

**PERCEIVED EFFECTIVENESS OF SUSTAINABLE
CORN PRODUCTION ON SLOPING AREAS
(SCOPSA) PROJECT IN ADTUYON,
PANGANTUCAN, BUKIDNON, PHILIPPINES: BASIS
FOR PROJECT IMPLEMENTATION
IMPROVEMENT**

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Abstract

Corn production in the Philippines is still considered to be low and inefficient. The Sustainable Corn Production on Sloping Areas (SCOPSA) is one of the government interventions to improve corn production in sloping areas in the Philippines. This study aimed to assess the perceived effectiveness of SCOPSA in terms of (1) practice of sustainable agriculture, (2) promotion of ecological balance, and (3) increase in income of farmer recipients by at least 10%. The study had a complete enumeration and used the responses of 20 corn farmer-recipients of the project in barangay Adtuyon, Pangantucan, Bukidnon, Philippines. A descriptive research design was employed. Primary data were collected through a self-structured survey questionnaire and Focus Group Discussion (FGD). The SCOPSA project was perceived as not totally effective. Specifically, the program was perceived to be effective only in implementing sustainable agricultural practices and promoting ecological balance on the farm. However, the program was not able to achieve its objective of increasing the income of farmers by at least 10%. Thus, the program was perceived to contribute to achieving agricultural sustainability and promotion of ecological balance. However, additional interventions can be integrated to improve the program's economic utility to farmers.

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INTRODUCTION

Philippine corn production is still considered low and inefficient compared to other major corn-producing countries (Transon & Defourny, 2017). The agricultural sector is currently facing several challenges that hinder the maximization of its full potential in terms of economic growth and poverty alleviation. Plain fields are usually planted with high-value crops which leads to the expansion of cultivation for corn production to sloping and protected areas (Crop Life Philippines, 2021). Northern Mindanao as one of the major producers of corn on the island, has a lot of critical sloping areas. More than 80% of agricultural land is sloped and poses a high tendency for topsoil erosion (Momblan, 2019). Added to that, farmers in Bukidnon observed heavy rains in the province which intensified soil erosion and affected roughly 52,000 has of corn farms. The vulnerability of sloping farms to heavy rains which results in erosion also causes landslides that destroy crops (Asian Development Bank, 2021).

With the expansion of corn production among farmers to the soil erosion-prone areas, the Department of Agriculture together with other government agencies launched the national program on Sustainable Corn Production in Sloping Areas (SCoPSA) (Crop Life Philippines, 2021) to address the problems of soil erosion and effects of climate change. The objective of the project was to help farmers utilize their sloping agricultural lands in a sustainable manner in a way that will not harm the soil by minimizing soil erosion. It also promotes ecological balance. On the economic side, the adoption of SCOPSA is expected to enhance corn productivity and increase farmers' income by at least 10% (Department of Agriculture RFO XI, 2022). The effectiveness of the development projects of the government in the field of agriculture varies from one project to another. Some technologies were more successful than others as influenced by different factors like the approach might include the technology itself, the extension approach used, farmers' limitations, and other factors.

Thus, it is very timely to assess how far the SCOPSA project has gone and how farmers responded to the technology.

Objectives

The main objective of this research was to assess the perceived effectiveness of Sustainable Corn Production on Sloping Areas (SCoPSA) project by the farmer recipients at Adtuyon, Pangantucan, Bukidnon. Also, this study aimed to determine the problems encountered in the implementation of

the project.

Significance of the Study

The Local Government Unit (LGU) and Municipal Agriculture Office of Pangantucan, Bukidnon, and other government agencies can use the result of the study as a basis for any possible intervention, actions, or reinforcement that they can conduct to ensure the effectiveness of the implementation of the development programs/projects of the government to the farmers. Farmers can also benefit through the future intervention that the government will undertake based on the recommendations of this study. In the long run, more farmers will benefit from more effective implementation of agricultural technologies.

