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# The Effectiveness of Agricultural Extension Communication on Coconut Farmers Behavior Change in Farm Management in Enok District, Indragiri Hilir, Riau

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ABSTRACT

This research evaluated the effectiveness of agricultural extension communication in influencing the behaviour change of coconut farmers in farm management in the Enok District, Indragiri Hilir, Riau. The research employed a quantitative method, utilizing a questionnaire as the primary instrument, with a sample size of 100 coconut farmers in the Enok District. The results indicate that farmers' interactivity during extension sessions is influenced by the relevance of the material to their needs. The communication media, information sources, and messages the extension officers convey significantly impact communication effectiveness. Overall, the effectiveness of agricultural extension communication in the Enok District is positive, with most farmers providing positive feedback on the team's abilities, message relevance, and media used. Hypothesis testing results reveal a significant improvement in the effectiveness of agricultural extension officers after the intervention, reflecting their ability to present relevant material that motivates farmers' behaviour change. These findings provide a basis for recommending a more active and strategic role for agricultural extension officers in designing and delivering extension programs. The success of these programs is also reflected in the tangible actions adopted by farmers, such as implementing better farming techniques and adopting more sustainable farm management practices. This research provides in-depth insights into the factors influencing the effectiveness of agricultural extension communication and contributes to the research literature in this field.

**Keywords** : Agricultural Extension, Communication Effectiveness, Behavior Change, Coconut Farmers, Communication Media, Information Sources.

## I. INTRODUCTION

As an agricultural country, Indonesia relies heavily on the agricultural sector to improve people's welfare. Although Indonesia has abundant natural resources, the agricultural sector faces various problems that hinder its progress. Indragiri Hilir Regency, especially Enok District, is one of the vital coconut production centers for people's livelihoods. Enok District has an area of 880.86 km2, with most of the population working as fishermen and coconut farmers. The development of agriculture in this region is significant in supporting economic growth and community welfare.

a) Village boundaries

**Table 1.** Geographical Location of Enok District

| Regional Boundaries | District Name |
|---|---|
| North | Tembilahan, Tembilahan Hulu and Tempuling sub-districts |
| South | Sungai Batang and Keritang Districts |
| West | Kempas District |
| East | Tanah Merah District |

b) Area

**Table 2.** Coconut Plantation Statistics Data

| Types of Coconut | Area | Number of Farmers |
|---|---|---|
| Deep Coconut | 30,895ha | 6.305 |
| Coconut Hybrid | 481ha | 195 |

**Source :** (Riau Provincial Plantation Office, 2021)

The availability and access to information play an important role in social development, particularly in the context of sustainable agriculture in developing countries. Effective communication between farmers and agriculture agencies, especially through agricultural extension services, is critical in transferring technology and knowledge. Mass, electronic, and new media are innovations to improve agricultural management, income, and farmer welfare. The role of extension workers is vital in providing information to coconut farmers in Enok District, guiding them in increasing coconut production, managing plantations as a business, and understanding the importance of coconut farmer regeneration. The importance of adapting communication to the region's characteristics, including Enok District, which has uniqueness and differences in individuality between farmers. Extension workers are expected to be able to produce production resources, working capital, and primary markets in addition to other public services needed by farmers to contribute to economic activity [1]. According to [2], agricultural extension workers have a role that must be done to achieve good performance. Then, according to Ban and Hawkins (2009) in [3], agricultural extension aims to transfer information from the global knowledge base and local research to farmers. [4] Rusmono stated that there were 72,000 villages with capacity in the agricultural sector, and currently, there are only 44,000 agricultural extension workers. Based on Law Number 16 of 2006 concerning the Agricultural Extension System, Fisheries, and Forestry, at least one village has one agricultural extension worker. However, research locations often find that one extension worker oversees 3 to 4 villages, so not all villages can get counselling. Enok faces a condition where there are no extension workers in the village, and the village government needs an extension program that can provide information and education to farmers. However, recently, non-governmental organizations through the Field School program have just carried out counselling to farmers where the programs focus on transferring knowledge related to Good Business Practice (GBP), Good Financial Practice (GFP) and Good Post Harvesting Practice (GPHP). The Enok sub-district area was chosen as one of the pilot projects of this program, where communication still

