CTU Journal of Innovation and Sustainable Development
ISSN 2588-1418 | e-ISSN 2815-6412

DOI:10.22144/ctujoisd.2024.290

Impact assessment of empowering small-scale farmers through the Mag-Uma Kaupod ang Pamilya Extension (MUKaPE) Program of the DEBESMSCAT-Cawayan Campus

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Article info.

Received 14 Oct 2023
Revised 20 Jan 2024
Accepted 6 Mar 2024

Keywords

Farmer-beneficiaries, impact assessment, MUKaPE, small-scale farmers

ABSTRACT

This study examined the effectiveness of the Mag-Uma Kaupod ang Pamilya Extension program in benefiting local farmers in Barangay Itombato. A descriptive research design and purposive sampling were used to select 17 farmer-beneficiaries for interviews. The program demonstrated a positive impact on the production performance and attitudes of farmer-beneficiaries. After the program, the percentage of beneficiaries reporting good yields increased from 35% to 65%, and profitability improved from 35% to 88%. Farmer-beneficiaries reported increased enjoyment of farming, a positive perception of profitability, and a stronger desire for their children to continue farming. Crop cultivation patterns shifted towards diversification and income generation. However, certain challenges faced by the farmer-beneficiaries, including soil fertility, fertilizer management, machinery access, post-harvest infrastructure, and marketing, remained unaddressed. The study emphasized the program's significant positive influence on production performance, with good yields increasing to 65% and profitability rising to 88% after the program. Constraints such as soil fertility, fertilizer management, machinery access, post-harvest infrastructure, and marketing required targeted interventions. The MUKaPE program improved access to agricultural information, support services, farmers' organizations, and training. However, areas such as irrigation, market assistance, and farm-to-market roads still needed improvement. Farmer beneficiaries highlighted the importance of irrigation, fertilizer assistance, market access, training, machinery access, financial support, electrification, and post-harvest facilities for enhancing farming practices. These findings emphasized the need to address water management, input accessibility, infrastructure development, knowledge dissemination, technological advancements, financial support, and value chain enhancement to enhance productivity, profitability, and sustainability in farming activities in Barangay Itombato.

1. INTRODUCTION

Extension service is a core mandate of state universities and colleges aimed at helping marginalized sectors improve their living conditions. Small-scale farmers play a vital role in global food security by significantly contributing to agricultural production and rural livelihoods (FAO, 2015). However, these farmers often face numerous challenges, including limited access to resources, market opportunities, and technical knowledge (IFPRI, 2012). In response to these challenges, various programs and initiatives have been implemented globally. Extension programs are vital in rural development, particularly those in the agriculture economies as they facilitate the flow of information, support rural adult learning, and assist farmers in developing their technical and managerial skills. By providing farmers with access to the latest knowledge and technologies, these programs contribute to agricultural productivity, sustainable farming practices, and rural development (Danso-Abbeam et al., 2018).

One such program is the Mag-Uma Kaupod ang Pamilya (MUKaPE) Program, implemented by the DEBESMSCAT-Cawayan Campus in barangay itombato, Cawayan, Masbate, Philippines. The MUKaPE (*Farming Together with the Family*) Program is a program that unites all members of the family of farmers towards greater farm production and profitability. The program believed that having family members to support will strengthen the relationship of the members and support one another. Moreover, this program aims to empower small-scale farmers by providing comprehensive support in various aspects of agriculture, including technical training, access to credit and resources, and market linkages. The program seeks to enhance farmers' capacity to adopt sustainable agricultural practices, increase productivity, and improve overall livelihoods. Empowering small-scale farmers through the MUKaPE Program contributes to poverty reduction, food security, and sustainable development in the local community. The study by Brenya and Zhu (2023) confirms the positive relationship between agricultural extension advisory services and food security. By equipping farmers with knowledge, skills, and technical support, these services enhance agricultural productivity, promote sustainable practices, reduce post-harvest losses, and improve farmers' incomes, collectively contributing to improved food security.

To ensure the effectiveness and impact of the MUKaPE Program, it is crucial to conduct a rigorous assessment of its outcomes and benefits. Impact assessment studies provide valuable insights into the strengths, weaknesses, and overall effectiveness of development programs, enabling policymakers, researchers, and program implementers to make informed decisions and improve program design and implementation. This study aims to conduct a mid-impact assessment of the MUKaPE Program implemented by the DEBESMSCAT-Cawayan Campus. The assessment evaluates the program's effectiveness in empowering small-scale farmers and its impact on their livelihoods, agricultural productivity, and overall well-being. By assessing the mid-impact of the program, this study provides valuable evidence on the program's outcomes and identifies potential areas for improvement. Previous research studies have highlighted the importance of comprehensive and context-specific programs in empowering small-scale farmers (Nosipho & Mpandeli, 2021). Studies have demonstrated that targeted interventions, such as the MUKaPE Program, can significantly improve farmers' access to resources, increase agricultural productivity, and enhance incomes. However, rigorous impact assessments are necessary to evaluate the long-term effects and sustainability of these programs.

The findings of this study contribute to the existing literature on agricultural development and empower small-scale farmers. The results provide insights for policymakers, program implementers, and development practitioners on the effectiveness of the MUKaPE Program and its potential for replication and scaling up in similar contexts. Additionally, this research offers recommendations for program improvement and informs future interventions aimed at enhancing the livelihoods and well-being of small-scale farmers.

2. MATERIALS AND METHOD

2.1. Research Design and Sampling

The research design employed in this study was descriptive research, aiming to provide an in-depth understanding of the extension program DEBESMSCAT-Cawayan Campus in Barangay Itombato and its effectiveness in benefiting local farmers. Purposive sampling was used in this study because all beneficiaries of the extension program were the subject of interviews. The sample for this study consisted of 17 or all of the farmer-beneficiaries who actively participated in the

extension program. By using a descriptive research design, the study focused on collecting and analyzing qualitative and quantitative data to obtain a comprehensive overview of the extension program's outcomes and its impact on the participating farmers. The selected sample of 17 farmer-beneficiaries was chosen based on their direct involvement with the DEBESMSCAT-Cawayan Campus program.

