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TRANSFORMING AGRICULTURAL PRACTICES IN HILLYLAND AREAS: ACHIEVING ECONOMIC GROWTH AND GENDER INCLUSIVITY THROUGH INTEGRATED FARMING

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Abstract

This study investigated the implementation and outcomes of integrated farming systems in hillyland communities, focusing on enhancing farm productivity, profitability, and sustainability. Two primary farming systems were studied: Farming System 1 (Rice + Corn + Cassava + Poultry + Vermicomposting) and Farming System 2 (Corn + Poultry + Vermicomposting). Through comprehensive training sessions and technology demonstrations, farmers were educated and empowered to adopt integrated farming practices tailored to local conditions. The study found significant improvements in farm profitability with Farming System 1 achieving a 158.95% increase in profit and Farming System 2 realizing a remarkable 183.27% increase. Adoption of these systems also led to the development of 1.57 hectares of previously unproductive land, effectively optimizing land use and expanding agricultural production capacities. Gender inclusivity was a key focus, and both male and female farmers actively participated in adopting new technologies, particularly in corn and poultry production. Sustainable agricultural practices such as organic fertilization and integrated pest management were emphasized, contributing to improved environmental stewardship and economic resilience in the communities studied. The findings underscored the transformative potential of integrated farming systems, not only in increasing farm incomes but also in promoting sustainable development and enhancing livelihoods in challenging hillyland environments. The study highlights the importance of continued support for integrated farming initiatives, policy frameworks that incentivize sustainable practices, and the need for ongoing education and capacity-building programs to sustain these positive outcomes in agricultural communities.

Keywords: *CPAR*, Integrated Farming Systems, Hillyland Communities, Farm Productivity, Farm Profitability, Sustainability, Gender Inclusivity, Training and Technology Adoption, Agricultural Development, Organic Fertilization, Integrated Pest Management.

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1. INTRODUCTION

Sitio Buri is situated in the northeastern part of Masinloc in Zambales, covering approximately 325 hectares of hilly, rainfed land. Currently, 50 hectares are utilized for agricultural ventures, primarily following a monocropping pattern of corn, rice, and cassava during the wet season from June to September. The area has a Type 1 climate classification, characterized by a distinct dry season from November to April and a wet season for the remainder of the year. The fertile loam, sand, and clay soil support various crops.

All farmers in the community raise poultry, particularly native chickens, primarily for family consumption. Despite their interest in improving production to generate additional income, they lack adequate knowledge in proper management techniques. Fishing is the primary livelihood for most families in Sitio Buri, with male members engaged in fishing and female members and children assisting in marketing the products. However, climate change and sudden typhoons have reduced fishing opportunities in Masinloc, prompting women and other family members to turn to farming in the hilly areas of Sitio Buri. They have started planting fruit-bearing trees, bananas, corn, cassava, rice, and other crops to support their daily needs. When fishing activities are halted, the male members also assist in farming. Over time, farming in the hilly lands has expanded, encouraging other families to participate. However, as the community's population grows, farm production has struggled to meet demand due to a lack of knowledge about technologies that could enhance farming in hilly areas. Participatory Rural Appraisal (PRA) is an approach comprising methods to collect and analyze information about past, present, and future situations to understand rural communities and their conditions. This approach provides a comprehensive understanding of problems, potentials, resources, and solutions, enabling realistic development strategies (Chambers, 1992). PRA was conducted in Sitio Buri to gather data on current farming practices and assess the main issues. The primary commodities identified as sources of income include banana, cassava, rice, corn, and sweet potato. The main problem identified was low yield in crop and animal production, attributed to issues such as the lack of good quality seeds, inadequate irrigation, and insufficient farming knowledge. The average annual income from crop and animal production is about PHP 30,000, with an additional PHP 20,000 from banana production, based on an average farm area of 0.40 hectares. This income is insufficient to meet the basic needs of households. Based on this information, the team and the farmers formulated an action plan to improve the production system for rice, corn, root crops, and chickens, which are the least profitable commodities in their farming area. Integrated farming involves cropping methods and other agricultural production techniques that fulfill both ecological and economic demands (Reents et al., 2008). Integrated Farming Systems harmonize the joint management of land, water, vegetation, livestock, and human resources (De et al., 2021). This mature technology can be replicated in communities with similar environments to enhance and improve the standard of living for farmers and stakeholders. Recommended agricultural technologies for crops and poultry production and the utilization of farm wastes for vermi-compost production will be introduced and established in the community. This holistic approach helps farmers increase crop and animal productivity while reducing production costs by maximizing and utilizing available resources, ultimately increasing farm net income.