Limitations of the Study

This study was conducted at Barangay Aduyon, Pangantucan, Bukidnon. The respondents of this study are limited to the yellow corn farmers who were recipients of the SCOPSA project of the government. The responses on the measurement of the effectiveness of SCOPSA were based on the perception of the corn farmer-beneficiaries.

METHODOLOGY

A descriptive research design was used in the study. The locale of the study was at Aduyon, Pangantucan, Bukidnon. It is one of the barangays which implemented SCOPSA. Barangay Aduyon is considered to be a geographically isolated and disadvantaged area (GIDAS). Out of 30 corn farmers recipients of the SCOPSA project in Barangay Aduyon, Pangantucan, Bukidnon, only 20 participated in the study. A complete enumeration of the corn farmer recipients was conducted.

A self-structured survey questionnaire was developed and validated by experts. Informed consent was sought from the farmer respondents on their participation in the study. Upon approval, a structured interview with the use of a survey questionnaire was conducted. A Focus Group Discussion (FGD) was also conducted to validate the survey results.

Descriptive measures like mean, frequency counts, and percentages were used to analyze the data. This study secured an Institutional Ethics Review Committee (IERC) permit from Central Mindanao University to ensure that the procedures for conducting the study were ethical.

RESULTS AND DISCUSSIONS

Effectiveness of Sustainable Corn Production in Sloping Area (SCOPSA) Project

The project provided the farmer-beneficiaries with technical knowledge of contour farming through training and field trips. The project provided farmers with 9kg of corn seeds, commercial fertilizer, organic fertilizer, and pesticides. It also provided each farmer-beneficiary with planting materials like 25 coconut seedlings, 25 banana (lakatan) seedlings, 25 lanzones seedlings, and 25 durian seedlings. These fruit trees will be planted in the contour to minimize erosion and promote crop diversification. However, based on the Focus Group Discussion, some of these trees did not withstand the high temperature in the area.

The effectiveness of the technology was measured through the perception of the farmer recipients who adopted the technology. The measurement was based on the attainment of the program's objectives which include (1) practice of sustainable agriculture; (2) promotion of ecological balance; and (3) increase in farmer's income by at least 10%.

Practice of Sustainable Agriculture

Table 1 shows the perceived effectiveness of Sustainable Corn Production in Sloping Area (SCOPSA) in terms of the practice of sustainable agriculture. It has an overall mean of 3.89, which is perceived as effective. This implies that the program was effective in facilitating the practice of sustainable agriculture.

Table 1

Effectiveness of SCOPSA in terms of practice of sustainable agriculture

INDICATORS	Weighted Mean	Qualitative Description
1. There is reduction of soil erosion due to the presence of buffer strips (trees, fruit trees, legumes, etc.) planted.	4.15	Effective

2.	There are more plants grown and survived due to furrows made across the slope where it reduced loss of nutrients from fertilizer applied during rainy days.	4.15	Effective
3.	Soil fertility was conserved due to furrows made which prevents erosion.	3.90	Effective
4.	There is low insect pest infestation due to the practice of crop rotation.	3.65	Effective
5.	There were few weeds grown in the area due to the practice of crop rotation.	3.90	Effective
6.	Soil fertility increased due to the practice of fallow period.	3.75	Effective
7.	Soil fertility increased due to the composting of crop residues and applied to the plants.	3.80	Effective
8.	Soil moisture was conserved due to the use crop residues as mulching materials.	3.65	Effective
9.	There is reduced infestation of weeds due to the use of crop residues as mulching materials.	4.10	Effective

10. Soil erosion was reduced due to the trash line or crop residues piled along the countour.	3.85	Effective
Overall Mean	3.89	Effective

Legend:

4.51- 5.00	-	Very Effective
3.51- 4.50	-	Effective
2.51- 3.50	-	Somehow Effective
1.51- 2.50	-	Not so Effective
1.00- 1.50	-	Not Effective

It was observed by the farmers that the establishment of buffer strips using trees, fruit trees, legumes, etc. together with contour tillage significantly reduced soil erosion and preserved soil nutrients for the corn plants. According to Eden River Trust, (2023), creating strips of vegetation provides a physical barrier that slows the flow of overland runoff, increases infiltration, and prevents soil, sediment, and nutrient loss. Also, contour buffer strips are less expensive (Gilley, 2005). Also, the furrow across slopes acts as reservoirs to catch and retain rainwater which increases infiltration. This practice has been proven to reduce fertilizer loss, reduce erosion, and increase crop yields (Encyclopedia Britannica, 2023).