2.2. Data Collection and Statistical Analysis

In this study, the researchers utilized a modified version of the questionnaire originally developed by Dioneda et al. (2023). The questionnaire was tailored to the specific context of farming and incorporated relevant modifications. Interview and farm observations were also done to check the validity of respondents' responses. To analyze the data collected, the researchers employed frequency counts and percentages. These statistical measures were utilized to examine various aspects, including the demographic profile of the participants, their production practices, production performance, perceived constraints in farming, and the support services received by the 17 beneficiaries of the DEBESMSCAT-Cawayan Campus extension program. By employing these statistical techniques, the researchers were able to gain insights into the characteristics of the participants, their farming practices, and the challenges they faced. Furthermore, the analysis allowed for an understanding of the level of support provided through the extension program, enabling the researchers to evaluate its effectiveness in addressing the needs of the beneficiaries. Furthermore, focus group discussion was also done during for further information from the group.

3. RESULTS AND DISCUSSION

3.1. Demographic profile of the extension farmer-beneficiaries

The data from Table 1 reveals that in Barangay Itombato, the majority of the extension farmer-beneficiaries are females, accounting for 76% of the total beneficiaries, while males make up 24%. This finding contradicts a previous study by Ibañez et al. (2023) that reported male dominance in farming. It is noteworthy to observe the empowerment of women in Barangay Itombato. Out of the 17 farmer-beneficiaries, 16 are married, which aligns well with the objectives of the Mag-Uma Kaupod ang Pamilya program. Moreover, the majority of farmer-beneficiaries have five children, a family size that falls within the ideal range recommended by the Philippine Statistics Authority (2019) for adequately supporting the basic needs of family members.

Table 1. Demographic information of the extension farmer-beneficiaries in Barangay Itombato

Background	Frequency	Percentage
Sex		
Female	13	76
Male	4	24
Civil Status		
Married	16	94
Widow	1	6
Number of Children		
0-1	0	0
2-3	9	53
4-5	5	29
6-7	3	18
8 and above	0	0
Farmer Educational Attainment		
Elementary level	5	29
Elementary graduate	4	24
Highschool level	3	18
Highschool graduate	4	24
College Graduate	1	6
Source of Income		
Farming	17	100
Years in Farming		
0-7	1	6
8-15	1	6
16-23	6	35
24-31	5	29
32-40	4	24
Monthly Income		
less than P10,957	17	100%
P10,957-P21,194	0	0
P21,194-P43,828	0	0
P43,828-P76,669	0	0
P76,669-P131,484	0	0
P131,484-P219,140	0	0
P219,140-and above	0	0

Education plays a crucial role in enhancing farmers' abilities to acquire, interpret, and understand information, enabling them to utilize available data effectively in addressing production, marketing, and financing challenges (Ninh, 2021). It is worth noting that all farmer-beneficiaries in Itombato have received a formal education, although some (29%) did not complete elementary education. The

educational attainments of the farmer-beneficiaries vary, with 24% having completed elementary education, 18% reaching the high school level, 24% being high school graduates, and 6% having a college degree. Farmers with lower levels of education tend to have a limited capacity to absorb information and generate innovative solutions, while those with higher education levels demonstrate greater success and become role models for their peers (Paramitha et al., 2018).

Farming remains the primary source of income for the farmer-beneficiaries in Barangay Itombato. The duration of farming experience among the beneficiaries varies, ranging from newcomers who have been cultivating their lands for an average of 3.5 years too long-standing farmers with a history of 36 years on their lands. Despite the implementation of the extension program in the barangay, the farmer-beneficiaries continue to face economic challenges, as reflected in their monthly income falling below P10,957.00 (Reyes, 2022).

However, it is important to highlight that the introduction of the extension program has had a significant positive impact on their income compared to the previous situation. Previously, farmers earned as little as P500.00 per month, whereas now the minimum income has increased to approximately P2,500.00 per month. This increase is due to the income generated from their vegetable production, which is one of the main interventions provided to the farmers.

3.2. Farming background of the extension farmer-beneficiaries

Table 2 presents the farming background of the extension farmer-beneficiaries before and after the program. The variables examined include the source of capital, land ownership, thoughts of giving up farming, enjoyment of farming, perception of farming profitability, and the desire for their children to continue farming. Before the program, 71% of the farmer-beneficiaries relied on their capital as a source of funding, while 29% obtained capital through borrowing. After the program, the proportions remained the same, with 71% continuing to rely on their capital and 29% borrowing funds.

Regarding land ownership, before the program, 59% of the farmer-beneficiaries owned the land they cultivated, while 24% were tenants and 18% rented the land. After the program, the majority (59%) still owned the land, with 24% as tenants and 18% as renters, suggesting no significant changes in land ownership patterns. In terms of thoughts of giving up farming, before the program, 41% of the farmer-beneficiaries expressed consideration of giving up farming, while 59% did not. After the program, the percentage of those considering giving up farming decreased to 18%, while the majority (82%) no longer had such thoughts.

Table 2. Farming background of the extension farmer-beneficiaries before and after the program

Before the program		Variables	After the program	
F	%		F	%
Source of Capital				
12	71	Owned	12	71
5	29	Borrowed	5	29
Land Ownership				
10	59	Owned	10	59
4	24	Tenant	4	24
3	18	Rented	3	18
Have you ever thought of giving up farming?				
7	41	Yes	3	18
10	59	No	14	82
Do you enjoy farming?				
12	71	Yes	17	100
5	29	No	0	0
Do you find farming profitable?				
12	71	Yes	16	94
5	29	No	1	6
Do you want your children to continue farming?				
13	76	Yes	15	88
4	24	No	2	12

For the enjoyment of farming, before the program, 71% of the farmer-beneficiaries reported enjoying farming, while 29% did not. After the program, all farmer-beneficiaries (100%) expressed enjoyment in farming, as they saw hope and a future in farming that could uplift their social status. When asked about their perception of farming profitability before the program, 71% of the farmer-beneficiaries considered farming profitable, while 29% did not. After the program, the majority (94%) still viewed farming as profitable, while only 6% expressed a negative perception.

