

Effectiveness of The Implementation of The Extension Program for Rice Farming in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency

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ABSTRACT

The purpose of this study was to determine the process of planning and implementation of the Rice paddy farming extension program and to evaluate the effectiveness of the extension program. The methods and type of research used descriptive quantitative methods with survey techniques and a sample size of 40 rice farmers. The results showed: (1) The planning and implementation of extension programs in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency involved two planning processes, namely the involvement of farmers in planning the extension programs and their involvement in decision-making, with an average score of 2.5. Meanwhile, for the implementation of extension programs, there were eight components with an average score of 2.71; and (2) The effectiveness of the planning and implementation of the extension program for paddy rice in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency is categorized as effective. This is evidenced by farmer participation, timely implementation of extension programs, alignment of the programs with farmers' needs, appropriate duration, implementation according to targets, increased production, changes in the level of adoption by farmers, and the level of farmer satisfaction.

Keywords: Effectiveness, Implementation, Extension Program, Farming Business, Paddy Rice

INTRODUCTION

Agricultural development in order to increase the competitiveness of farmers can be achieved through institutional development, to realize an agricultural system with highly competitive agribusiness and agro-industry requires an agricultural institution organization that is able to carry out the vision and mission of agricultural development, able to anticipate agricultural development challenges, able to take advantage of opportunities and consistently (Rejeki and Ninik Sri, 2018). Indonesia is one of the developing countries with the agricultural sector as a source of livelihood for most of its population (Kusnadi & Mulyani, 2023). This is because it has various natural potentials for the development of the agricultural sector, especially for the commodity of paddy rice which has become Indonesia's leading commodity (Rukmana & Sari, 2018). One of the challenges in agricultural development is the declining trend of land productivity (Richard and Steers, 2015). On the other hand, natural resources continue to decline so that efforts need to be made to maintain their sustainability, as well as rice paddy farming can be sustainable, so the technology applied must be considered (Pamungkas, 2014).

Rice paddy is one of the food crop commodities that has long been cultivated by farmers intensively (Suharno & Sari, 2019). This commodity is also a source of income and employment opportunities that contribute quite high to the development of the regional economy, because it has high economic value, the cultivation of paddy rice has spread in almost all provinces in Indonesia. Although farmers' interest in paddy rice is quite strong, in the process of cultivation there are still various obstacles, both technical and economic (Sutarya, 2015).

In addition, the development of paddy rice cannot be separated from the role of agricultural extension workers (Kusnadi & Mulyani, 2023). The role of agricultural extension officers as one of the information channels for sawah rice farmers, this will make it easier for farmers to get information about sawah rice, on the one hand agricultural extension officers are an extension of the government to sawah rice farmers (BPS, 2024). The extension program in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency has several programs including field meetings, application of organic fertilizer methods and handling of plant disrupting organisms (OPT) (Prasetyo & Sari, 2022). To carry out the program, an extension worker must be equipped with adequate knowledge so that the program is implemented on time (Rahmat, 2020). This is done as a form of concern for extension workers in empowering sawah rice farmers who are mostly farmers or in the field of farming (Sumarjono, 2014).

Research by Rejeki and Ninik Sri (2018) emphasizes the importance of institutional development in agricultural systems to enhance the competitiveness of farmers. However, this study focuses more on the organizational and institutional aspects, without considering the direct impact of agricultural extension programs on farmers' productivity and economic outcomes. This study fills that gap by focusing on the role of agricultural extension programs in improving the technical and economic aspects of rice paddy farming, specifically in Suranenggala Kidul Village, Cirebon Regency. Furthermore, Richard and Steers (2015) discuss the declining trend of land productivity and the challenges faced by the agricultural sector in maintaining sustainability. However, their research does not provide a direct connection between agricultural extension efforts and addressing these challenges, particularly in relation to rice paddy farming. This study contributes to the literature by analyzing how agricultural extension workers, through their programs, can address these challenges and improve land productivity and sustainability in rice farming.

