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Sheep Breeders' Response to the Use of Papaya Seed Meal as a Natural Anthelmintic in Sriwedari Village Muntilan Subdistrict Magelang Regency

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Abstract: *This research was carried out in Sriwedari Village, Muntilan District, Magelang Regency, from May 10 to June 10, 2025. The purpose of the study was to determine the response of farmers to the use of papaya seed flour as a dewormer in sheep and to analyze the relationship between this response and the characteristics of farmers, including age, education level, and experience in livestock farming. This study used a Pre-test-Post test research design (One Group Pre-test Post-test Design) with a sample of 33 people selected using the purposive sampling method. The respondents' criteria were to have a minimum of seven sheep and more than 2 years of livestock experience. Data collection techniques include interviews, observations, documentation, and recording. Data analysis used descriptive analysis to determine the response of breeders and statistical analysis of Spearman's rank correlation to determine the relationship between respondent characteristics and responses. The variables studied consisted of independent variables, namely the characteristics of the breeder (age, education level, and experience in breeding) and the dependent variable (bound), namely the response of the breeder. The results of the study showed that the response of farmers to the use of papaya seed flour as a dewormer in sheep was in the very high category. The effectiveness of counseling is considered very effective, while the effectiveness of behavior change is categorized as effective. Statistical analysis showed that the variables of age and experience of breeding were not significantly related to the response of the breeders. Meanwhile, the education level variable has a very strong, positive, and significant relationship with farmers' responses.*

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INTRODUCTION

The livestock sector in Indonesia has a very important role as one of the sources of food security, where sheep livestock is included. In Indonesia, the important role of sheep livestock cannot be ignored because it is one of the sources of animal protein for the community (Rusdiana and Maesya, 2017). The demand for meat and other livestock products continues to increase along with the growth of the population and public awareness of the importance of nutrition (Fatmawati *et al.*, 2018). Judging from data sources from the Central Statistics Agency (BPS, 2023), it shows a positive increase in lamb production in Indonesia, this haI is evidenced by the production of lamb meat in 2022 of 52,162.30 tons and an increase in 2023 of 52,998.80 tons, this haI is because the public is increasingly aware of the importance of animal protein for health.

Sheep cultivation in Sriwedari Village is generally still carried out traditionally and lacks attention to the health of livestock, especially what often occurs, namely worms that cause livestock productivity to decrease. The use of chemical drugs is often the primary solution, but the increasing resistance to resistance and the side effects it causes prompts the search for safer and more effective alternatives. Atmaja *et al*., (2024) worm infections can cause damage to vital organs, such as the liver and intestines, leading to decreased livestock productivity. These worms can interfere with nutrient absorption, cause anemia, and reduce the quality of meat and dairy products, thus negatively impacting animal welfare and the economy of farmers. Worm infestation in livestock can cause symptoms in the form of lumps or lumps in the colon, as well as the appearance of nodules in the intestine (intestinum). This condition can trigger serious digestive disorders, such as dysentery, due to inflammation and damage to intestinal tissues (Sugama and Suyasa, 2011).

Based on the results of the Regional Potential Identification (IPW), the potential of papaya seeds in Sriwedari Village as a plant that can be made into the basic material for making alternative worm medicines. The manufacture of papaya seeds as the basic ingredient for making medicines is very ambitious because it is a new technology that is efficient, cheap and easy to apply by utilizing existing papaya seeds. Atmaja *et al*., (2024) papaya seeds contain the proteolytic enzyme papain that exhibits antihelmintic activity, which is manifested through the ability to interfere with survival or remove worm parasites from the host's digestive tract. Previous research has shown that papain can damage the connective tissues of worms and inhibit their growth and reproduction, thereby reducing worm infestations in livestock.

The flavonoid compounds found in the papaya plant can be extracted from the seeds and leaves (Prasetya *et al*., 2018). Induces capillary vasoconstriction and decreases vascular permeability in worms. This leads to disruption of oxygen and nutrient circulation, which ultimately accelerates the death of the parasite (Utami, 2017). Tannin compounds, which are classified as alkaloid polyphenols (Deaville *et al*., 2010). have protein binding activity and enzyme degradation (Oliveira *et al*., 2009). The ability of tannins to bind proteins allows inhibition of protein biosynthesis through interaction with the digestive tract of worms and induction of cuticle protein aggregation, resulting in disruption of metabolism, homeostasis, and activity of worms (Ulya *et al*., 2014). Tannins can also trigger nutritional deficiencies in roundworms by binding to enzymes involved in nutrient absorption (Faradila *et al*., 2018).

The advantages of using papaya seeds as an alternative medicine in worm control also offer advantages in terms of availability and cost. Atmaja *et al*., (2024) noted that the basic ingredient of papaya seed flour is easy to find and abundant, so it can provide opportunities for farmers to take preventive measures in controlling worm diseases. Thus, the use of papaya seeds not only has the potential to improve the health of livestock, but can also improve the overall productivity and welfare of farmers.