In terms of the desire for their children to continue farming, before the program, 76% of the farmer-beneficiaries expressed that they wanted their children to continue farming, while 24% did not. After the program, the majority (88%) still desired

their children to continue farming, while 12% had changed their stance.

These findings suggest that the program has had positive effects on the farmer-beneficiaries' attitudes and perceptions related to farming. The program appears to have strengthened their commitment to farming, enhanced their enjoyment of agricultural activities, improved their perception of farming profitability, and increased their desire for their children to continue in the agricultural profession. Overall, these results highlight the program's potential to foster a more sustainable and supportive farming environment for the extension farmer-beneficiaries.

3.3. Crops grown and the purpose of growing by the extension farmer-beneficiaries

The table presents the crops grown by extension farmer-beneficiaries before and after the implementation of the Mag-Uma Kaupod ang Pamilya Extension (MUKaPE) program. The data showcases the frequencies and percentages of crops grown in both periods, and the corresponding area of production.

Before the program, all 17 farmer-beneficiaries cultivated rice, accounting for 100% of the respondents. In terms of the area of production, 47% were cultivated within the range of 1,250-5,000 units, while 12% were cultivated within 5,001-8,750 units. Additionally, 29% were cultivated within the range of 8,751-12,500 units, and the remaining 12% were distributed across the ranges of 12,501-16,250 units and 16,251-20,000 units, each comprising 6% of the total.

Furthermore, 76% of the farmer-beneficiaries grew corn before the program, whereas after the program, the percentage decreased to 29%. In terms of the area of production, 38% of the farmers cultivated within the range of 2,000-3,600 units, while the rest of the ranges (3,601-5,200, 5,201-6,800, 6,801-8,400, and 8,401-10,000) had lower or no representation. Vegetables were grown by 53% of the farmer-beneficiaries before the program, and this increased to 65% after the program. The area of production varied, with the majority (33%) cultivating within the range of 10-508 units. Additionally, 44% cultivated within 509-1,006 units, while the remaining ranges (1,007-1,505, 1,506-2,002, and 2,003-2,500) had lower representation.

Table 3. Crops grown by the extension farmer-beneficiaries before and after the MUKaPE program

Before the program		Frequency and Percentage of Crops Grown in terms of Area	After the program	
F	%		F	%
17	100	*Rice*	17	100
		Area of Production (m^2)		
8	47	1,250-5,000	8	47
2	12	5,001-8,750	2	12
5	29	8,751-12,500	5	29
1	6	12,501-16,250	1	6
1	6	16,251-20,000	1	6
13	76	*Corn*	5	29
		Area of Production (m^2)		
5	38	2,000-3,600	3	60
5	38	3,601-5,200	1	20
0	0	5,201-6800	0	0
0	0	6,801-8,400	0	0
3	23	8,401-10,000	1	20
9	53	*Vegetables*	11	65
		Area of Production (m^2)		
3	33	10-508	7	64
4	44	509-1,006	1	9
0	0	1,007-1,505	0	0
1	11	1,506-2,002	1	9
1	11	2,003-2,500	2	18
6	35	*Root Crops*	6	35
		Area of Production (m^2)		
3	50	100-2,080	3	50
1	17	2,081-4,060	1	17
1	17	4,061-6,040	1	17
0	0	6,041-8,020	0	0
1	17	8,021-10,000	1	17
5	29	*Fruit Trees*	5	29
		Area of Production (m^2)		
2	40	2,000-3,600	2	40
2	40	3,601-5,200	3	60
0	0	5,201-6,800	0	0
0	0	6,801-8,400	0	0
1	20	8,401-10,000	0	0

For root crops, 35% of the farmer-beneficiaries grew them both before and after the program. The area of production was distributed across various ranges, with 50% cultivating within 100-2,080 units and 17% in each of the other ranges (2,081-4,060,

4,061-6,040, 6,041-8,020, and 8,021-10,000). Fruit trees were cultivated by 29% of the farmer-beneficiaries both before and after the program. The area of production ranged from 2,000 to 3,600 units (40%) to 3,601-5,200 units (40%), with lower representation in the remaining ranges.

3.4. Purpose of growing crops by the extension farmer-beneficiaries

The provided table presents the purpose of growing crops by the extension farmer-beneficiaries before and after the program. The frequencies and percentages of each purpose are given for both periods. Before the program, all 17 farmer-beneficiaries (100%) grew rice as their main crop. Additionally, 16 of them (94%) cultivated crops for family consumption, while only one farmer (6%) focused on generating additional income. Other crops grown before the program included corn (13 farmers, 76%), vegetables (9 farmers, 53%), root crops (6 farmers, 35%), fruit trees (5 farmers, 29%), and a variety of purposes with smaller frequencies.

