Information

Table 16 shows the different sources of information of farmer respondents. This refers to where they acquire information that they use in their farming activities, such as weather/climate, farming techniques, sources of capital outlay, etc. Apparently, a huge proportion reported that their main source of information is the television (87%), followed by friends, co-farmers and neighbors (79%), local government (60%), and radio (43%).

It is important to note that the local government plays a big role in being a channel of information to help farmers. Hence, the local government should continue & sustain its effort to reach our farmers and feed them with useful ideas.

Table 15. Problems encountered & adaptations employed by women farmers

Common Problems Encountered & Adaptations Employed by Women Farmers*	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Pest/rat Infestation	245	86.3	146	67.0	391	77.9
Apply chemical spray	209	73.6	134	61.5	343	68.3
Remove through physical control	8	2.8	12	5.5	20	4.0
Typhoon/Heavy rain	231	81.3	156	71.6	387	77.1
Harvest the crops before typhoon	40	14.1	55	25.2	95	18.9
Replant/replace the damage crops	21	7.4	18	8.3	39	7.8
Lack of Capital	234	82.4	150	68.8	384	76.5
Take loan/credit to finance farm expenses	162	57.0	113	51.8	275	54.8
Manage the available resources	11	3.9	4	1.8	15	3.0
Drought/Heat Stress	241	84.9	110	50.5	351	69.9
Watering the plant	186	65.5	33	15.1	219	43.6
Store water in the container	15	5.3	2	0.9	17	3.4
Losses in production	191	67.3	120	55.0	311	62.0
Take credit/loan to finance farm expenses	70	24.6	35	16.1	105	20.9
Plant again	29	10.2	20	9.2	49	9.8
Floods	84	29.6	50	22.9	134	26.7
Build/Repair the water drainage near the farm area	42	14.8	14	6.4	56	11.2
Repair the plot damage	2	0.7	6	2.8	8	1.6
Thieves	85	29.9	17	7.8	102	20.3
Watch and guard the farm during harvesting season	17	6.0	1	0.5	18	3.6
Report to the barangay officials	11	3.9	1	0.5	12	2.4
Lack of time in farming	40	14.1	43	19.7	83	16.5
Hired farm laborer to do the task	13	4.6	41	18.8	54	10.8
Let other family member do the task	5	1.8	0	0.0	5	1.0
Soil/Landslide	42	14.8	12	5.5	54	10.8
Arrange the soil/rock	1	0.4	4	1.8	5	1.0
Plant Again	2	0.7	1	0.5	3	0.6
Strong Wind	1	0.4	2	0.9	3	0.6
Clearing the trees	-	-	1	0.5	1	0.2
Tornado	1	0.4	1	0.5	2	0.4

* multiple response

Table 16. Source of information used in the farming activities of women farmers in the OK mountain ranges

Source Of Information*	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Television	242	85.2	193	88.5	435	86.7
Friend, co-famer & neighbor	200	70.4	195	89.4	395	78.7
Local Government	130	45.8	173	79.4	303	60.4
Radio	122	43.0	94	43.1	216	43.0
Telephone/Cellphone	35	12.3	56	25.7	91	18.1
Family & relatives	4	1.4	18	8.3	22	4.4
Other source of information ^a	10	3.5	2	0.9	12	2.4

* multiple Responses

^a other sources of information include: internet, newspaper and buyer

Women's Participation in Farm Decision Making

Women farmers actively participate in the farm decision-making, as shown in Table 17. More than seventy-five percent (78%) or 388 respondents make farm decisions. This implies that women farmers in the area are empowered to plan and take action in their farming life. Similar with Balayar and Mazur (2021) there is clear evidence that women are active in farm decision making and active farm managers and income earners from vegetable production.