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2. OBJECTIVES

1. Increase Net Farm Income: To increase the net farm income of farmers in Sitio Buri, Masinloc, Zambales, by at least 15-20% through the promotion and establishment of an integrated farming system for hilly lands using a Community-based Participatory Action Research (CPAR) approach.
2. Improve Farm Production: To enhance farm production by imparting integrated farming technologies suitable for hillyland farming communities, thereby improving crop and animal productivity.
3. Enhance Knowledge and Skills: To conduct capacity-building training and seminars aimed at increasing farmers' knowledge of recommended management practices for crops and animal production, as well as improving their leadership, managerial, and strategic management skills.
4. Demonstrate Integrated Farming Practices: To establish Technology Demonstration (Techno-Demo) areas showcasing recommended production management practices for crops and poultry production in hillylands, and to demonstrate the farm integration process utilizing farm wastes.
5. Promote Sustainable Practices: To introduce and establish vermi-composting and free-range chicken integration, utilizing farm wastes to produce natural fertilizers and additional resources, thereby reducing production costs and supporting sustainable farming practices.

3. METHODOLOGY

The project involved 20 active farmer members (5 male and 15 female) from the Buri, Inhobol Upland Farmers Association (BIUFA), all committed to the project's ideals and objectives. During implementation, each farmer allocated at least 1,000 square meters of production area for the integrated farm system and provided farming labor throughout the project period.

The integrated cropping system comprised a package of technologies for each commodity. The integration process included recommended management practices for crops and poultry production. Residues, by-products, and non-marketable products from crop production sites were fed to free-range chickens. Additionally, farm wastes were utilized through vermi-composting to produce natural fertilizers, reducing the cost of farm inputs. Capacity-building training and seminars were conducted to enhance farmers' knowledge of recommended management practices for crops and animal production, increase awareness of the integrated farming process, and improve leadership, managerial, and strategic management skills for managing business enterprises.

During the training, recommended production management practices, including water management for rice, corn, mungbean, sweet potato, vegetables, cassava, pineapple, and banana, were discussed. The potential of free-range chicken, mushroom, and vermi-compost production, as well as the integration process with crop production, was emphasized to develop the farmers' knowledge and skills for improving their hillyland farming practices.

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Establishment of Technology Demonstration Sites

Techno-Demo areas were established to showcase recommended production management practices for crops and poultry production in hillylands and to demonstrate the farm integration process utilizing farm wastes. These areas also served as learning sites for farmers, complementing lectures and discussions on different farming technologies.

Participatory Techno-Demo

Two rice varieties, NSIC RC-216 and NSIC RC-480, were selected for their adaptability to the project site, requiring fewer chemical inputs and irrigation water while possessing key survival traits for complex growing conditions. These high-yielding varieties with quality grains were used in production.

A superimposed trial with different farming practices was conducted at the demonstration site. The first practice, Farmer's Practice (FP), involved traditional fertilization and pest management using only synthetic fertilizers (46-0-0, 21-0-0, 14-14-14). The second practice, CPAR intervention, provided a fertilization method using soil analysis, combining organic and synthetic fertilizers (46-0-0, 14-14-14, 16-20-0, 0-0-60) with recommended amounts and timing of application. Integrated Pest Management (IPM) was also promoted for pest control. Crop residues produced after rice production, such as rice straw, rice hull, and rice bran, were utilized in other production sites as part of the integration process.