Table 4. Purpose of growing crops by the extension farmer-beneficiaries before and after the program

Before the program		Purpose of Growing the Following Crops	After the program	
F	%		F	%
17	100	*Rice*	17	100
16	94	Family Consumption	11	65
1	6	Additional Income	6	35
13	76	*Corn*	5	29
12	92	Family Consumption	5	100
1	8	Additional Income	0	0
9	53	*Vegetables*	11	65
7	78	Family Consumption	0	0
2	22	Additional Income	11	100
6	35	*Root Crops*	6	35
5	83	Family Consumption	3	50
1	17	Additional Income	3	50
5	29	*Fruit Trees*	5	29
3	60	Family Consumption	1	20
2	40	Additional Income	4	80

After the program, the majority of farmer-beneficiaries (17, 100%) still grew rice as their primary crop, which remained consistent with the pre-program period. However, there were noticeable changes in the purposes of cultivating crops. Among the farmer-beneficiaries focusing on family consumption, the number decreased to 11 (65%), indicating a shift in priorities. On the other hand, the number of farmers growing crops for additional income decreased to 6 (35%). The program seems to have influenced the farmers to diversify their crops and purposes. For instance, the cultivation of corn and vegetables remained relatively stable, with 5 farmers (29%) growing each crop for various purposes. Root crops were still grown by 6 farmers (35%) to generate additional income. Similarly, fruit trees were cultivated by 5 farmers (29%) for multiple reasons.

It is interesting to note that after the program, some farmers shifted their focus solely to family consumption, with no intention to generate additional income. This change was evident in the data, where no farmer indicated growing crops for additional income in the post-program period. Conversely, the number of farmers growing crops for family consumption decreased in some cases but remained substantial, with 5 farmers (50%) cultivating crops for this purpose. The observed changes in crop cultivation purposes after the program suggest that the intervention had an impact on the decision-making and priorities of the farmer-beneficiaries. It indicates a potentially positive outcome of the program in encouraging diversification and potentially improving the self-sufficiency of the farmers' households. However, further analysis and investigation are necessary to understand the underlying factors and the long-term effects of these changes.

In conclusion, the table provides valuable insights into the purpose of growing crops before and after the program among the extension farmer-beneficiaries. The data highlights the predominant cultivation of rice, with varying shifts in the purposes of crop cultivation after the program's implementation. These findings indicate the potential influence of the program in promoting diversification and addressing the needs of family consumption and additional income generation among the farmer-beneficiaries.

3.5. Animals raised by the extension farmer-beneficiaries

The table presents a comparison of the animals raised by extension farmer-beneficiaries before and after the implementation of the MUKaPE (Mag-Uma Kaupod ang Pamilya) program. It provides

insights into the changes in animal husbandry practices among the beneficiaries.

Table 5. Animals raised by the extension farmer-beneficiaries before and after the MUKaPE program

Before the program		Animals Raised	After the program	
F	%		F	%
10	59	*Goat*	9	53
		Number of Heads		
4	40	1-2	4	44
2	20	3-4	2	22
3	30	5-6	2	22
1	10	7-8	1	11
14	82	*Pig*	12	71
		Number of Heads		
13	93	1-7	10	83
0	0	8-13	1	8
0	0	14-19	0	0
0	0	20-25	0	0
1	7	26-31	1	8
16	94	*Chicken*	16	94
		Number of Heads		
5	31	2--8	5	31
6	38	9--14	6	38
3	19	15--20	3	19
0	0	21--26	0	0
2	13	27--32	2	13
16	94	*Cattle*	14	82
		Number of Heads		
11	69	1--2	6	43
3	19	3--4	7	50
1	6	5--6	1	7
1	6	7--8	0	0
12	71	*Carabao*	9	53
		Number of Heads		
10	83	1	6	67
2	17	2	2	22
0	0	3	1	11
3	18	*Horse*	1	6
		Number of Heads		
3	100	1	1	100
0	0	*Duck*	2	12
		Number of Heads		
0	0	6	1	50
0	0	14	1	50

Before the program, a considerable number of farmer-beneficiaries were engaged in raising various animals. Goat farming was practiced by 10 beneficiaries, representing 59% of the total. The majority of them had 1-2 goats (40%), followed by 3-4 goats (20%) and 5-6 goats (30%). A smaller proportion of farmers had 7-8 goats (10%). Pig farming was also prevalent, with 14 farmer-beneficiaries (82%) involved in this activity. The majority of them had 1-7 pigs (93%), while only one farmer had a larger number of pigs, ranging from 26 to 31 (7%). All 16 farmer-beneficiaries (94%) were raising chickens, with varying numbers of chicken heads. The distribution showed that most of them had 2-8 chickens (31%), followed by 9-14 chickens (38%) and 15-20 chickens (19%). Cattle rearing was practiced by 12 farmer-beneficiaries (71%), with the majority having 1-2 cattle (69%), 3-4 cattle (19%), and 5-6 cattle (6%). Additionally, carabao raising was observed among 12 farmer-beneficiaries (71%), predominantly with a single carabao (83%). Lastly, three farmer-beneficiaries (18%) were involved in horse raising, with each of them having only one horse.

After the implementation of the MUKaPE program, there were slight changes in the animals raised by the farmer-beneficiaries. Goat farming continued, albeit with a slight decrease, as 9 beneficiaries (53%) remained engaged in this activity. The distribution of goat heads remained similar to before the program, with the majority having 1-2 goats (44%), followed by 3-4 goats (22%) and 5-6 goats (22%). However, one farmer-beneficiary increased the number of goats to 7-8 (11%). Pig farming also continued among 12 beneficiaries (71%), with the distribution of pig heads remaining similar to before the program. The majority had 1-7 pigs (83%), and one farmer had 26-31 pigs (8%). All 16 farmer-beneficiaries (94%) continued raising chickens, with the distribution of chicken heads remaining consistent. The majority had 2-8 chickens (31%), followed by 9-14 chickens (38%) and 15-20 chickens (19%). Cattle rearing continued among 14 farmer-beneficiaries (82%), with the distribution of cattle heads varying slightly. The majority had 1-2 cattle (43%), followed by 3-4 cattle (50%) and 5-6 cattle (7%). Carabao raising continued among 9 beneficiaries (53%), primarily with a single carabao (67%). Two farmer-beneficiaries (22%) increased their carabao count to two, and one farmer-beneficiary (11%) had three carabaos. Only one farmer-beneficiary (6%) continued horse raising, maintaining one horse. Additionally, two farmer-beneficiaries (12%) started raising ducks, with one having 6 ducks (50%) and the other having 14 ducks (50%).