Table 17. Participation of women in farm decision making

Women Participation in Farm Decision Making	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Yes	240	84.5	148	67.9	388	77.3
No	44	15.5	70	32.1	114	22.7
Total	284	100	218	100	502	100

Access to Financial Service

It is important for farming households to have access to financial outlay increase since these farmers are at poor levels, as seen in their social-economic profit. Table 18 shows that microfinance institutions served as their main access to financial capital (35%). Microfinance services are aimed at poor clients who do not have access to formal financial sources. Microfinance is mostly collateral-free, has simplified savings and loan procedures, small size of loans and savings, repetitive

loans, the interest rate is usually in between money lenders and formal banks, free use of loans, repayment considers incomes from business as well as other sources, loan and savings products within manageable numbers and MFI's go to clients rather than clients going to MFI's (ADRA-Nepal, 2010). These are reasons why farmers choose to access financial services through microfinance.

Table 18. Financial institution accessible to farmers in OK mountain ranges

Credit Access	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Micro-Finance	108	38.0	66	30.3	174	34.7
Cooperative	34	12.0	9	4.1	43	8.6
Government Agencies	14	4.9	11	5.0	25	5.0
People Organization	9	3.2	12	5.5	21	4.2
Banks	3	1.1	3	1.4	6	1.2
Other	13	12.0	28	12.8	41	8.2

Loan Information

Table 19 shows the allocation of borrowed funds by the respondents from their financial sources. On average, the amount borrowed by the farmer respondents is around Php 12,000, and they use this to purchase farm needs (48%) and household consumption (15.3%). Furthermore, a part of the borrowed amount is used for business investments for non-farm income sources (10.6%), educational expenses (4.4%), house construction or house repair (3%), medical & health care (1.8%), and others.

When farmers were asked whether there is a need for collateral whenever they apply for a loan, almost sixty percent (59%) mentioned that there is no collateral needed to avail the loan. This confirms that farmer respondents prefer to access credit from microfinance institutions since it is easy to apply and does not require collateral.

For loan repayment more than half of the respondents (51.2%) have unpaid loan balances while only 17.7% reported that loans were fully paid.

Perceived Policies and Ordinance to be Implemented in the Community

Table 20 shows the policies and ordinances recommended by the women farmers of Ormoc-Kananga mountain ranges that need to be implemented in their community. Most of the respondents are concerned about the curfew time for teenagers and 62% of the respondents suggested implementing curfew policy. The

next policy and ordinance that women recommended concerned to illegal logging and selling of trees (40%), proper waste disposal (35%), stopping drug selling (21%), imposing fines for those who do not participate in barangay activities (14%), and discontinue gambling practices (14%). Few suggestions were on ordinances concerning the prohibition of farmers in using the forest land for farming (5%), the responsibility of the respondent to clean the surrounding (4%), stopping slash and burn or *kaingin* practice (4%), strict monitoring to penalize those who catch and kill endangered animals (4%), and policies that protect women and children from abuse (3%).

Table 19. Purpose, collateral & payment status of loan availed by women farmers

Loan Information	Ormoc		Kananga		Total	
	Mean	SE	Mean	SE	Mean	SE
Total Amount Loan	11,426.5	1,131.78	13,150.7	2,405.70	12,173.2	1,221.68
Loan Purpose	n	%	n	%	n	%
Farm Expenditure	162	57.0	77	35.3	239	47.6
Household Consumption	42	14.8	35	16.1	77	15.3
Business Investment	29	10.2	24	11.0	53	10.6
Education	5	1.8	17	7.8	22	4.4
House Construction/ Repair	3	1.1	12	5.5	15	3.0
Medical & Health Care	6	2.1	3	1.4	9	1.8
Other loan purposes ^a	8	1.4	4	0.5	12	1.0
Loan Collateral						
None	189	66.5	107	49.1	296	59.0
Harvest	2	0.7	16	7.3	18	3.6
Appliances	7	2.5	5	2.3	12	2.4
Land	5	1.8	5	2.3	10	2.0
Vehicles	2	0.7	-	-	2	0.4
Loan Payment status						
Installment ongoing (w/ unpaid balances)	158	55.6	99	45.4	257	51.2
Fully paid	51	18.0	38	17.4	89	17.7
Payment Stopped	2	0.7	-	-	2	0.4

^a other loan purposes include: insurance, payment for the past loan and expenses for preparation of documents needed necessary in working abroad

Some policies and ordinances suggested by women farmers were concerned about the security and safety of the community, just like curfew time, no to drugs ordinance, prohibit gambling practice, protection for women and

children from abuse, and others (Table 20). At the same time, other recommended policies and ordinances of women farmers were about environmental protection like protecting the trees, rivers, forests, animals and keeping the surroundings clean to avoid diseases.