After rice cropping, farmer-partners planted the area with corn. These commodities served as staple foods and additional income sources for the farmers.

Promising commodities with good yield potential were showcased at the demo sites, including dual-purpose crops like White corn Lagkitan during dry season production (February-May 2022). Recommended management practices, from land preparation to harvesting, including IPM, were employed at the demo sites. Soil analysis fertilizer recommendations were followed for each commodity.

As part of the integration process, crop residues were utilized for vermicomposting and fed to free-range chickens. For cassava, five adaptable high-yielding varieties were used at the techno-demo site, including the farmers' existing variety (R-72, Golden Yellow, Lakan 1, CV-40, and FV (Lakan 2)). Soil analysis recommendations were followed for nutrient management. The establishment started on February 21, 2021, and harvesting occurred on December 15, 2021.

Pineapple Techno-Demo

The MD2 variety of pineapple was promoted and showcased at the demo site. This variety is naturally immune to diseases and viruses, requires minimal care, and does not need artificial water sources, relying on natural water sources like rain, making it suitable for hilly areas. The planting density used was 50 cm between rows and 25 cm between hills, with three rows in one bed. Plastic mulch was used to control weed population, and fertilizer recommendations from the Bureau of Plant Industry (BPI) were applied.

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Free-Range Chicken Integration

Farmers raised free-range chickens at their production sites, integrating them with other production areas, especially crops. The chickens served as an additional fertilizer source for crop production projects. The production involved providing pens with proper shelter and outdoor areas for the chickens to access soil, their natural environment, and good ventilation. Bio Plant Extracts were used as supplements, and farm-produced by-products such as corn, rice bran, and other raw materials from crops served as feed.

Vermi-Compost Production Integration

Vermicompost produced was used as organic fertilizer in the production. Farm by-products such as rice straw, leaf clippings, banana spent, carabao manure, decomposed chicken manure, leguminous plants, and other remaining biodegradable farm waste from the community were used in the production. The project supervised the establishment of recommended vermicomposting areas with proper housing or sheds to protect worms from sunlight, rain, and pests.

4. RESULTS AND DISCUSSION

Improving Farm Production through Integrated Farming Technologies for Hillyland Farming Communities

Increase in Learning among Farmers

Table 2 presents the results of capacity-building trainings focused on crop and animal production, which aimed to impart knowledge and raise awareness among farmers regarding recommended technologies for integrated farming systems. The average pre-training knowledge level of farmers was 46.30%. After participating in various trainings and lectures, this figure rose significantly to 89.96%, reflecting a 43.66% increase in knowledge.

This notable improvement highlights the effectiveness of the training programs in enhancing the farmers' understanding and awareness of integrated farming technologies. The increase in knowledge equips farmers with the necessary skills to adopt and implement these technologies, ultimately contributing to improved farm production.

Table 2: Level of Learning Acquired by Farmers from Capacity Building Trainings and Seminars

Number of Farmer Respondents	Average Pre-test Score	Average Level of Knowledge (%)	Average Post-test Score	Average Level of Knowledge (%)	Average Learnings Acquired (%)
25	21.76	46.30*	42.28	89.96*	43.66

The substantial increase in post-test scores demonstrates the significant impact of the training sessions on farmers' knowledge levels. By equipping farmers with integrated farming techniques suitable for hillyland areas, these trainings help them enhance their productivity and sustainability, thereby contributing to overall agricultural development in the region.

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Increasing Farm Productivity through Integrated Farming Technologies

Farming System 1: Rice, Corn, Cassava, Free-Range Chicken, and Vermicompost

The implementation of the CPAR (Community Participatory Action Research) package of technologies for Farming System 1, which includes rice, corn, cassava, free-range chicken, and vermicomposting, has demonstrated significant improvements in farm productivity. The average area utilized for this farming system is 5,000 m², with the following results:

Rice Production: On a 2,000 m² production area, the average yield of rice increased by 47% (256 kg) compared to the farmers' practice.

Corn Production: On a 2,000 m² production area, the average yield of corn increased by 19% (168 kg).