needs to be built to transfer knowledge to farmers. Extension activities will have a practical impact if the objectives of the extension program can be achieved and there is a change in the target audience's behaviour. The final goal can be observed and measured. The purpose of the extension service carried out in Enok is to foster farmers' motivation in garden management and care, foster interest for the younger generation to farm or regenerate farmers, and change their perception of how to make their gardens a business that they can develop to improve the economy and standard of living of farmers. Agricultural extension is a learning process aimed at the main actors and agricultural business actors. The goal is for them to be willing and able to manage themselves in accessing information about markets, technology, capital, and other resources. This increases their productivity, business efficiency, income, and welfare. In addition, agricultural extension also aims to increase awareness of preserving environmental functions [5]. The purpose of agricultural extension workers according to Ban and Hawkins (2009) in (Prabawa et al., 2020), the purpose of agricultural extension is to improve excellent and profitable farming practices, improve the standard of living and welfare of farmers, handle agricultural extension activities will involve extension activities and agricultural community activities that require extension.

Communication of behaviour change is carried out to the target of the program, namely the community. Communication efforts are made to increase knowledge, influence attitudes, and encourage healthy practices and behavior in individuals, families, and communities. In this study, the target of the program is coconut plantation farmers. The effectiveness of communication largely determines success in extension activities. Communication effectiveness is achieved when the recipient can well understand the message conveyed. [6] Effective communication can be described as communication in which the meaning emitted or stimulated by the communicator is similar or identical to the meaning intended by the receiver of the message. If S (sender) and R (receiver) of the message have a corresponding response, then communication is considered effective. Schram and Forter (1973) in, Communication effectiveness can be observed through the extent to which communicators and communicants support each other in general, especially in the context of using communication media to convey a change. According to Hornik (2012) in [7], to measure effectiveness, appropriate indicators are needed. An indicator of the effectiveness of communication in a program is Source Credibility [8] *(source credibility*); In the dimension of source credibility includes several indicators, namely: trust *(trustworthiness),* ability *(competence),* skill *(expertise),* Dynamic *(dynamism),* attraction *(physical attractiveness),* similarity of sources with audiences *(similarities between the source and receiver)* closeness *(proximity).* Message *(messages)*; In the message dimension there are indicators such as message prominence (salient information), the number and type of nonverbal messages perceived *(effective nonverbal cues),* the number and type of perceived verbal messages *(effective verbal cues),* Content of messages from the audience in response through various media or events *(two-way communication).* Message recipients *(receivers)*; In the recipient dimension there are three indicators, namely *opinion leader, group influence* and *selective exposure*. Participant participation (audience participation); In this dimension of participation, it is seen the extent of feedback generated from the program. Then, the study aims to evaluate the effectiveness of agricultural extension communication in Enok District, Riau, which is implemented by non-governmental organizations through the Field School program Extension involves increasing farmer motivation, increasing the interest of the younger generation in farming, and changing perceptions of gardens as a business that can improve the economy. In this context, communication

strategies are vital to achieving these goals, avoiding information gaps, and ensuring changes in farmer behaviour. This study will evaluate the effectiveness of extension communication with a focus on changing the behaviour of coconut farmers in plantation management in Enok District, Indragiri Hilir, method focuses on distributing questionnaires.

## II. METHODS AND MATERIAL

This research was designed using a descriptive research type, a method for researching the status of a group of people, an object, a condition, a system of thought or a class of events in the present. This research uses a positivist paradigm. The positivism paradigm emphasizes the scientific approach, measurement, and hypothesis testing. This research uses a positivist paradigm. The positivism paradigm emphasizes the scientific approach, measurement, and hypothesis testing. The choice of this design was based on the need to understand the factors that influence the effectiveness of extension communication and to assess the extent to which the agricultural extension program achieved its goal of changing the behaviour of coconut farmers. Thus, descriptive design provides an appropriate framework for conducting research objectives. The method used in this research is quantitative, a research approach based on a positivist paradigm in developing science. This method focuses on distributing questionnaires. The research instrument that will be used is the questionnaire method, namely a questionnaire guide containing questions related to research in the form of closed and open questionnaires, meaning that answers are available in the form of a checklist and fill-in columns. Questionnaires were distributed to respondents who were determined to answer honestly and independently. Then, to take measurements, use what is called a measurement scale. According to [9] the Likert scale is used to evaluate the attitudes, opinions and perceptions of individuals or groups towards certain social phenomena. Then, questionnaires will be distributed to coconut farmers who own land and participate in counselling through the field school program in Enok District. The research period was carried out for three months, from May to July 2023. This period was chosen due to the author's limited time, costs and energy.