The purpose of this study was to determine the planning process and implementation of the Rice paddy farming extension program and to determine the effectiveness of the extension program in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency. The findings of this research are expected to provide valuable insights into how agricultural extension programs can improve the economic and technical conditions of rice paddy farming, thereby enhancing the productivity and sustainability of farmers in rural areas. The study will also contribute to understanding how extension programs can be better designed and implemented to address the specific needs of farmers and increase the effectiveness of agricultural development efforts.

METHOD

The research was conducted in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency. This research will be conducted for 3 months from April to June 2025.

Quantitative design research design with research techniques in the form of descriptive surveys describe and explain the empirical facts encountered in the field. The population in this study was conducted on wet-rice farmers in Suranenggala Kidul Village. The number of samples was 40 rice paddy farmers, who live in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency. According to Arikunto (2022). Sampling is done by simple random sampling so that the entire population has the same opportunity to be sampled (Arikunto, 2022), while the sample for the extension agent appointed one agricultural extension agent.

The data sources used in this research are primary data and secondary data. Primary data is data obtained directly from key informants using a list of questions (questionnaire) and direct interviews to obtain data on the effectiveness of the implementation of the Rice Paddy Farming Business Extension Program in Suranenggala District, Cirebon Regency. While secondary data is data obtained from related agencies and studying various literature such as books, journals, and scientific articles related to this research.

Data collection techniques used in this study are: (1) Observation is to collect data through direct observation of rice paddy farmers and agricultural extension, (2) Interview is to collect data through direct interviews with informants, namely rice paddy farmers and agricultural extension agents, (3) Documentation, namely by recording and taking pictures in the field on rice paddy farmers and extension agents in Suranenggala District, Cirebon Regency

Data analysis techniques used in this study are as follows:

1. Descriptive analysis is a method used to provide an overview of the primary data and secondary data that has been collected (Sugiyono, 2014). The data obtained from the research results are then analyzed to achieve the objectives of this study. From the data that has been obtained, the average will be sought to determine the effectiveness of the method with the formula:

$$\text{Average} = \frac{\sum x}{f}$$

Description:

$\sum x$ = jumlah program

f = Number of respondents

2. Scoring analysis is used to determine the average obtained and determine how much the level of effectiveness is by using the following criteria by giving a score divided into several class intervals (effective, quite effective, and ineffective) with a score for effective criteria 3, less effective 2, and ineffective 1.

By using the following formula:

Interval = highest score - lowest score

Number of classes

Effective: 2.34-3.00

Less Effective: 1.67-2.33

Less Effective: 1.67-2.33

RESULTS AND DISCUSSION

Respondent Identity

Farmers are people who do business in meeting their needs in agriculture. To obtain information about farming, the identity of respondent farmers is one of the important things that can help smooth the research process (Wibowo & Setiawan, 2021). The following is a discussion of the identity of respondent farmers which includes age, education level, number of family dependents, farming experience, and land area.

Age is one of the factors that greatly influence a person's activities in the field of business (Supriyono, 2020). Generally, someone who is still easy and healthy has stronger physical abilities than those who are old. Someone who is still young is quicker to accept new things, more willing to take risks and is more dynamic. Meanwhile, someone who is relatively old has a mature management capacity and has a lot of experience in managing his business, so he is very careful in making decisions and tends to act on traditional matters, besides that his physical abilities have begun to decrease to find out clearly the classification of respondents according to age group can be seen in the table below:

Table 1. Identity of respondents based on age group in Suranenggala Kidul Village, Suranenggala Sub-district, Cirebon Regency with land area <0.5 ha.