Cassava Production: On a 1,000 m² production area, the average yield of cassava increased by 62% (1,490 kg).

Poultry Production: Integration of poultry production for 15 hens resulted in increases in egg production (57%), chick production (50%), and meat production (33%).

Vermicomposting: The integration of vermicomposting provided an additional average yield of 450 kg, reducing the need for procuring organic fertilizer and providing additional income.

Table 3: Yield Summary and Difference of Farming System 1 Compared to Farmers' Practice in in Philippine Pesos

Commodity	Average Area Used (m²)	Yield Unit of Measure	Farmer's Practice Yield	CPAR Intervention Yield	Increase in Yield
Rice	2000	kg	542	798	256
Corn	2000	kg	900	1068	168
Cassava	1000	kg	2400	3890	1490
Chicken (15 Hens)	120				
Meat Purpose		heads	30	40	10
Eggs		pcs	315	495	180
Chicks		heads	180	270	90
Vermicompost	20	kg	0	450	450

The adoption of Farming System 1 has shown substantial improvements in the yields of rice, corn, and cassava. Moreover, the integration of poultry and vermicomposting has further enhanced productivity and income generation for farmers. These results underscore the effectiveness of integrated farming technologies in boosting farm productivity and sustainability, particularly for hillyland farming communities.

Farming System 2: Corn, Free-Range Chicken, and Vermicompost

The implementation of the CPAR (Community Participatory Action Research) package of technologies for Farming System 2, which includes corn, free-range chicken, and vermicomposting, has demonstrated significant improvements in farm productivity. The average area utilized for this farming system is 2,000 m², with the following results:

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Corn Production: On a 2,000 m² production area, the average yield of corn increased by 18% (162 kg) compared to the farmers' practice.

Poultry Production: Integration of poultry production for 10 hens resulted in increases in egg production (88%, 210 pieces), chick production (75%, 90 chicks), and meat production (20%, 6 heads).

Vermicomposting: The integration of vermicomposting provided an additional average yield of 550 kg, reducing the need for procuring organic fertilizer and providing additional income.

Table 4: Yield Summary and Difference of Corn + Free-Range Chicken + Vermicompost Farming System Compared to Farmers' Practice in Philippine Pesos

Commodity	Average Area Used (m²)	Yield Unit of Measure	Farmer's Practice Yield	CPAR Intervention Yield	Increase in Yield
Corn	2000	kg	900	1062	162
Chicken (10 Hens)	120				
Meat Purpose		heads	30	36	6
Eggs		pcs	240	450	210
Chicks		heads	120	210	90
Vermicompost	20	kg	0	550	550

The adoption of Farming System 2 has shown substantial improvements in the yields of corn and poultry products. Moreover, the integration of vermicomposting has further enhanced productivity and income generation for farmers. These results underscore the effectiveness of integrated farming technologies in boosting farm productivity and sustainability, particularly for hillyland farming communities.

Increasing Net Farm Income by at Least 20%

Farming System 1: Rice, orn, Cassava, Chicken, and Vermicompost

The integrated farming system comprising rice, corn, cassava, chicken, and vermicompost, along with various interventions such as promising crop varieties, integrated pest and nutrient management, soil analysis recommendations, minimum tillage, and recommended planting distances for specific crops, has significantly contributed to increases in both yield and profit.

Rice Production: Average net income increased from P3,136.00 on a 2,000 m² area to P6,202.00, nearly doubling the income.

Corn Production: Average income increased from P4,750.00 to P7,596.00 on a 2,000 m² area.

Cassava Production: Cassava, identified as a highly productive crop in the community, saw net income rise from P8,500.00 to P18,220.00 on a 1,000 m² area.

Poultry Production: The integration of crops and poultry helped reduce feed costs as crop residues like rice bran, non-marketable cassava, and corn tubers were utilized as feed. This resulted in a significant increase in net income from poultry production, from P5,000.00 to P18,860.00.