## III.RESULTS AND DISCUSSION

The author will provide a more detailed overview of the research object: the effectiveness of agricultural extension communication on changes in the behaviour of coconut farmers in Enok District, Indragiri Hilir, Riau. This explanation will include a description of the study's location and the study's subject.

### Research Location

The location of the research was carried out in Enok District. Enok District is located in Indragiri Hilir Regency, Riau Province, Indonesia. This region is characterized as a significant centre of coconut farming. Enok District has geographical conditions strongly supporting coconut growth located on the coast.

### Research Subjects

The research subjects that the author took were coconut farmers who actively participated in agricultural extension programs, especially the Field School program organized by the Bahtera Dwipa Abadi Foundation (YBDA) in Enok District. This area has 6,500 coconut farmers, as recorded in the statistics of the Riau Plantation Office.

The author should have sampled 377 coconut farmers based on the sampling method to produce representative data. However, within the limited resources and time of the study, researchers chose to test as many as 100 coconut farmers.

*Age of Respondents*

**Table 1**. Distribution of Respondents Based on Age of Respondents

| No | Age | Sum | Percentage |
|---|---|---|---|
| 1 | 20-30 years | 21 | 21% |
| 2 | 31-40 years | 38 | 38% |
| 3 | 41-50 years | 26 | 26% |
| 4 | 51-60 years | 14 | 14% |
| 5 | 61-70 years old | 1 | 1% |
| Sum | | 100 | 100% |

The study succeeded in summarizing the age variation of coconut farmers in Enok District, with an age range of 20-70 years. The age group of 31-40 years is dominant, which is vital in the effectiveness of extension communication. Although the 20-30 years and 61-70 year age groups had a lower percentage, respondents' age diversity provided a rich dimension to understanding the factors influencing agricultural extension communication. Analysis of the distribution of respondents by age becomes an essential basis to support research findings and recommendations.

*Long Farming*

**Table 2**. Distribution of respondents based on length of farming

| No | Long Farming | Sum | Percentage |
|---|---|---|---|
| 1 | 1-5 years | 35 | 35% |
| 2 | 6-10 years | 21 | 21% |
| 3 | 11-15 years | 13 | 13% |
| 4 | 16-20 years | 18 | 18% |
| 5 | 21-25 years | 3 | 3% |
| 6 | 26-30 years | 8 | 8% |
| 7 | >31 | 2 | 2% |
| **Sum** | | **100** | **100%** |

Based on data analysis regarding the length of coconut farming, it can be concluded that most respondents (35%) have 1-5 years of coconut experience. The 6-10 year group is also significant, reaching 21% of the total respondents. There is considerable variation in the distribution of years of farming, but the group with more than 20 years of experience is in the minority. This shows that most respondents are still relatively new to the world of coconut farming, while a small number of them have been involved in this practice for a longer period.

*Recent Education*

**Table 3**. Distribution of respondents based on recent education

| No | Education | Sum | Percentage |
|---|---|---|---|
| 1 | No School | 5 | 5% |
| 2 | SD | 51 | 13% |
| 3 | Junior | 11 | 11% |
| 4 | Senior | 28 | 28% |
| 5 | Diploma | 1 | 1% |
| 6 | Bachelor | 4 | 4% |
| **Sum** | | **100** | **100%** |

Most respondents had a secondary education level, with 28% completing high school. The primary rate is also significant, reaching 13%, while respondents who do not attend school are around 5%. Only a small number of respondents attended higher education, such as diplomas and bachelor's degrees (1% and 4%). This analysis reflects the diversity of education levels among respondents.