The purpose of this study is to determine the relationship between characteristics in the form of age, education level, and experience of livestock to responses related to the use of papaya seed flour as a dewormer in sheep and to determine the Effectiveness of Counseling (EP) and Effectiveness of Behavior Change (EPP). The novelty of this study is that papaya seed flour has not been used as a dewormer in sheep, the hope of this study is that farmers in Sriwedari Village will be able to use papaya seed flour to overcome worm problems in sheep.

THEORETICAL FRAMEWORK

Agricultural Extension

Agricultural extension, as defined in (Permentan RI No. 03 of 2018) is an educational intervention that aims to facilitate key actors and business actors in the agricultural sector in accessing essential resources, including markets, technology, financing, and other resources. This intervention is designed to optimize productivity, business efficiency, income, and welfare, as well as increase awareness of environmental sustainability.

Ginting and Andari (2020) stated that counseling is a motivator for teaching science about agricultural development should be a learning coach for farmer groups and assist farmers in providing an understanding of attitudes towards the application of modern agricultural technology from government program policies. The practice of agricultural extension, as a professional entity, aims to direct farmers' decisions regarding the adoption of innovation. The expansion of agricultural extension is rooted in the identification of farmers' needs to develop their ability to run productive agricultural businesses, which has implications for increased income and welfare. The development of agricultural extension is needed as an instrument to mobilize farmers' awareness and participation in the development agenda, with the ultimate goal of empowering farmers to achieve self-help (Rimadi *et al*., 2021).

Counseling Evaluation

Agricultural extension evaluation is a structured methodology that aims to collect data and information to assess the effectiveness of achieving the objectives of agricultural extension programs in certain geographical areas. The data collected is used to make an assessment and becomes the basis for decision-making and consideration related to the continuation of the agricultural extension program. Evaluation by extension workers is carried out in a structured manner through the collection and analysis of information which includes aspects of planning, implementation, results, and the impact of activities. This evaluation aims to assess the relevance, effectiveness, and efficiency of the achievements of the activities that have been carried out, as well as the basis for designing or developing the next extension program (Utami, 2018).

Response

Rakhmat (2005) response or response is an impression obtained through the interpretation of messages and information in observing a subject, event/relationship. The response was divided into three, namely:

a. Cognitive responses are related to understanding information,
b. Affective responses that are connected to emotions, attitudes, and values, and
c. Conative responses refer to real behaviors in the form of actions, or habits.

Response is the result obtained from an observation of a subject, an event obtained by interpreting a message or impression as well as concluding information. Impressions or responses from those that have been observed and recognized, if in consciousness are also called actual responses, if they are in the subconscious, they are called latent responses. (Budi, 2017).

Sheep

Sheep is one of the important commodities in the livestock industry, especially in rural areas and agricultural communities. Molabe and Tyasi (2024) sheep farming not only

contributes to the provision of animal protein sources through meat and dairy, but also has significant economic value for farmers. Sheep can be raised at a relatively low cost and have good adaptability to a wide range of environmental conditions, making them an ideal choice for increasing farmers' income in tropical and subtropical regions. Endoparasitic (worm) infections can result in a variety of physiological disorders, such as weight loss, anemia, diarrhea, and indigestion. Furthermore, this infection can trigger damage to the sheep's internal organs, especially the stomach and intestines, which has negative implications for livestock productivity and welfare (Atmaja *et al*., 2024).

Worms in Sheep

Livestock in particular sheep are susceptible to infection by various types of endoparasitic worms, including nematodes (roundworms), cestodes (tapeworms), and trematodes (liver worms). Some species of worms that infect ruminants such as cattle, goats, and sheep have a direct life cycle, which does not require an intermediate host. Adult worms that inhabit the digestive tract produce eggs, which are then excreted with feces. Gastrointestinal nematodes that often parasitize in sheep include *the species Toxocara vitulorum*, *Bunostomum spp*., *Oesophagostomum sp*., *Haemonchus spp*., *Mescitocirrus spp*., *Cooperia spp*., *Nematodirus spp*., *Trichostrongylus spp*., and others (Atmaja *et al*., 2024).

Atmaja *et al* ., (2024) Worm infections can cause damage to vital organs, such as the liver and intestines, leading to decreased livestock productivity. These worms can interfere with nutrient absorption, cause anemia, and reduce the quality of meat and dairy products, thus negatively impacting animal welfare and the economy of farmers. Worm infestation in livestock can cause symptoms in the form of lumps or lumps in the colon, as well as the appearance of nodules in the intestine (intestinum). This condition can trigger serious digestive disorders, such as dysentery, due to inflammation and damage to intestinal tissues (Sugama and Suyasa, 2011).

Papaya Seeds

The anthelmintic potential of papaya seeds has been known to have the potential as an alternative medicine in the control of worm diseases in livestock, especially sheep. Atmaja *et al*., (2024), papaya seeds contain the proteolytic enzyme papain that exhibits antihelmintic activity, which is manifested through the ability to interfere with survival or remove worm parasites from the host's digestive tract. Previous research has shown that papain can damage the connective tissues of worms and inhibit their growth and reproduction, thereby reducing worm infestations in livestock. The effectiveness of papaya seed flour in a study conducted by Atmaja *et al*., (2024), papaya seed flour was given to a dose of 5 grams per head every 3 days for 7 days to cows resulting in a significant decrease in the number of worm eggs in the feces, which was indicated by the *Fecal Egg Count Reduction* value (FECR) of 76.9%. This suggests that papaya seed flour can be an effective alternative for worm control, compared to the use of synthetic dewormers that often raise concerns about residue and worm resistance.