Table 20. Respondents' recommended policy & ordinance to be implemented in the community

Policies and Ordinance*	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Curfew	172	60.6	137	62.8	309	61.6
No illegal logging and selling of trees	89	31.3	109	50.0	198	39.4
Proper waste disposal	62	21.8	110	50.5	172	34.3
No to drugs	21	7.4	86	39.4	107	21.3
Fines for the absent in <i>barangay</i> activities	15	5.3	54	24.8	69	13.7
Not allowed gambling practices	38	13.4	30	13.8	68	13.5
Ordinance prohibit in transforming of forest land to agriculture	2	0.7	23	10.6	25	5.0
Maintain the cleanliness of house surrounding	17	6.0	5	2.3	22	4.4
Punishment for practicing <i>kaingin</i>	12	4.2	7	3.2	19	3.8
Monitor to punish for catching and killing of endanger animals	1	0.4	17	7.8	18	3.6
Women and child abuse	5	1.8	10	4.6	15	3.0
Other policy and ordinances ^a	32	11.3	29	13.3	61	12.2

* multiple responses

^a other policies and ordinances include: Time limitation for drinking alcoholic beverages and spending videoke at night, no smoking public areas, penalties for using electricity in the river, regular meeting, coconut ban, policy utilization of water, prohibit in burning plastic materials and garbage, construction of building/ infrastructure for community use, provide farmer's needs, owner's responsibility in keeping their animals register the migrant household to barangay, provide household to own comport room, using semi-organic fertilizer in farming, punishment for stealing crops planted, grant loan program for livelihood capital and firework ban.

Access to Social Services

Women farmers in both areas of Ormoc and Kananga have access to basic social services (Table 21). The top 5 institutional/agencies include DSWD, City/Barangay Health Center, PNOC-EDC and NGOs. DSWD topped in Kananga (84%), while the city/barangay health center in Ormoc City where most women farmers access their services. The lowest rank goes to the DAR where only 1% accessed and nobody did from Ormoc City.

However, only half of the respondents have access to social services that focus on improving agriculture, like the Department of Agriculture (DA). This

government agency is responsible for the promotion of agricultural development by providing support services necessary to make agriculture and agri-based enterprises profitable. It also helps spread the benefits to poor people, particularly in rural areas. In this way, access to social services for agriculture can help farmers increase farm income, improve their farming activity, and improve their standard of living.

Some of the social support services they received include free medicines and vitamins supplements and sometimes cash assistance. Respondents yearned for social services that would improve their source of income, such as livelihood programs for livestock, poultry business, and conduct of training/seminar. Other respondents mentioned support that would increase their crop yields may include provision of agricultural tools and farm inputs like seeds, seedling, fertilizer, and pesticides.

Table 21. Social Institution Available to Women Farmers in the OK mountain range

Government/Non-Government Organization*	Ormoc		Kananga		Total	
	n	%	n	%	n	%
DSWD (Department of Social Welfare and Development)	189	66.5	184	84.4	373	74.3
City/Barangay Health Center	195	68.7	142	65.1	337	67.1
PNOC- EDC (Philippine National Oil Co.-Energy Development Corporation)	175	61.6	137	62.8	312	62.2
NGO (Non-Government Organization)	157	55.3	135	61.9	292	58.2
DA (Department of Agriculture)	128	45.1	124	56.9	252	50.2
Dep Ed (Dept. of Education)	122	43	86	39.4	208	41.4
LGU(Local Government Unit)	61	21.5	115	52.8	176	35.1
DENR (Department of Environment and Natural Resources)	16	5.6	3	1.4	19	3.8
DAR (Department of Agrarian Reform)	-	-	5	2.3	5	1