In addition, crop residue management through mulching with the use of crop residues greatly reduced the presence of weeds. The retention of crop residues on the soil surface limits the amount of solar light that penetrates the ground limits the growth of weeds and reduces weed seed emergence (Jat, Singh, Gupta, Gill, & Pooniya, 2019). Trash lines also contributed to the reduction of soil erosion and improved soil fertility. Crop residues and weed biomass can be converted as nutrient sources. It promotes soil and environmental sustainability through its soil incorporation (Choudhary, Gurjar, & Meena, 2020).

The practice of the fallow period also improves soil fertility. Fallowing replenishes nutrients removed by crops, reduces soil erosion, and leaching, and maintains better physical and biological soil conditions (Adekiya, Aremu, Agbede, & Olayanju, 2021).

Table 2 shows the perceived effectiveness of Sustainable Corn Production in Sloping Area

(SCOPSA) in terms of the practice of promotion of ecological balance. It has an overall mean of 3.66, which is perceived as effective. This implies that the program was effective in promoting ecological balance in farming.

Table 2

Effectiveness of SCOPSA in terms of promotion of ecological balance

INDICATORS	Weighted Mean	Qualitative Description
1. The cultural practices of SCOPSA prevents soil erosion.	4.05	Effective
2. The SCOPSA adopts crop residue management which promotes the activity of beneficial microorganisms.	3.45	Somehow Effective
3. The incorporation of crop residues in the soil improves soil organic matter which improves soil biodiversity.	3.75	Effective
4. The establishment of buffer strips promotes soil biodiversity that promotes ecological balance.	4.00	Effective
5. The SCOPSA practices are centered on Good Agricultural Practices that contribute to ecological sustainability.	3.60	Effective

6.	The strip management of SCOPSA improves soil fertility which is an indicator of improved soil biodiversity.	3.85	Effective
7.	The SCOPSA soil fertility improvement practices prevent chemical and biological soil degradation.	3.60	Effective
8.	Crop rotation breaks the pest and disease cycle thus, reduces the use of synthetic chemicals which protects the live beneficial organic microorganism.	3.30	Somehow Effective
9.	SCOPSA promotes a balance and ideal ecological environment that promotes ecological diversity.	3.65	Effective
10.	SCOPSA promotes the sustainability of beneficial organisms and ensures no species is harmed.	3.35	Somehow Effective
<hr/> Overall Mean		3.66	Effective

Legend:

- 4.51- 5.00 - Very Effective
- 3.51- 4.50 - Effective
- 2.51- 3.50 - Somehow Effective
- 1.51- 2.50 - Not so Effective
- 1.00- 1.50 - Not Effective

Farmer-recipients perceived that the Sustainable Corn Production in Sloping Area (SCOPSA) program effectively prevents soil degradation and erosion. According to Crop Life Philippines (2021), SCOPSA focuses on sustainable land use practices which include contour farming, agroforestry, and soil conservation which help reduce soil erosion and improve soil fertility. The Department of Agriculture (2016) also emphasized that the adoption of SCOPSA will ensure the retention of soil nutrients. Hedgerow and contour were already tested and proven by experts to prevent topsoil from erosion.

In addition, the establishment of buffer strips enhances diversification and promotes ecological balance. Buffer strips can also improve wildlife habitat and the diversity of both flora and fauna (Gilley, 2005). Also, strip management and crop residue management contribute to the improvement of soil fertility which indicates rich soil microbial diversity. According to Iowa State University (2016), the retention of crop residues on the surface of the soil leads to an increase in soil organic carbon and nutrient-holding capacity. It also improves nutrient cycle and soil quality making it rich organic soil that sustains soil productivity.