*Number of dependents of farming families*

**Table 4.** Distribution of Respondents Based on Number of Dependents

| No | Number of Dependents | Sum | Percentage |
|---|---|---|---|
| 1 | 0 | 3 | 3% |
| 2 | 1 | 13 | 13% |
| 3 | 2 | 24 | 24% |
| 4 | 3 | 23 | 23% |
| 5 | 4 | 18 | 18% |

| | | | |
|---|---|---|---|
| 6 | 5 | 12 | 12% |
| 7 | 6 | 5 | 5% |
| 8 | 7 | 1 | 1% |
| 9 | 11 | 1 | 1% |
| **Sum** | | **100** | **100%** |

Most respondents have varying numbers of family dependents. Group 2 dependents are the most with 24%, followed by group 3 dependents (23%) and four dependents (18%). A higher number of dependents has a lower percentage. Most respondents had two dependents, showing variations in family dependents.

### *Land Area*

**Table 5.** Distribution of Respondents Based on Land Area

| No | Land | Sum | Percentage |
|---|---|---|---|
| 1 | 1 ha | 15 | 15% |
| 2 | 2 ha | 35 | 35% |
| 3 | 3 ha | 15 | 15% |
| 4 | 4 ha | 31 | 31% |
| 5 | 5 ha | 4 | 4% |
| **Sum** | | **100** | **100%** |

Most respondents have varied coconut farming land areas. As many as 35% have about 2 hectares of land, followed by 31% with 4 hectares. The land areas of 1 and 3 hectares reach 15% each. Respondents with 5 hectares of land are a minority group (4%).

### *Hypothesis Testing*

**Hypothesis 1:** Based on the factor analysis test, the media is the most dominant factor in the effectiveness of extension communication in Enok District. The t-test results showed significant differences in factors (source, medium, and message), and an alternative hypothesis (H1) was accepted for all three factors. These findings provide the basis for developing more effective communication strategies in the context of extension in the region. **Hypothesis 2 testing:** T-test results show significant differences in the effectiveness of informative, persuasive, and entertainment sources, messages, media, and communications in agricultural extension. All these variables are statistically effective in counselling, indicating that the role of extension workers and elements of communication messages are vital in achieving the effectiveness of counselling. **Testing Hypothesis 3:** Behavior change variables showed significant differences after agricultural extension interventions. The results confirm that the extension program has successfully encouraged changes in farmer behaviour. Thus, extension programs have proven effective in achieving the desired behaviour change goals.

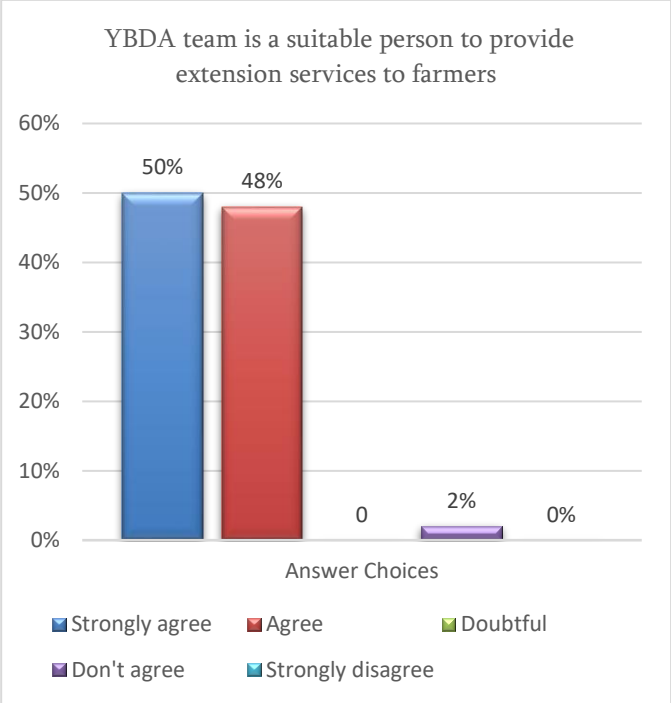
## Communication Effectiveness

### *Factors Affecting the Effectiveness of Extension Communication*

This study used field observations and questionnaires to understand the effectiveness of agricultural extension communication in Enok District, Riau. Observations show variations in farmer participation rates, increasing when the material is relevant to farm management. The importance of tailored extension and the role of media in communication effectiveness are emphasized. Hypothesis testing confirms significant differences in factors such as media, source, and message. These results form the basis for a more targeted extension strategy, ensuring clear messages, and increasing the positive impact of agricultural programs in Enok District.