No	Age (Years)	Frequency	Percentage (%)
1	32 – 41	8	40
2	42 – 51	7	35
3	52 – 60	5	25
Total		20	100

Source: Primary Data After Processing, 2025

Table 1 shows that 8 respondent farmers with a percentage of 40% are in the age range of 32 - 41 while 7 respondent farmers aged 42 - 51 years with a percentage of 35% and 5 respondent farmers with a percentage of 25% aged 52 - 60 years. This means that rice paddy farmers in Suranenggala Kidul Village are generally at a young age with the largest number of 8 people with a percentage of 40% so that researchers can conclude that farmers in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency are at a productive age which gives a positive impact in the management of rice paddy farming. While the lowest age of farmers with the number of respondents is 5 people with a percentage of 25% and this can be categorized as unproductive. Based on population theory states that a person's productive age is in the range of 15 years to 55 years. Where at that age a person's ability to think and work is relatively productive (Central Bureau of Statistics, 2025).

Table 2. Identity of respondents based on age group in Suranenggala Kidul Village, Suranenggala Sub-district, Cirebon Regency with land area > 0.5 ha.

No	Age (Years)	Frequency	Percentage (%)
1	27 – 38	9	45
2	39 – 50	6	30
3	51 – 62	5	25

Total	20	100 %
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Source: Primary Data After Processing, 2025

Table 2. shows that 9 respondent farmers with a percentage of 45% are in the age range of 27 - 38 while 6 respondent farmers aged 39 - 50 years with a percentage of 30% and 5 respondent farmers with a percentage of 25% aged 51 - 62 years. This means that paddy rice farmers in Suranenggala Kidul Village are generally at a young age with the highest number of 9 people with a percentage of 45% so that researchers can conclude that farmers in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency are at a productive age which gives a positive impact in the management of paddy rice farming (Prabowo, 2017). While the lowest age of farmers with the number of respondent farmers is 5 people with a percentage of 25% and this can be categorized as unproductive. Based on population theory, it states that a person's productive age is in the range of 15 years to 55 years. Where at that age a person's ability to think and work is relatively productive (Central Bureau of Statistics, 2025). The level of education is one of the successful factors of farmers in managing their farms because it can affect the mindset of farmers and better reasoning power, so that the longer a person gets education, the more rational (Moenir, 2022). In general, highly educated farmers will have a better way of thinking that allows them to act more rationally in managing their farms. The development of technology in agriculture also requires skills in applying technology (Soekandar, 2020). A high level of education allows farmers to be more responsive to receiving innovations or technology. The education level of respondent farmers can be seen in Table 3.

Table. 3 Identity of Respondent Farmers Based on Education Level in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency 2025.

No	Level of Education	Number (Soul)	Percentage (%)
1	SD/ Equivalent	20	50
2	SMP/ Equivalent	10	25
3	SMA/ Equivalent	7	17,5
4	SI/ Equivalent	3	7,5
Total		40	100,00

Source: Primary Data After Processing, 2025.

Table 3 shows that there are 3 farmers (7.5%) who have a bachelor's degree, while 37 other farmers have had formal education. Of the 37 farmers, 20 farmers (50%) completed their education at primary school, 10 farmers (25%) completed junior high school / equivalent, and 7 farmers (17.5%) completed high school / equivalent. Judging from the level of education of farmers, respondents can be said to increase because in general they can take formal education to high school / equivalent level of education. The level of education of a person very determine success in managing his farm. This is in accordance with the opinion of Pamungkas, Adjie (2020), that the higher the level of education of farmers, the broader the mindset and will certainly be faster in accepting an innovation delivered. The high level of education is due to the increasing awareness of farmers about the importance of education.

The number of family dependents is all family members who live in the same house or not with farmers or anyone whose living expenses and other needs are borne by the respondent farmer as head of the family. The large number of family dependents causes the magnitude of the burden of living expenses borne by farmers, but with many family dependents can affect the motivation of farmers to do creativity and a number of new innovations in terms of increasing or increasing production and income of farmers and family dependents can also be used as labor on farms (Mahmudi, 2015). The number of respondent farmers' family dependents can be seen in Table 4.

Table 4. Identity of respondent farmers based on the number of family dependents in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency.

No	Number of dependents family (people)	Frequency	Percentage (%)
1	2-6	30	75%
2	7-11	10	25%
	Total	40	100%

Source: Primary Data After Processing, 2025.