* multiple responses

Livelihood Needs of the Community

In order to increase sources of income and uplift the economic status of the farmers, they identified some training and livelihood needs (Table 22). The top suggested livelihood needs of the community was funding for agricultural production (30%) like pig, carabao, chicken, fish, cow, and goat production since not all agricultural land is used in farming. Next suggested livelihood needs for

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the community are business engagement (22%) such as vegetable selling, tailoring, sari-sari store, ice cream making, bakeshop, handicraft, cooking, and barbeque selling (Table 22). This only shows that respondents were able to identify alternative livelihood opportunities for their community other than crop farming. While it is worthy to note all of these livelihood alternatives, it is crucial to help these farmers develop enterprises within their level of resource endowment. Finally, farmers were able to identify the need for training on new technologies in farming, including the basics of farm record keeping, as many of them are not taking correct farm records. Similar results were reported by Diacamos et al. (2021) that small scale farmers need agricultural training to help them increase production and farm income.

Table 22. Identified livelihood needs of the community by the women farmers

Identified Livelihood Needs*	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Fund For Agricultural Production ^a	32	11.3	123	56.4	155	30.9
Business Engagement ^b	42	14.8	69	31.7	111	22.1
Funds for Fam Inputs ^c	62	21.8	19	8.7	81	16.1
Training for new techniques/technology for planting ^d	29	10.2	19	8.7	48	9.6
Training for new sources of income ^e	20	7.0	20	9.2	40	8.0
Livelihood Program	12	4.2	20	9.2	32	6.4
Job Opportunity for the Community	21	7.4	7	3.2	28	5.6
Available loan	14	4.9	2	0.9	16	3.2
Establish or fund the Association	3	1.1	6	2.8	9	1.8
Water Farm Facilities	4	1.4	5	2.3	9	1.8
Other Livelihood Needs ^f	9	3.2	10	4.6	19	3.8

* multiple responses

^a pig, carabao, chicken, fish, cow, goat

^b vegetable selling, tailoring, sari-sari store, ice cream making, bakeshop, handicraft, cooking, barbeque selling

^c seeds/seedling, fertilizer, funds/capital for farming, agricultural tools

^d training in farming/agriculture, organic fertilizer, recording/bookkeeping, livestock raising, fertilizer, pesticide

^e tailoring, manicure, cooking, handicraft, food processing/ cooking

^f other livelihood needs: construction of efficient road and highways, available vehicles for transportation, lower loan interest, soil analysis, increased wage for hired laborer, support farm recovery in Yolanda, help farmer own the land, help DA technician in solving farm problem, support tourism activity, price control on their crop harvest and price control on-farm inputs.

Respondents' Perceived Community Needs Required for Development

Roads and bridges are the most wanted infrastructure needs in the OK mountain ranges. This will encourage investors and facilitate ease of transporting products to and from market (56%). Water supply (25%) and street light installations (23%) are also highly demanded by both areas (Table 23). Other identified needs include supplies and equipment for barangay clinic, recreational facilities, transportation facilities, installation of comfort room for each household, construction of school building with facilities, and reduced water and electric bills. In addition, they demand the regulation against vices, strong implementation of barangay rules and regulations, installation of rice/corn mills, and other community needs.