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Vermicompost Production: Farmers adopted vermicomposting, turning farm wastes into organic fertilizers, which reduced production costs due to high market prices for commercial fertilizers. This innovation added P4,500.00 to the farmers' net income.

Overall, these interventions led to a remarkable 159% increase in farmers' annual income, far exceeding the target increase of 20%. This significant rise in income underscores the potential of hillyland areas to achieve production sustainability through proper and recommended management practices for crops, integrated with poultry and vermicompost production.

Table 5: Average Annual Yield and Income Summary of Rice + Corn + Cassava + Free-Range Chicken + Vermicompost Farming System Compared to Farmers' Practice in Philippine Pesos

Commodity	Yield Unit of Measure	Farmer's Practice			CPAR Intervention			Increase in Income
		Yield	Operation Cost	Gross Income	Net Income	Yield	Operation Cost	Gross Income
Rice	kg	542	6,620	9,756	3,136	798	8,162	14,364
Corn	kg	900	7,850	12,600	4,750	1,068	7,356	14,952
Cassava	kg	2,400	10,700	19,200	8,500	3,890	12,900	31,120
Chicken		1,000	6,000	5,000		5,496	24,356	18,860
Sold for Meat	heads	30	1,000	6,000	5,000	40		10,000
Sold Eggs	pieces	-	-	-	-	189		1,886
Sold Chicks	heads	-	-	-	-	124		12,420
Vermicompost	kg					450		4,500
Total			26,170	47,556	21,386		33,914	89,292
Increase in Net Income								

These results clearly demonstrate the significant financial benefits of adopting an integrated farming system. The increase in net income highlights the viability and potential of integrated farming technologies in enhancing the economic well-being of hillyland farming communities.

Increasing Net Farm Income by at Least 20%

Farming System 2: Corn, Free-Range Chicken, and Vermicompost

The implementation of integrated pest and nutrient management, soil analysis recommendations, minimum tillage, and recommended planting distances for corn production in Farming System 2 (corn, chicken, and vermicompost) has significantly contributed to increases in yield and profit.

Corn Production: Average net income increased from P4,750.00 on a 2,000 m² area to P7,512.00.

Poultry Production: The integration of poultry with corn production reduced feed costs. The produced chicks, eggs, and meat were sold, resulting in an increase in net income from P5,000.00 to P14,606.00.

Vermicomposting: Vermicomposting provided farmers with an additional source of income by turning farm wastes into organic fertilizers, thereby reducing production costs. This

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contributed P5,500.00 to the net income.

These interventions led to a remarkable 183% increase in farmers' annual income, far exceeding the target increase of 20%, similar to the success observed in Farming System 1.

Table 6: Yield and Income Summary of Corn + Free-Range Chicken + Vermicompost Farming System Compared to Farmers' Practice in Philippine Pesos

Commodity	Yield Unit of Measure	Farmer's Practice			CPAR Intervention			Increase in Income
		Yield	Operation Cost	Gross Income	Net Income	Yield	Operation Cost	Gross Income
Corn	kg	900	7,850	12,600	4,750	1,062	7,356	14,868
Chicken		1,000	6,000	5,000		11,973	26,580	14,606
Sold for Meat	heads	30	1,000	6,000	5,000	36		8,933
Sold Eggs	pieces	-	-	-	-	229		2,287
Sold Chicks	heads	-	-	-	-	154		15,360
Vermicompost	kg					550		5,500
Total			8,850	18,600	9,750		19,329	46,948
Increase in Net Income								

The farm integration process in both Farming System 1 (FS1) and Farming System 2 (FS2) helped reduce production costs in farm operations. However, FS1 provided more additional feedstuffs for chickens using residues from rice and cassava production, which helped reduce feed costs more effectively than FS2, where only by-products from corn production were used as feed for animals. Consequently, the operational costs in FS2 were higher than those in FS1.

While both systems led to significant increases in farmers' annual income, surpassing the 20% target, the total net income for farmers in FS2 (P27,619.00) was lower than that in FS1 (P55,378.00) due to the wider range of crop integration in FS1.