Table 4 shows that the number of respondents as many as 40 people with the number of family dependents varying between 2-6 family dependents as much as 75% with 30 respondents, 7-11 family dependents as much as 25% with 10 respondents, so a total of 40 respondents with a total percentage of 100% of farmers in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency.

Land area is one of the factors farmers in making decisions on managing their farms. The use of seeds, fertilizers and pesticides is influenced by the area of land owned which will affect the costs that will be incurred during the growing season. To find out the area of land owned by respondent farmers can be seen in table 5.

Table 5. Identity of respondents based on land area in Suranenggala Kidul Village, Suranenggala Sub-district, Cirebon Regency 2025

No	Land area (Ha)	Frequency	Percentage (%)
1	≤ 0,5	20	50
2	> 0,5	20	50
	Total	40	100

Source: Primary Data After Processing, 2025.

The table above shows that 20 respondent farmers have a land area of 0 - 0.5 Ha as much as 50% and 20 respondent farmers with a percentage of 50% as many as 20 people. The total number of paddy rice farmers is 100% and in general the respondent farmers are classified as farmers with large land area. The length of time farming is calculated since being involved in paddy rice farming. The length of time in business is very important in making a decision for the management of rice paddy farming in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency. In general, rice paddy farmers in farming are always guided by previous

farming experience. The longer one's farming experience, the greater the opportunities that are obtained and the smaller the failure experienced. The length of time respondents cultivate paddy rice can be seen in Table 6.

Table 6. Identity of Respondent Farmers Based on Length of Farming Experience

No	Length of farming (years)	Number (people)	Percentage (%)
1	2-11	11	27,5
2	12-21	18	45
3	22-31	7	17,5
4	32-41	4	10
Total		40	100%

Source: Primary Data After Processing, 2025

Table 6 shows that 4 respondent farmers (10%) have been farming for 32-41 years, 7 respondent farmers have been farming paddy rice for 22-31 years with a percentage of 17.5% and 18 respondent farmers have been farming paddy rice for 12-21 years with a percentage of 45% and 11 farmers have been farming paddy rice with farming experience from 2-12 years 27.5%. The length of farming is closely related to the age of the farmer. Farmers whose age is older have more experience than farmers whose age is easier. A person who has been farming for a long time is very careful in absorbing new technology offered from outside, on the other hand, farmers with relatively little experience tend to absorb new technology more easily and more quickly try the technology on the farms they manage. Thus, farming experience will reflect a person's behavior in farming activities (Uhland, R. E. 2014; Uhland et al, 2022).

Extension Program Planning Process

In planning the program, extension workers often hold meetings with farmer groups, both meetings are held at the agriculture office and extension workers visit farmer groups, there are several things that are discussed, among others, regarding programs related to paddy rice farming (Danim, 2014). In planning extension programs often involve farmers in this case is the farmer group itself in which there are community leaders besides that farmers are given the opportunity to argue and about decision making related to programs that will be implemented by agricultural extension agents on the grounds that farmers are directly involved in making extension program plans (Mardikanto, 2013) and (Uhland and Roberta, 2022).

Table 7. Extension Program Planning Process in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency, 2025

No	Extension program planning process	Total Score (Average)	Category
1	Farmer involvement in planning extension programs	2,5	Effective
2	Farmer involvement in the decision-making process	2,62	Effective

Average	2,56	Efektif
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Source: Primary Data After Processing, 2025

Table 7 explains that the process of planning extension programs in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency consists of involving farmers in planning extension programs with an average score of 2.5 with an effective category and involving farmers in the decision-making process with an average score of 2.62 with an effective category. In general, there are two agricultural extension programs in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency, namely:

1. Agricultural machinery

Procurement of agricultural machinery is an action taken by extension workers to help farmers in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency, this is done to make it easier for farmers to manage agricultural land seen with a very effective work process besides that the procurement of agricultural machinery is very helpful for sawah rice farmers to reduce costs because previously farmers in Suranenggala Kidul Village always paid for machines such as tractors in land management at a considerable cost. Farmers in Suranenggala Kidul Village are very grateful for the extension program and sawah rice farmers respond strongly to the extension program. The types of machines provided to the government (extension workers) are tractor machines and land management machines (disk plows). In the process of planning the program, especially agricultural machinery, extension workers often involve farmers and always hold meetings, either meetings held at the extension office or the extension workers themselves who come to the farmers, besides that farmers are also involved in program planning both in decision making or offering ideas about rice farming (Tannembaum, 2015).