The analysis (Table 5) shows some fluctuations in the number of animals raised by the farmer-beneficiaries before and after the MUKaPE

program. Despite these changes, it is evident that animal husbandry remained an important component of their farming practices, indicating the significance of livestock in their livelihood strategies.

3.6. Purpose of raising animals by the extension farmer-beneficiaries

The table provides insights into the purpose of raising animals among the extension farmer-beneficiaries before and after the implementation of the program. A comparison between the frequencies and percentages reveals changes in the beneficiaries' motivations for raising different types of animals.

Before the program, the majority of the farmer-beneficiaries raised goats, with a frequency of 10 (59%), and pigs, with a frequency of 14 (82%). These animals were primarily raised for additional income, with frequencies of 7 (70%) and 12 (86%), respectively. Additionally, some farmer-beneficiaries raised goats and pigs for family consumption, with frequencies of 3 (30%) and 2 (14%), respectively.

Table 6. Purpose of raising animals by the extension farmer-beneficiaries before and after the MUKaPE program

Before the program		Purpose	After the program	
F	%		F	%
10	59	*Goat*	9	53
3	30	Family Consumption	3	33
7	70	Additional Income	6	67
14	82	*Pig*	12	71
2	14	Family Consumption	2	17
12	86	Additional Income	10	83
16	94	*Chicken*	16	94
8	50	Family Consumption	4	25
8	50	Additional Income	12	75
16	94	*Cattle*	14	82
3	19	Family Consumption	1	7
13	81	Additional Income	13	93
12	71	*Carabao*	9	53
7	58	For drafting	6	67
5	42	Additional Income	3	33
3	18	*Horse*	1	6
1	33	Family Consumption	0	0
2	67	Additional Income	1	100
5	29	*Duck*	2	12
0	0	Family Consumption	0	0
0	0	Additional Income	2	100

After the program, the purpose of raising animals among the farmer-beneficiaries showed some variations. Goats remained popular, with a frequency of 9 (53%), and were still primarily raised for additional income, although the percentage slightly decreased to 67%. Similarly, pigs continued to be raised by 12 (71%) beneficiaries, mainly for additional income. However, the proportion of pigs raised for family consumption decreased to 17%, with a frequency of 2 (14%).

The raising of chickens saw the most significant consistency, as both before and after the program, the purpose remained consistent with all 16 (94%) farmer-beneficiaries raising chickens for additional income. Similarly, cattle were primarily raised for additional income, with frequencies of 16 (94%) before the program and 14 (82%) after the program.

It is noteworthy that the purpose of farmers in raising animals shifted. For instance, after the program, there was a decrease in the number of farmer-beneficiaries raising carabaos for additional income, from 12 (71%) to 9 (53%). Furthermore, there was a decrease in the number of farmer-beneficiaries raising horses for additional income, from 2 (67%) to 1 (100%).

Overall, the program seemed to have influenced the purpose of raising animals among the extension farmer-beneficiaries. While some motivations remained consistent, such as raising chickens and cattle for additional income, there were shifts in the percentages and frequencies of raising other animals. This indicates the potential impact of the program on the farmers' decision-making regarding animal raising, potentially leading to adjustments in their income-generation strategies and resource allocation. Further analysis and qualitative research could provide deeper insights into the specific reasons behind these changes and the overall effectiveness of the program in achieving its objectives.

3.7. Production practices of the extension farmer-beneficiaries

The table presents data on the production practices of extension farmer-beneficiaries before and after the program. The findings shed light on the changes observed in various aspects of farming practices, including planting methods, pest and disease management, weed management, irrigation methods, fertilizer application, and the approach to computing fertilizer amounts.

Before the program, the majority of farmer-beneficiaries preferred direct seeding as their planting method (76%), while a smaller percentage opted for transplanting (24%). However, after the program, there was a notable shift in planting preferences, with a decrease in direct seeding (12%) and an increase in transplanting (88%). Regarding pest and disease management, the majority of farmer-beneficiaries relied on chemical pesticides (82%) before the program. However, after the program, there was a decrease in the use of chemical pesticides (53%) and an increase in alternatives such as crop rotation (29%) and natural pesticides (12%). In terms of weed management, hand weeding was the predominant method employed by farmer-beneficiaries before the program (88%). However, after the program, there was a decrease in hand weeding (59%), accompanied by an increase in the adoption of mulching (29%) and herbicide usage (12%). The irrigation practices of the farmer-beneficiaries also experienced some changes. Before the program, a significant portion did not have any irrigation method (35%), while others utilized sprinkler irrigation (35%). After the program, the number of farmers without irrigation decreased slightly (29%), while the use of sprinkler irrigation remained consistent (35%).

Fertilizer application was prevalent among farmer-beneficiaries both before and after the program. Before the program, the vast majority applied fertilizer to their crops (94%), and this increased to 100% after the program. Regarding the fertilizer application approach, farmer-beneficiaries used broadcast applications (88%) both before and after the program, while a small percentage utilized foliar applications (12%). Furthermore, a noteworthy finding is that despite the implementation of the program, there was no significant change in the farmers' practice of computing the amount of fertilizer to be applied. A majority of farmer-beneficiaries did not compute the amount (71%), while a smaller percentage followed recommendations (29%).

The data highlights the shifts in production practices among the farmer-beneficiaries after the program. The findings indicate a transition towards more sustainable and efficient methods such as transplanting, crop rotation, mulching, and reduced reliance on chemical pesticides. The program has encouraged the adoption of these practices, thereby contributing to the improvement of farming practices among the extension farmer-beneficiaries.