***Effectiveness of Message Source (Extension)***

**Picture 1.** Effectiveness of Message Source

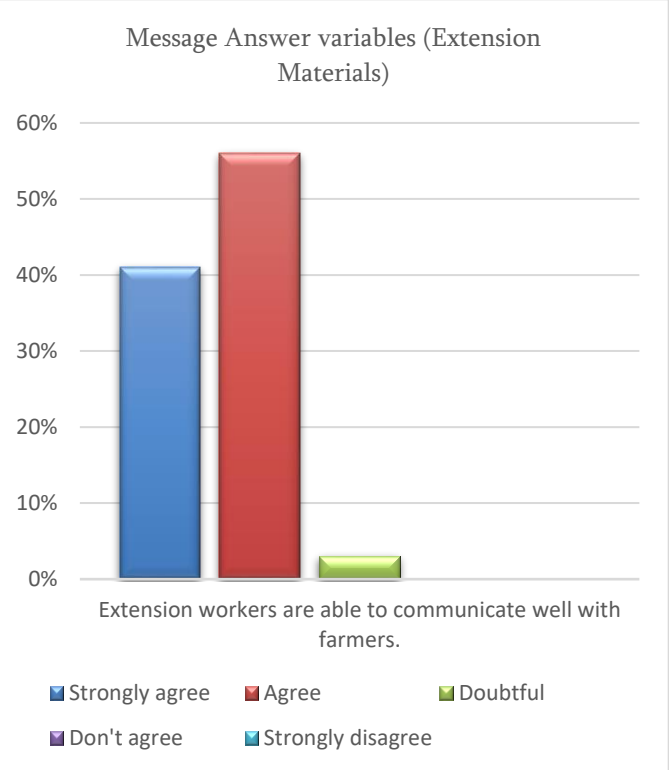



***Source:*** *Processed Primary Data*

Research highlights the crucial role of agricultural extension workers in the effectiveness of extension communication. Most farmers positively perceive YBDA as a source of coconut information, although a small percentage need more understanding. The ability, knowledge, and credibility of extension workers, along with Berlo's Theory, play an important role. Farmers' perceptions of extension workers correlate with social, cultural, and organizational factors. Evaluation of farmers' understanding of the role of YBDA can improve the effectiveness of extension services. Source credibility theory is also relevant, where perceptions of extension worker competence influence message reception and behaviour change.

***Message Effectiveness (Extension Materials)***

**Picture 2.** *Message Answer variables* (Extension Materials)

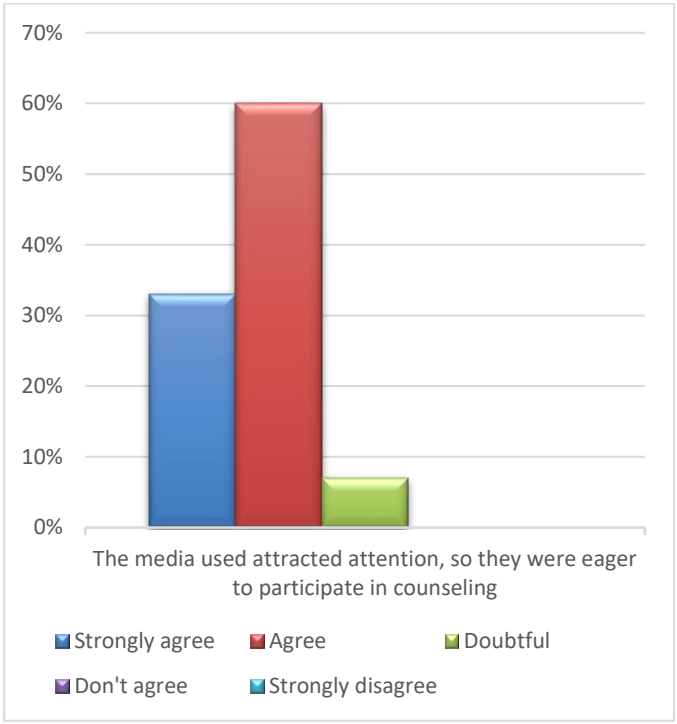



***Source:*** *Processed Primary Data*

The survey results regarding the communication skills of the YBDA Facilitator Team in delivering agricultural extension services to farmers can be analyzed in more detail. Most farmers, about 41% of the total respondents, strongly agree that the YBDA Facilitator Team is an extension worker who can communicate well with them.