2. Means of Production of Paddy Rice

Agricultural extension officers prepare and provide assistance in the form of fertilizers, OPT, Seeds This is done to support the success of paddy rice farmers so that the production of paddy rice increases, the extension officers also conduct field meetings with paddy rice farmers. In addition, with the extension program, at least it can help wet-rice farmers in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency in reducing the cost of wet-rice farming (Umar and Sartono. 2018).

- a. Quality Seeds

Seeds are one of the many extension programs in Suranenggala Kidul Village, Suranenggala Sub-district, Cirebon Regency. In the procurement of seeds, extension workers involve farmers in determining the varieties of seeds that are suitable for planting. Quality seeds are labeled seeds with a high level of purity and growth power. The characteristics of quality seeds are pure seeds of a full-sized and uniform variety, good growth capacity, free of weed seeds, diseases, pests, or other materials. Generally, good quality seeds can increase the production of paddy rice. While the quality seeds provided by extension workers based on input from paddy farmers to farmer groups, namely the Bima Brebes variety, are carried out on the basis of the results of meetings between extension workers and paddy farmers, indirectly farmers are involved in the decision-making process. In addition, the extension agent in making the extension program on time is seen with the assistance of seeds and agricultural machinery before

entering the planting season, everything is already there so that the sawah rice farmers in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency are given convenience in farming sawah rice.

b. Fertilizer

As for the types of fertilizers given by extension workers to respondent farmers, there are two types of fertilizers, namely organic fertilizer and urea fertilizer by distributing each person in the farmer group to get two types of fertilizer, namely urea fertilizer and organic fertilizer with a distribution of 50 kg of urea fertilizer and 50 kg of organic fertilizer according to the number of members in the farmer group because farmer members vary from 13 farmer groups there are 19 members, 20 people, 21 people and 25 people. This was done by the extension agent to help rice farmers in Suranenggala Kidul Village, Suranenggala Subdistrict, Cirebon Regency seen with fertilizer supplies that are so limited with this program at least farmers can easily obtain fertilizer both organic fertilizer and chemical fertilizer.

c. Plant Disturbing Organisms (OPT)

OPT control is an action taken by wetland rice farmers to reduce the intensity of pests that are increasingly troubling wetland rice farmers in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency. In controlling this pest, there must be special treatment by paying attention to the use of chemicals which will have a negative impact if too many chemicals are used (Zakaria. 2020). The method used by extension workers in face-to-face counseling and going directly to the field to provide pesticides and herbicides to farmers as a response to plant disrupting organisms between goal and rumpas pesticides while for herbicides using larvins as caterpillar control in rice paddy plants. The involvement of extension workers in controlling plant disrupting organisms received a response from farmers in Suranenggala Kidul Village seen pesticides and herbicides work which greatly helped farmers in controlling plant disrupting organisms of paddy rice. So that farmers in Suranenggala Kidul Village have increased production levels compared to before the use of larvin, goal and *rumpas*.

d. *Temu lapang*

Temu lapang is an activity carried out by extension workers to provide important information to farmers by delivering material directly (face to face) which is carried out twice a week to provide information that is closely related to the cultivation and production of paddy rice. In addition, with the field meeting program, farmers are given the opportunity to provide input related to rice paddy farming starting from land management to harvesting, besides that the field meeting can help farmers increase rice paddy production seen from the comparison of previous results.