Table 23. Perceived community needs by the women farmers

Identified Community Needs*	Ormoc		Kananga		Total	
	n	%	n	%	n	%
Construction of road and bridges	146	51.4	137	62.8	283	56.4
Water supply facilities	45	15.8	81	37.2	126	25.1
Presence of street light	61	21.5	54	24.8	115	22.9
Available supply and equipment for barangay clinic	19	6.7	24	11.0	43	8.6
Construction of recreational building	16	5.6	10	4.6	26	5.2
Transportation facilities	23	8.1	1	0.5	24	4.8
Follow rules and regulations of the village	9	3.2	9	4.1	18	3.6
Comfort room for each household	4	1.4	13	6.0	17	3.4
Construction of school building & facilities	5	1.8	10	4.6	15	3.0
Reduce water & electric bill	8	2.8	5	2.3	13	2.6
Regulates vices	4	1.4	8	3.7	12	2.4
Strong implementation of rules and regulation of barangay	-	-	10	4.6	10	2.0
Available rice/corn mill in the area	10	3.5	-	-	10	2.0
Other Community Needs ^a	40	14.4	18	9.2	58	12.2

* multiple responses

^a other community needs: presence of water drainage, proper negotiation of landowner and gov. officials, available doctor, nurse and midwife in public hospital and clinic, construction of riprap, community unity, regular community meeting, construction relocation area, available scholarship for children, establish cooperative or organization, proper waste disposal, area monitoring for community security, conduct proper auditing of barangay's officials, barangay tree planting, lower transportation fare, price control of primary goods, presence of water meter for each household, regular inspection on public vehicles, regular garbage collector and community cleaning.

4. CONCLUSION

This study generally aims to assess the needs of women farmers in the Ormoc- Kananga Mountain Ranges and provide them with livelihood assistance that can uplift their living standards. Women farmers in the study area are generally married and have a household size of five. In terms of educational attainment, many respondents are high school undergraduates with an average number of years in school equal to 7.7 years. In terms of the annual household income, the results showed that most of their incomes came from farm sources Php 44, 446.60 (\$ 844.01), then from non-farm sources Php 6, 596.18 (\$ 125.26) and from other income sources Php 6, 530.29 (\$ 124.01). This is a validation that indeed farming is their main source of living. However, for a family of five, these income levels are low and can be considered below the provincial poverty line. According to PSA (2020), in 2018, the average monthly poverty threshold in the province of Leyte for a family of five is Php 10, 716 (\$ 203.50). Given the results, farmers included in the study are considered poor since their monthly income is way lower than the computed monthly poverty threshold, around Php 5, 164.61 (\$98.07). Hence, there is a need for appropriate plans to help improve their income status by facilitating and extending necessary aid in their farming endeavors.

Farm-related information of the farmer respondents was also reported. Based on the reports, the important crops in Ormoc were spring onions, pechay, Chinese cabbage (*umbok*), cabbage, and sweet pepper, while in Kananga, the important crops were rice, banana, cassava, coconut, and corn. In general, women farmers used basic farm tools like bolo, hoe, and sickle. It is important to note that these tools were already obsolete during the time of the interview, hence these may affect farm productivity. Furthermore, farmers in the area reported that pest infestation is between slight to moderate, and they are using chemical sprays to control this problem.

The results of the study highlighted the livelihood needs in the Ormoc-Kananga (OK) mountain ranges as suggested by the women respondents, such as availability of funds for agricultural production (30.9%), business engagement (22.1%), and availability of funds for farm inputs. Aside from the livelihood needs, the farmers recommended several communities needs that were deemed necessary, namely construction of roads and bridges (56.4%), improvement of water supply facility (25.1%), and presence of street lights (22.9%). In connection with these, the study recommended that trainings related to record-keeping are a must among farmers in the area since many are not keeping track of their farming

activities. This is crucial since this is an essential step in transforming our farmers into profitable entrepreneurs. Moreover, the study recommends the provision of extension services in developing other enterprises that can be considered as another source of income among women farmers. Specifically for Kananga farmers, it is suggested that they try to venture into vegetable production to help increase and diversify their farm income. With diversified farming, their livelihood will not be too vulnerable in case of farm failure brought by any natural or physical calamity, diseases, and other factors.

5. CONFLICT OF INTEREST

The authors declare no conflict of interest.

6. INFORMED CONSENT

Informed consent was obtained from all respondents involved in the study.

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