These results highlight the importance and potential of integrated farming systems in enhancing the economic well-being of farmers, particularly in hillyland areas, by adopting comprehensive and sustainable farming practices.

Enhancing the Capability of Hillyland Farm Areas through Adoption of Technologies and Interventions

The training sessions and technology demonstrations on integrated farming systems, including various crops, poultry, and vermicomposting, significantly enhanced the knowledge and capacity of all participating farmers regarding recommended farm management practices. This led to increases in farm productivity and profitability.

Adoption of Farming Systems in Sitio Buri, Inhobol, Masinloc

- **Farming System 1 (Rice + Corn + Cassava + Poultry + Vermicomposting):**
    - Adopted by 5 farmers.
    - Resulted in a 158.95% increase in farm profit.

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- **Farming System 2 (Corn + Poultry + Vermicomposting):**
  - Adopted by 15 farmers.
  - Achieved a 183.27% increase in farm profit.

The introduction of technologies and interventions for various commodities created opportunities for the farming community to expand production by developing new hillyland production areas. This adoption resulted in the development of 1.57 hectares of new production areas, enabling farmers to enhance and maximize their land use and improve previously unproductive hilly areas.

Table: Farmer Adoption and Profit Increase

Farming System	No. of Farmer Co-operators (Before CPAR)	No. of Farmer Co-operators (After CPAR)	Profit (Php)	% Increase in Profit	Utilized Farm Area before CPAR (ha)	Utilized Farm Area after CPAR (ha)
Rice + Corn + Cassava + Poultry + Vermicomposting	0	5	33,992.00	158.95%	-	2.65
Corn + Poultry + Vermicomposting	0	15	17,869.00	183.27%	-	3.22
Rice/Corn + Cassava + Poultry	5	0	11,500.00	-	1.5	-
Corn + Poultry	12	0	9,750.00	-	1.60	-
Corn/Cassava	3	0	7,500.00	-	1.2	-
TOTAL	**20**	**20**			**4.30**	**5.87**

Specific Crop and Livestock Technologies Adopted

Rice: Technologies such as nutrient management based on soil analysis, application of organic fertilizers, and Integrated Pest Management (IPM) with PalayCheck System guide were adopted by 5 farmers (2 males and 3 females).

Corn: The package of technologies for yellow corn production, including integrated nutrient management with recommended fertilizers, a planting distance of 30cm x 75cm, and integrated pest management practices, were adopted by 13 farmers (11 females and 2 males). This led to the development of 3.40 hectares of new production area in the community.

Cassava: Interventions for cassava production in hillylands, such as the use of high-yielding varieties (e.g., Lakan 1), integrated nutrient management with fertilizer recommendations and organic fertilizers, a planting distance of 75cm x 75cm, and proper planting seasons (February-December), were adopted by 5 farmers (3 females and 2 males).

Free-Range Chicken Integration: Technologies for free-range chicken production, including high-performance breeds, feeding, health management, provision of proper housing and range areas, proper incubation, and breeding methods, were adopted by 20 farmers (4 males and 16 females). The integration of poultry with crop production and vermicomposting was properly adopted and maintained by the farmers.

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Vermicompost Production Integration: The integration of vermicompost production utilized farm by-products such as rice straw, leaf clippings, banana spent, carabao manure, decomposed chicken manure, and other biodegradable farm waste present in the community. Farmers followed proper composting procedures and established suitable shelters for African night crawlers. The adoption of vermicomposting provided additional income to the farmers.

These efforts collectively enhanced the capability of hillyland farm areas, leading to significant improvements in productivity, profitability, and land use. The adoption of these technologies and interventions demonstrated the potential for sustainable development and economic growth in hillyland farming communities.

5. CONCLUSION

The findings from the implementation of integrated farming technologies and interventions in hillyland farming communities reveal significant improvements in farm productivity, profitability, and land utilization. The adoption of comprehensive farming systems, along with targeted training and technology demonstrations, has empowered farmers and demonstrated the potential for sustainable agricultural development in challenging terrains.