Implementation of the Extension Program

Based on table 8 below, it can be seen that the implementation of the extension program in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency, all implementations are categorized as effective and this also plays an important role in the implementation of the Rice paddy extension program in the area, to see the results can be seen in the following table:

Table 8. Implementation of Extension Programs in Suranenggala Kidul Village, Suranenggala Subdistrict, Cirebon Regency, 2025

No	Implementation of Extension Programs	Total Score (Average)	Category
1	Farmer participation	2,45	Effective
2	Timely	2,72	Effective
3	According to the wishes of farmers	2,75	Effective
4	Timing	2,57	Effective
5	Program implementation	2,87	Effective
6	Increased production	2,85	Effective
7	Target	2,9	Effective
8	Decision making	2,57	Effective
	Average	2,71	Effective

Source of primary data after processing, 2025

Based on the results of research conducted by researchers in Suranenggala Kidul Village, Cirebon Regency District, there are several extension work programs that are realized or implemented, namely the implementation of the extension program. Table 8 explains that:

Farmer participation with an average score of 2.45 with an effective category, this is said to be effective because in the implementation of extension programs often involve farmers both in decision making such as submitting suggestions to extension agents related to the procurement of agricultural machinery and quality seeds seen with consideration that farmers in Suranenggala Kidul Village are limited or difficult to get quality seeds (Zahnd and Markus. 2023). While in the process of implementing the extension program farmers are directly involved in the application of agricultural technology such as tractors and disk plows seen from the level of response of wet-rice farmers in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency.

The implementation of the extension program on time with an average of 2.72 with the effective category, this is said to be effective seen in the implementation of programs such as the provision of seeds, agricultural machinery, and the provision of fertilizers because before entering the planting season everything is already in each head of the farmer group. The implementation of the extension program in accordance with the needs of farmers with an average of 2.75 with the effective category means that each program implemented by the extension agent is based on what the Paddy farmers input.

The length of time required in implementing the program with an average of 2.57 with the effective category. The time required by the extension agent is seen by the level of risk and cost that is so great as the agricultural machinery takes approximately a year while for seeds and fertilization it does not take so long 1-3 months. Implementation of extension programs in accordance with the target with an average of 2.87 with the effective category this is categorized as effective because in the implementation of extension programs related to rice paddy farming extension workers always hold meetings with farmers to discuss the implementation of the program not least about the objectives of the program whether the

program is made in accordance with the expectations of farmers or not so that the author can conclude that in the implementation of the program is definitely in accordance with the target because in it extension workers involve farmers in decision making through joint musahwara. Is there an increase in production after the program with an average of 2.85 with an effective category seen by the production of wet-rice farmers compared to before the existence of agricultural assistance. In 2015 before the existence of the agricultural extension program, paddy rice was only able to produce 37 tons per year while in 2025 there was an increase in production of 54 tons per year.

Changes in the level of adoption of farmers with an average of 2.9 with an effective category can be seen with the process of accepting innovations or good behavioral changes in the form of attitudes in farmers compared to before the existence of extension programs in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency. The level of farmer satisfaction with the implementation of the extension program with an average of 2.57 with the effective category can be seen with all the extension programs in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency which greatly provides benefits and convenience for the rice farmers themselves ranging from the supply of agricultural machinery to the provision of quality seeds. so based on the implementation of the agricultural extension program in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency, the extension work program is very effective based on the results of the scoring analysis (Vitalaya. 2018).

Based on the description above, the implementation of the extension program in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency is categorized as effective, this is known from the results of the scoring analysis in Table 8.

CONCLUSION

The planning and implementation of extension programs in Suranenggala Kidul Village, Suranenggala District, Cirebon Regency involve two main planning processes—farmer involvement in program planning and decision-making—with an average score of 2.5. The implementation phase consists of eight components, achieving an average score of 2.71. Overall, the effectiveness of these extension programs is categorized as effective, demonstrated by active farmer participation, timely program delivery, alignment with farmers' needs, appropriate duration, target achievement, increased rice paddy production, improved adoption levels, and high farmer satisfaction. For future research, it is recommended to explore the long-term economic impacts of these extension programs on farmers' livelihoods and to assess how integrating modern digital technologies could further enhance program engagement and effectiveness in this community.

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