***Effectiveness of Extension Media***

**Picture 3.** Communication Media Answer Variable



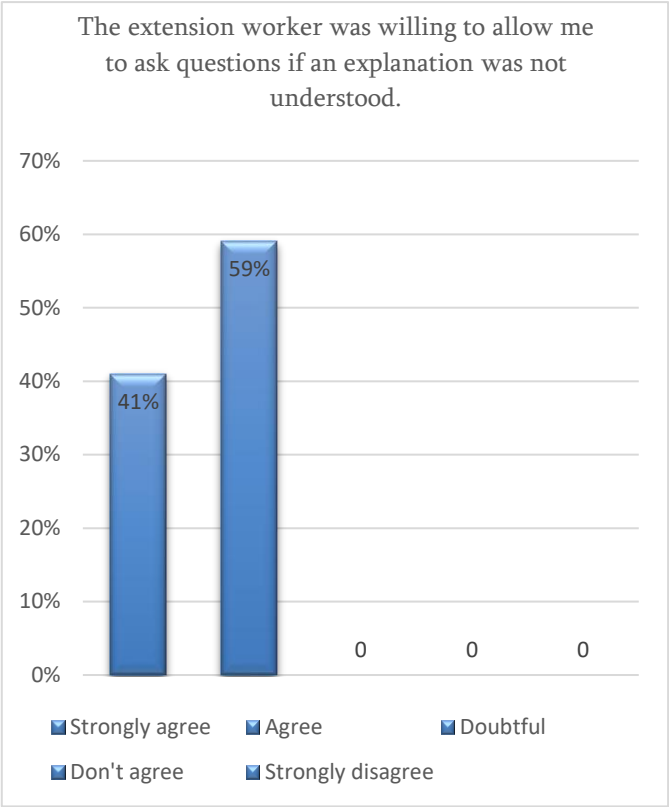

***Source:*** *Processed Primary Data*

From the results of the questionnaire distribution, most respondents (33%) stated that they strongly agreed that the media used managed to attract their attention. Hence, they felt excited to take part in counselling. However, a small percentage of respondents (7%) are sceptical of this statement. The hypothesis test results related to the effectiveness of extension media showed significant findings in improving extension communication in Enok District. Then, through the application of a one-sample t-test, the hypothesis test results showed a significant difference between the level of effectiveness of extension materials before and after the intervention in Enok District.

***Behavior Changes***

**Increasing Farmer Knowledge in Farm Management**

**Picture 4.** Increasing Farmer Knowledge in Farm Management

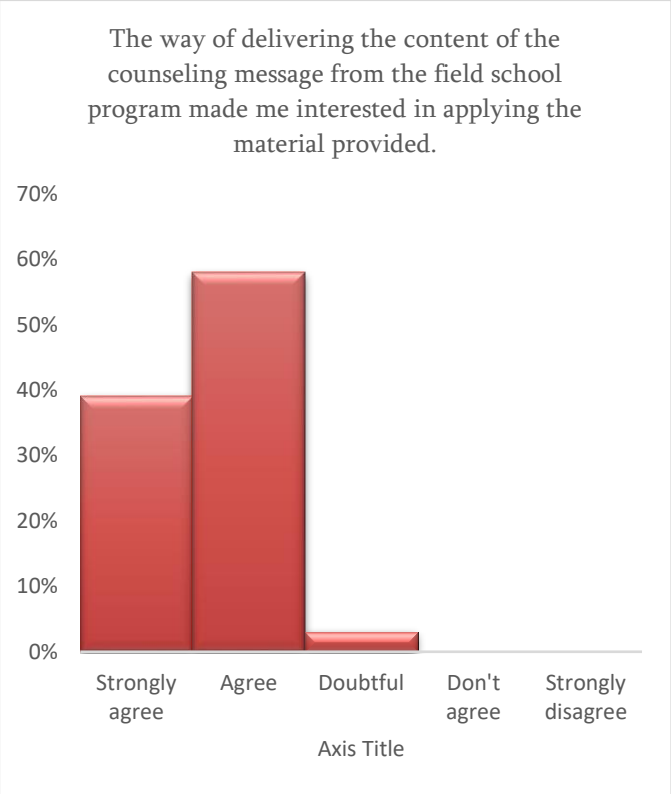



***Source:*** *Processed Primary Data*

The results showed several significant findings related to the effectiveness of agricultural extension. Most farmers (41%) feel that extension workers are willing to allow them to ask questions if explanations are not understood, which is a positive aspect of extension communication. This increased knowledge is essential in agriculture, as more knowledgeable farmers tend to make better decisions in managing their farms. They can identify problems, take appropriate action, and implement more effective agricultural practices.