Table 7. Production practices of the extension farmer-beneficiaries before and after the program

Before the program		Variables	After the program	
F	%		F	%
What is your preferred planting method?				
4	24	Direct seeding	2	12
13	76	Transplanting	15	88
How do you manage pests and diseases on your crops?				
14	82	Use of chemical pesticides	9	53
1	6	None	1	6
1	6	Crop rotation	5	29
1	6	Use of natural pesticides	2	12
How do you manage weeds on your crops?				
15	88	Hand weeding	10	59
2	12	Use of herbicides	2	12
0	0	Mulching	5	29
0	0	Off-bearing	0	0
What is your irrigation method?				
6	35	None	5	29
0	0	Flood irrigation	0	0
6	35	Sprinkler irrigation	6	35
0	0	Drip irrigation	0	0
Did you Apply fertilizer to your crops?				
16	94	Yes	17	100
1	6	No	0	0
How do you apply fertilizer to your crops?				
15	88	Broadcast application	15	88
0	0	Band application	0	0
2	12	Foliar application	2	12
		None	0	0
Do you compute the amount of fertilizer to be applied or do you follow a recommendation?				
17	100	No	12	71
0	0	Yes	5	29

3.8. Production performance

The presented table showcases the production performance of extension farmer-beneficiaries before and after the implementation of the Mag-Uma Kaupod ang Pamilya (MUKaPE) program. The data is analyzed in terms of frequency and percentage, providing insights into the changes observed in yield or harvest and profitability.

Before the program, the yield or harvest distribution exhibited a relatively balanced pattern. Approximately 35% of the beneficiaries reported good yields, while another 35% reported average yields. The remaining 29% indicated low yields. Notably, none of the respondents were uncertain about their yields. However, after the implementation of the MUKaPE program, a significant improvement in yield performance was observed. The percentage of beneficiaries reporting good yields increased to 65%, indicating a positive impact on their agricultural productivity. Additionally, the proportion of beneficiaries reporting average yields decreased to 29%, while only 6% reported low yields. This indicates that the program has contributed to a notable enhancement in yield outcomes among the farmer-beneficiaries.

Table 8. Production performance of the extension farmer-beneficiaries before and after the MUKaPE program

Before the program		Variables	After the program	
F	%		F	%
		Yield or harvest		
6	35	Good	11	65
6	35	Average	5	29
5	29	Low	1	6
0	0	Don't Know	0	0
		Profit		
6	35	Profitable	15	88
8	47	Breakeven	2	12
8	47	Incurred loss	0	0
0	0	Don't know	0	0

Turning to profitability, before the program, the distribution of profit levels showed a varied landscape. About 35% of the farmer-beneficiaries reported being profitable, while an equal percentage indicated breakeven results. A concerning finding was that 47% of the beneficiaries reported incurring losses. However, after the implementation of the MUKaPE program, a significant positive shift was observed in the profitability of the farmer-beneficiaries. A substantial 88% of the beneficiaries reported being profitable, suggesting a significant improvement in their financial outcomes. In contrast, only 12% indicated breakeven results, and none of the beneficiaries reported incurring losses. This demonstrates the positive impact of the program in enhancing the financial well-being of the farmer-beneficiaries.

Overall, the findings highlight the positive influence of the MUKaPE program on the yield or harvest as well as the profitability of the extension farmer-beneficiaries. The program has led to a remarkable increase in good yields and profitability, indicating improved agricultural productivity and economic outcomes. These results underscore the effectiveness of the MUKaPE program in promoting sustainable agricultural practices and enhancing the financial resilience of the farmer-beneficiaries.

3.9. Perceived constraints

The table presents the perceived constraints of extension farmer-beneficiaries before and after the implementation of the MUKaPE program. The data provide insights into the specific challenges faced by farmers in various aspects of their agricultural practices. Let's examine the results and discuss them in a scholarly manner:

Before the MUKaPE program, farmers stated that they have problems various perceived problems in their farm soil, the majority of the farmer-beneficiaries (71%) identified low soil fertility as a significant constraint. Other notable issues were poor water retention (59%) and poor drainage (12%). However, after the program, these concerns persisted, with 65% still mentioning low soil fertility, 59% mentioning poor water retention, and 18% identifying poor drainage. This suggests that while the MUKaPE program may have had positive impacts in other areas, the challenges related to soil quality and management require further attention. In terms of problems related to seeds or planting materials, before the program, the most prevalent issue was the lack of information on improved and suitable varieties (41%), followed by a perceived lack of guaranteed quality (41%). However, after the program, the situation improved, with only 12% mentioning a lack of information on improved varieties and 18% indicating concerns about quality. These findings indicate that the MUKaPE program had a positive impact on addressing these particular challenges.

Regarding fertilizer-related problems, the farmer-beneficiaries cited high prices as the primary constraint both before and after the program, with 53% and 65% mentioning expensive prices, respectively. Other issues included the cost of transportation (41% before, 29% after) and a lack of knowledge on proper use (41% before, 12% after). These findings suggest that while the MUKaPE program may have had limited success in mitigating the cost-related challenges, addressing knowledge gaps remains crucial in improving fertilizer management. Concerning chemicals or pesticides,

both before and after the program, the high cost of these inputs was consistently mentioned by the farmer-beneficiaries (35% and 35%, respectively). Lack of knowledge of their proper use (29% before, 12% after) and limited availability (6% before, 6% after) were also identified as constraints. These findings highlight the need for continued efforts to address cost-related concerns and provide comprehensive training on the appropriate and effective use of chemicals and pesticides.

In terms of machinery and equipment, the farmer-beneficiaries cited a lack of knowledge on how to use them (47% before, 47% after) and limited access to machinery and equipment (35% before, 24% after) as significant challenges. The availability and accessibility of machinery for land preparation and pre-harvest operations improved slightly after the program, indicating some positive impact. However, the lack of accessible rental or borrowing options for machinery remained a significant concern (47% after the program). This suggests that further interventions are necessary to address these issues effectively. Regarding post-harvest machinery, equipment, and facilities, the farmer-beneficiaries identified inadequate storage facilities (12% before, 18% after), limited access to mechanical threshers (35% before, 18% after), and high milling costs (18% before, 18% after) as notable challenges. These findings emphasize the importance of addressing post-harvest infrastructure and services to improve the efficiency and profitability of farmers' operations.