1. Enhanced Knowledge and Capacity: Training sessions and technology demonstrations significantly improved farmers' knowledge and awareness of recommended farming practices, resulting in notable increases in farm productivity and profitability.
2. Substantial Increases in Farm Profit: Farming System 1 (Rice + Corn + Cassava + Poultry + Vermicomposting): Adopted by 5 farmers, this system led to a 158.95% increase in farm profit.
3. Farming System 2 (Corn + Poultry + Vermicomposting): Adopted by 15 farmers, this system achieved a remarkable 183.27% increase in farm profit.
4. Expanded Production Areas: The adoption of new technologies and interventions led to the development of 1.57 hectares of new production areas, enabling farmers to maximize land use and improve previously unproductive hilly areas.
5. Diverse Crop and Livestock Integration: The integration of various crops (rice, corn, cassava) with poultry and vermicomposting created synergistic benefits, reducing feed costs, and providing additional income sources through the sale of eggs, chicks, and organic fertilizers.
6. Gender Inclusivity: Both male and female farmers actively participated in adopting new technologies, with a notable involvement of women in corn and poultry production, highlighting the inclusivity of the interventions.
7. Sustainability and Economic Viability: The interventions not only increased productivity and profitability but also promoted sustainable farming practices. The use of organic fertilizers and integrated pest management reduced reliance on chemical inputs, contributing to environmental sustainability.

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6. RECOMMENDATIONS

1. Develop tailored training programs that focus on integrated farming practices specific to hillyland conditions, emphasizing sustainable agriculture, crop-livestock integration, and soil health management.
2. Implement regular technology demonstrations and workshops to keep farmers updated on advancements in farming practices and technologies.
3. Encourage more farmers to adopt successful models like Farming System 1 and Farming System 2, which have demonstrated significant increases in farm profitability.
4. Highlight case studies and success stories to showcase the economic benefits and sustainability outcomes of integrated farming systems.
5. Provide support for expanding production areas by facilitating access to land, resources (seeds, fertilizers), and infrastructure (irrigation, storage facilities) necessary for scaling up agricultural operations.
6. Promote efficient land use practices that maximize productivity while preserving natural resources and biodiversity.
7. Strengthen market linkages and value chains to ensure farmers can access diverse markets for their produce, including eggs, chicks, and organic fertilizers.
8. Encourage farmers to engage in value addition activities, such as processing and packaging, to capture higher value and increase market competitiveness.
9. Implement initiatives that promote gender equality in agriculture by ensuring equal access to resources, training, and decision-making processes.
10. Recognize and support the active participation of women in agriculture, particularly in sectors like corn and poultry production, through targeted support programs and incentives.
11. Promote sustainable farming practices, including the use of organic fertilizers, integrated pest management, and water conservation techniques, to enhance environmental resilience and long-term farm viability.
12. Emphasize the economic benefits of sustainable practices, such as cost savings from reduced input use and access to premium markets for sustainably produced goods.

7. DECLARATION OF INTEREST STATEMENT

As the authors of this publication, we declare no conflicts of interest that could potentially influence the objectivity or integrity of our work. Our primary aim is to contribute to the collective knowledge and understanding within the fields of Agricultural sciences, ensuring the information presented is accurate, reliable, and beneficial to our diverse audience.

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This publication is intended for researchers, students, policy makers, professors, and farmers alike, with the goal of fostering informed discussions, promoting evidence-based decision-making, and ultimately driving positive change within our respective communities.

We have adhered to rigorous standards of academic integrity and transparency throughout the research, writing, and review processes, striving to uphold the highest levels of professionalism and ethical conduct. Any sources of funding or support received for this work have been acknowledged appropriately, and no external influences have compromised the independence or impartiality of our findings.

We sincerely hope that this publication serves as a valuable resource for advancing knowledge, inspiring innovation, and addressing the complex challenges facing our fields. Your feedback and engagement are invaluable contributions to our ongoing pursuit of excellence in research and scholarship.

Thank you for your interest in our work.

Sincerely,

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