**Farmer attitude in responding to the content/message of agricultural extension workers**

**Picture 5.** Distribution Diagram of Answer Variables Influencing Attitude

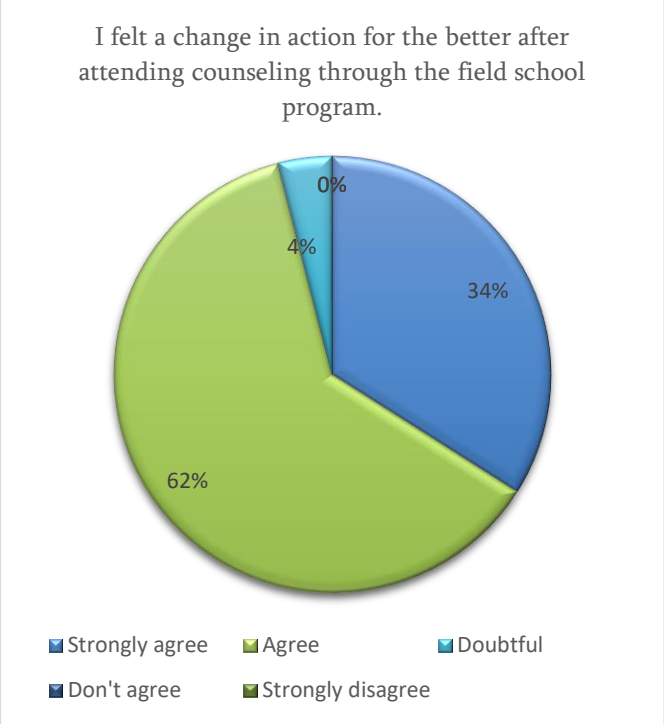



***Source:*** *Processed Primary Data*

The results showed several significant findings on how agricultural extension services affect farmers' attitudes. More than 58% of respondents stated that the way the content of the counselling message from the field school program was delivered made them interested in applying the material provided. This change in attitude can be the first step towards more remarkable behaviour change. A positive attitude towards more sustainable farming practices can encourage farmers to be more open to new concepts and try different farm practices. [10] states that attitudes, subjective norms, and self-behavioural control influence a person's behaviour. If coconut farmers experience a positive attitude change towards sustainable agricultural practices through extension, they are more likely to adopt the new behaviour.

**Farmer Skills in Farm Management (Generating Action)**

**Picture 6.** Distribution Diagram of Answer Variables Raises Action




***Source:*** *Processed Primary Data*

Furthermore, the research results show that agricultural extension through the field school program has influenced farmers' actions. This aligns with the Stimulus-Organism-Response (SOR) Theory; this theory highlights the importance of the quality of communication sources in influencing behaviour change. Thus, the quality of the extension (stimulus) in terms of how the message content is delivered and the instructor's skills contribute to increased farmer action (response) in managing their plantations. Then, the research results also show that most respondents stated that they acted directly after understanding the extension material. This indicates that extension programs improve farmers' knowledge and attitudes and encourage real action.

## IV.CONCLUSION

1. This study identifies key factors that influence the effectiveness of agricultural extension communication in Enok District, including farmer interactivity, communication media, extension sources, and messages conveyed by extension workers. The conclusions highlight differences in these factors and support the development of more targeted extension strategies.
2. In general, the effectiveness of agricultural extension communication in Enok District is assessed positively by farmers. The positive response to the extension team's ability, message relevance, and media use reflects farmer satisfaction. The hypothesis test showed a significant improvement in the effectiveness of extension workers after extension interventions, confirming the critical role of extension workers in influencing changes in farmers' knowledge and attitudes.
3. Extension programs, especially field schools, significantly impact coconut farmers' behaviour, knowledge, and attitudes in the Enok District. The role of extension workers, relevant messages, and effective use of media play a key role in the success of this program. Recommendations include increased adaptation of the material.

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