Table 3

Perceived effectiveness of SCOPSA in terms of increase in income by $\geq 10\%$

Year	Income per hectare before adoption of SCOPSA (Php)	Year	Income per hectare upon adoption of SCOPSA (Php)	Difference (%)
2014	58,125.00	2018	62,076.00	6.8%
2015	59,916.00	2019	54,153.00	-9.6%
2016	54,875.00	2020	56,123.00	2.3%
2017	57,692.31	2021	61,766.66	7.1%
Average	57,652.08		58,529.75	1.52

Table 3 shows the perceived effectiveness of Sustainable Corn Production in Sloping Area (SCOPSA) in terms of increase in income of SCOPSA farmer-recipient by at least 10%. The result shows that the program was not effective on increasing the income of the corn farmer-recipient by at least 10%. The average increase in income in one hectare of corn production was only 1.52%. The average gross income of the corn farmer recipients before adopting SCOPSA was around Php 57, 652.08. Then, after they adopted SCOPSA, their average gross income was Php 58, 529.75. Though there is a slight increase, it was not able to reach its target of not less than a 10% increment. According to the Philippine Statistics Authority (2022), the average cost of yellow corn per hectare is 49, 433 in 2021. Average gross returns reached Php 58,890 per hectare. The average net income per hectare is Php 9,457.00. The failure to achieve the target increment can be attributed to various factors. In 2019, corn farmers' income fell by 15.5%. The average cost of corn production rose by 2.5%. Then, in the average farmgate price of corn fell by 7.8% to 13.04 (Business World, 2020).

Table 4

Summary of the perceived effectiveness of SCOPSA

CRITERIA	OVERALL MEAN	QUALITATIVE DESCRIPTION
Practice of Sustainable Agriculture	3.89	Effective
Promotion of Ecological Balance	3.66	Effective

Legend:

- 4.51- 5.00 - Very Effective
- 3.51- 4.50 - Effective
- 2.51- 3.50 - Somehow Effective
- 1.51- 2.50 - Not so Effective
- 1.00- 1.50 - Not Effective

Problems in the Implementation of SCOPSA

Among the farmer-recipients of SCOPSA, only four (4) of them continued the adoption of the technology while the majority adopted the technology only during the 1st year of the implementation. Based on the Focus Group Discussion (FGD) conducted, the farmer recipients did not continue the adoption due to some reasons. One reason is that the quality of farm inputs (like seeds) is poor. It has a low germination rate. Some aspects of the technology like the establishment of contours were not fully implemented due to the lack of availability of materials. They fully depend on what will be given to them by the government. They also mentioned that there is a lack of follow-up from the end of the implementors of the project. This leads them not to continue the implementation.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Sustainable Corn Production on Sloping Areas (SCOPSA) was a project of the government that aimed to promote sustainable agriculture practices, promote ecological balance, and increase the income of corn farmers by at least 10%. Adtuyon, Pangantucan Bukidnon is one of the barangays where the project was implemented. This study sought to assess the effectiveness of SCOPSA.

The farmer-beneficiaries perceived that the SCOPSA project was effective in terms of promoting sustainable agricultural practices and promotion of ecological balance. However, the project failed to increase the income of farmers by at least 10%.

Most of the corn farmer recipients did not continue the implementation of the project due to the poor quality of inputs given, insufficient quantity of inputs provided, and lack of monitoring from the Municipal Agriculture Office.

Recommendations

Based on the assessment of the Sustainable Corn Production on Sloping Areas (SCOPSA) project in Adtuyon, Pangantucan, Bukidnon, several significant problems impede the project's success and the general welfare of the farmer-beneficiaries. The following recommendations are suggested to address these issues and enhance the success rate of related government projects in the future:

1. Provision high-quality farm inputs. For government projects, farm inputs that will be provided to the farmers should be of high quality. In addition, these inputs should be site-specific to ensure its survival. Quality should be a major consideration aside from price/costs. The quality of inputs should never be compromised in favor of low cost. Poor quality of input leads to low productivity eliminating the sense of helping the community.
2. Provision of a sufficient quantity of farm inputs. For government projects, the provision of free inputs should be sustainable frequency and designed for long-term use. Based on the result of the study, inputs were provided for free only during the 1st year of implementation. Farmers with low amounts of capital could not afford the farm inputs needed in corn production and other materials needed in implementing the SCOPSA project. The assistance could be extended to 2-3 years to fully realize the objectives of the project.
3. Enhance Project Monitoring. The agricultural technician together with the whole Municipal Agriculture should closely monitor and follow up on the progress of each farmer beneficiary. This is to assist the farmers with their individual needs on their farms. In this way, farmers will be encouraged to sustain the adoption of the project. It will also increase the success rate of the project. Thus, attain the objectives of the project and improve the quality of life of the farmers. In addition, more farm supplies should be provided to the farmers for more extended periods. It will help in ensuring the sustainability of the project.
4. Integrate values formation and moral accountability seminars on government project implementation. Both implementors and beneficiaries of government projects should be well-informed about their roles and responsibilities. Implementers should have a sense of accountability in the proper implementation of the project while beneficiaries should have a sense of accountability in cooperating with the project of the government. With this,

strong cooperation and partnership between the government and the farmers will lead to a higher probability of successful government project implementation.

The SCOPSA project's effectiveness can be greatly enhanced by putting these ideas into practice. This will ultimately result in a more resilient and successful agricultural community in Adtuyon, Pangantucan Bukidnon.

Conflicts of Interest

The author have disclosed no conflicts of interest.

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REFERENCES

- Business Mirror. (2021, August 31). *Business Mirror*. Retrieved from Google Chrome: <https://businessmirror.com.ph/2021/08/30/phl-faces-critical-lack-of-farmers-in-12-years/>
- Food and Agriculture Organization of the United Nations. (2010). *Women in Agriculture, Environment and Rural Production*. Retrieved from <https://www.fao.org/3/ae946e/ae946e00.htm#Contents>
- Food and Agriculture Organization. (2021, March 10). *Agricultural and Food Marketing*. Retrieved from Food and Agriculture Authority: <http://www.fao.org/3/w3240e/W3240E01.htm>
- Halvorson, J. (2021). *Is the Allure of Farming Irresistible?* US Department of Agriculture. Retrieved July 21, 2022, from <https://www.usda.gov/media/blog/2021/06/16/allure-farming-irresistible>
- India Agro Net. (2021, March 10). *Marketing Function and Functionaries*. Retrieved from India Agro Net: For Clean, Smart and Profitable Framing : https://www.indiaagronet.com/indiaagronet/Agri_marketing/contents/functions.htm
- MBA Skool Team. (2014, October 31). *Marketing Intermediaries*. Retrieved from MBA Skool Team: <https://www.mbaskool.com/business-concepts/marketing-and-strategy-terms/3953-marketing-intermediaries.html>
- MKM Digital Marketing. (2020, October 20). *The Four Types of Marketing Intermediaries*. Retrieved from MKM Digital Marketing: <https://www.melinakmiller.com/the-four-types-of-marketing-intermediaries/>
- Rivera, T. A., Poonon, S., de Vera, Z. O., & Cabeguin, M. M. (2018). *Production and Marketing Assessment of Ginger in Northern Mindanao*. Musuan, Bukidnon: Unpublished Terminal Report.
- Srivastava, S. K. (2012). *Agricultural Marketing: Concept and Definitions*. New Delhi.
- The New Humanitarian. (2013). *Filipino farmers- a dying breed?* The New Humanitarian.

Retrieved July 21, 2022, from

<https://www.thenewhumanitarian.org/feature/2013/02/26/filipino-farmers-dyingbreed#:~:text=Assuming%20an%20average%20life%20span,five%20only%20%E2%80%9D%20he%20added.> C

Wandschneider, T., Yen, N. T., Ferris, S., & On, T. V. (2015). *A Guide to Rapid Market Appraisal (RMA) for Agricultural Products*. Hanoi, Vietnam: Centro Internacional de Agricultura Tropical .