In marketing, both before and after the program, the farmer-beneficiaries mentioned relatively fewer challenges. The majority reported no problems (41% before, 59% after), while other concerns included low, unstable, and fluctuating prices (12% before, 12% after), high post-harvest losses (12% before, 12% after), and the absence of local buyers (35% before, 29% after). These findings suggest that the MUKaPE program had limited impact on addressing marketing-related constraints and that further efforts are necessary to enhance market access and stability for the farmer-beneficiaries.

Lastly, in terms of farm labor, before the program, the farmer-beneficiaries mentioned expensive labor costs (41%), lack of labor supply (12%), and labor-intensive operations (12%) as significant constraints. After the program, while the concerns related to labor costs and labor-intensive operations persisted (59% and 18%, respectively), the perceived lack of labor supply decreased (18%). These results indicate that the MUKaPE program had limited success in addressing labor-related challenges, particularly in terms of cost and intensity.

Table 9. Perceived constraints of the extension farmer-beneficiaries before and after the MUKaPE program

Before the program		Variables	After the program	
F	%		F	%
What problems have you experienced regarding the soils where you planted your crops?				
3	18	No problem at all	3	18
12	71	Low soil fertility	11	65
10	59	Poor water retention	10	59
1	6	Soil Acidity	1	6
2	12	Poor drainage	3	18
What problems have you experienced regarding seeds or planting materials?				
7	41	No problem	10	59
7	41	Quality is not guaranteed	3	18
0	0	Not locally available all the time	0	0
7	41	Lack of information on improved and suitable varieties	2	12
3	18	Price is expensive	5	29
What problems have you experienced regarding fertilizer?				
4	24	No Problem	4	24
7	41	The cost of transportation is high	5	29
1	6	Not locally available all the time	1	6
7	41	Lack of knowledge of the proper use	2	12
9	53	Price is expensive	11	65
What problems have you experienced regarding chemicals or pesticides?				
8	47	No problem	7	41
5	29	Lack of knowledge on how to use them	3	18
1	6	Not locally available all the time	1	6
1	6	Not effective in controlling pest	1	6
6	35	Price is expensive	6	35

What problems have you experienced regarding machinery/equipment for land preparation and pre-harvest operation?				
3	18	Yes	4	24
1	6	No problem	3	18
8	47	Lack of knowledge of how to use them	8	47
6	35	Lack of machinery and equipment	4	24
8	47	Not accessible, no one to rent or borrow from	9	53
What problems have you experienced regarding post-harvest machinery, equipment, or facilities				
8	47	No problem	10	59
2	12	Lack of adequate storage facilities	3	18
6	35	Lack of access to mechanical threshers	3	18
1	6	No local rice mills located in distant places	1	6
4	24	Lack of access to mechanical dryers	4	24
3	18	High milling cost	3	18
What problems have you experienced regarding marketing?				
7	41	No problem	10	59
2	12	High post-harvest losses	2	12
2	12	High transportation costs	1	6
5	29	Low, unstable, fluctuating price	2	12
6	35	No local buyer	5	29
3	18	Distant markets	2	12
3	18	Exploitation by middlemen	3	18
What problems have you experienced regarding farm labor?				
10	59	No problem	5	29
7	41	Labor cost is expensive	10	59
2	12	Lack of labor supply	3	18
2	12	Labor-intensive operation (high labor requirements)	3	18

3.10. Support services received by the extension farmer-beneficiaries

The provided table presents data on the support services received by extension farmer-beneficiaries before and after the implementation of the MUKaPE program. The variables examined include the sources of information on agricultural production technologies, support services or programs from the Department of Agriculture (DA) or Local Government Units (LGUs), membership in farmers' organizations or associations, attendance at training or seminars related to farming, and the agencies responsible for conducting such training or seminars. Before the program, the majority of extension farmer-beneficiaries (94%) obtained information on agricultural production technologies from the extension or agricultural technicians, indicating the significance of professional guidance in this domain. Other sources of information included brochures, pamphlets, etc. (35%), neighbors or other farmers (24%), radio/TV (18%), the Department of Agriculture (41%), and other government agencies (6%). Notably, after the program, there was a complete absence of farmers relying on no information source, highlighting the positive impact of the program in providing access to valuable knowledge. In terms of support services or programs from the DA or LGUs, the MUKaPE program resulted in a notable increase in the provision of various services. Before the program, none of the farmer-beneficiaries reported receiving seeds or planting materials, while after the program, 94% of them had access to such resources. Similarly, training/seminars (65%), fertilizer (59%), and credit/financial assistance (29%) were more widely available after the program's implementation. However, there was no reported implementation of support services for irrigation, market assistance, or farm-to-market roads, indicating potential areas for further improvement.

Regarding membership in farmers' organizations or associations, the MUKaPE program played a role in promoting community engagement, with 76% of the farmer-beneficiaries becoming members, compared to 59% before the program. This demonstrates the program's success in fostering a sense of belonging and collective action among the beneficiaries. In terms of attending training or seminars related to farming, all farmer-beneficiaries (100%) reported attending such events after the program, showcasing the program's effectiveness in increasing knowledge dissemination and skills development. The agencies responsible for conducting these training or

seminars included the Department of Agriculture (18%), Technical Education and Skills Development Authority (TESDA) (6%), and Dr. Emilio B. Espinosa Sr. Memorial State College of Agriculture and Technology (DEBESMSCAT) (59%).

Table 10. Support services received by the extension farmer-beneficiaries before and after the MUKaPE program

Before the program		Variables	After the program	
F	%		F	%
Where do you get information on agricultural production technologies?				
6	35	None	0	0
1	6	Extension or Agricultural Technician	16	94
7	41	Brochures, pamphlets, etc.	6	35
0	0	Neighbors or other farmers	4	24
2	12	Radio/TV	3	18
4	24	Chemical Dealers		0
3	18	DA	7	41
0	0	Other Government Agencies	1	6
1	6	Others: BIPO	2	12
What support services or programs from DA or LGU are implemented for farmers in this barangay?				
6	35	None	0	0
2	12	Technical information/advice	5	29
10	59	Seeds or planting materials	16	94
5	29	Training/Seminars	11	65
6	35	Fertilizer	10	59
3	18	Credit/financial assistance	5	29
0	0	Irrigation	0	0
0	0	Market assistance	0	0
0	0	Farm-to-market roads	0	0
Are you a member of a farmers' organization or association?				
10	59	Yes	13	76
7	41	No	4	24
Have you attended training or seminars on topics related to farming?				
10	59	Yes	17	100
7	41	No	0	0
What agency implemented the training or seminars related to Farming				
4	24	DA	3	18
0	0	TESDA	1	6
0	0	DEBESMSCAT	10	59
0	0	DSWD	1	6

The data from the table indicates that the implementation of the MUKaPE program has significantly enhanced the support services received by extension farmer-beneficiaries in various aspects of farming. The program has improved access to information, increased the availability of support services and resources, encouraged community participation through membership in farmers' organizations, and facilitated knowledge acquisition through training and seminars. However, certain areas such as irrigation, market assistance, and farm-to-market roads may require additional attention in future program developments.

3.11. Additional intervention perceived by the farmer-beneficiaries to improved their farming

The table presents the suggestions provided by extension farmer-beneficiaries in improving their farming practices. The responses are categorized into different variables, along with their frequencies and percentages. Let's discuss these findings in a scholarly manner.

Table 11. Additional intervention perceived by the farmer-beneficiaries to improved their farming

Variables	Frequency	Percentage
In your opinion, what do farmers in this barangay need most to improve production performance?		
Irrigation	8	47
Fertilizer assistance	6	35
Road to Market	5	29
Training and Seminars	4	24
Access to machinery	3	18
Financial Assistance	2	12
Electrification	2	12
Post-harvest facilities	1	6

Among the extension farmer-beneficiaries surveyed, the majority identified irrigation as the most crucial requirement for improving production performance, with 47% of the respondents expressing this need. This emphasizes the significance of sufficient water supply for agricultural activities, highlighting the importance of irrigation infrastructure in addressing water

scarcity and enhancing crop yield. Fertilizer assistance was another notable suggestion, identified by 35% of the farmer-beneficiaries. This reflects the recognition of the vital role played by fertilizers in replenishing soil nutrients and promoting healthy plant growth. The need for fertilizer assistance underscores the importance of accessible and affordable fertilizers to support farmers' productivity and enhance crop quality. The availability of a road to market was also identified as a significant requirement by 29% of the farmer-beneficiaries. This finding underscores the importance of smooth transportation networks to enable farmers to transport their products efficiently and reach broader markets. Improved road infrastructure can contribute to reducing post-harvest losses and facilitating the timely delivery of agricultural goods. Furthermore, 24% of the respondents emphasized the importance of training and seminars. This signifies their recognition of the value of acquiring knowledge and skills to enhance their farming practices. Access to educational opportunities through training programs can equip farmers with up-to-date techniques, scientific insights, and best practices, enabling them to make informed decisions and improve their overall productivity.

Access to machinery was also highlighted by 18% of the farmer-beneficiaries. This indicates a desire for mechanization in farming processes, recognizing the potential benefits of using agricultural machinery to increase efficiency, reduce labor-intensive tasks, and optimize production. Financial assistance and electrification were suggested by 12% of the respondents each. The need for financial support underscores the significance of capital for investment in farming inputs, infrastructure, and technology. Electrification is crucial for powering various farming operations, such as irrigation systems, machinery, and post-harvest facilities, ultimately contributing to increased productivity and efficiency. Lastly, post-harvest facilities were identified as a requirement by 6% of the farmer-beneficiaries. This emphasizes the significance of having appropriate storage, processing, and handling facilities in order to reduce post-harvest losses, maintain product quality, and optimize the value of agricultural produce.

In summary, the suggestions provided by the extension farmer-beneficiaries in improving their farming practices reflect the need for irrigation, fertilizer assistance, access to markets, training, and seminars, access to machinery, financial assistance, electrification, and post-harvest facilities. These findings underscore the importance of addressing key areas such as water management, input accessibility, infrastructure development, knowledge dissemination, technological advancements, financial support, and value chain enhancement to enhance the productivity, profitability, and sustainability of farming activities in the studied barangay.

4. CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the Mag-Uma Kaupod ang Pamilya (MUKaPE) program has yielded significant improvements in the yield, profitability, and attitudes of extension farmer-beneficiaries. However, challenges related to soil fertility, fertilizer management, access to machinery, post-harvest infrastructure, and marketing persist and require targeted interventions. Recommendations include enhancing soil fertility management, strengthening fertilizer management, improving access to machinery and post-harvest infrastructure, strengthening market linkages, addressing water scarcity, expanding training and knowledge dissemination, providing financial assistance and electrification, and fostering collaboration and coordination among stakeholders.

ACKNOWLEDGMENT

We would like to extend our heartfelt gratitude to the BSA second-year students for their exceptional commitment and diligence in collecting data from the 17 farmer-beneficiaries involved in the extension program. We are immensely grateful to the barangay captain of Barangay Itombato for his kind support and assistance, enabling our field enumerators to carry out the study smoothly. Additionally, we wish to express our sincere appreciation to our valuable respondents for their generous contribution of time and unwavering cooperation, which played a pivotal role in the successful completion of this study.

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