The flavonoid compounds found in the papaya plant can be extracted from the seeds and leaves (Prasetya *et al*., 2018). Induces capillary vasoconstriction and decreases vascular permeability in worms. This leads to disruption of oxygen and nutrient circulation, which ultimately accelerates the death of the parasite (Utami, 2017). Tannin compounds, which are classified as alkaloid polyphenols (Deaville *et al.,* 2010). have protein binding activity and enzyme degradation (Oliveira *et al*., 2009). The ability of tannins to bind proteins

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RESEARCH METHOD

Frame of Mind

The frame of mind obtained in this study can be seen in Figure 1.

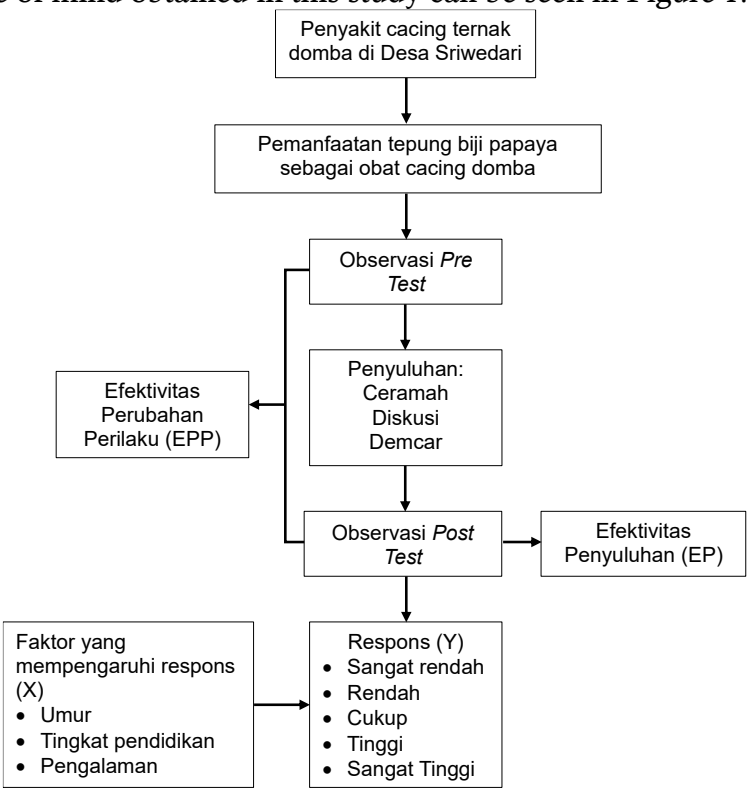

Figure 1. Frame of mind

Time and Place

This research was carried out for 2 months starting from April 10 to June 8, 2025 in Sriwedari Village, Muntilan District, Magelang Regency.

The population from the extension study was all sheep farmers in Sriwedari Village, Muntilan District, Magelang Regency. This study uses *a purposive sampling* technique by determining the criteria, namely having a minimum of 7 sheep and >2 years of livestock experience. From all the samples included in the criteria, a total of 33 samples were obtained. Complete and accurate data to answer research questions can be obtained within 2 months.

Data Collection Method

Observation

Observation involves two components, namely the *observer*, and the object being observed can be done by humans directly or with the help of electronic devices (Sukandarrumidi and Haryanto, 2014). The observations made in this study are by observing the attitude of farmers in the form of availability to utilize the use of papaya seed flour in the form of capsules as deworming in sheep in Sriwedari Village, Muntilan District, Magelang Regency, and recording various information and observing activities or target conditions.

Interview

Interviews are a method of collecting data through face-to-face between interviewers and resource persons, where researchers ask questions directly to obtain data that is in accordance with the research objectives (Sugiyono, 2010). In this study, interviews were conducted with farmers who were respondents. The interviews were implemented directly using research instruments in the form of questionnaires. The researcher asked questions and the respondents gave responses related to their knowledge, attitudes, and skills towards the counseling material.

Research Plan

This study uses a research design, namely the One Group Pre test-Post test (One Group Pre test-Post test Design*) method, that is*, research on the research sample is carried out by providing treatment in a certain time. *Pre tests* are given before treatment while *post tests* are given after treatment. The design of this study was used to evaluate the impact of treatment through comparison of pre- and post-intervention conditions (Sugiyono, 2010).

$$O_1 - X - O_2$$

Figure 2. Design (*One Group Pre test-Post test Design*)

Explanation

O_1 = *Observation*, the activity of filling out questionnaire blanks for the collection of respondent data before the feeding activity (*Pre Test*)

X = *Treatment*, a feeding activity using the use of papaya seed flour in the form of capsules as a dewormer in sheep.

O_2 = *Observation*, the activity of filling out questionnaire blanks for the collection of respondent data after the post-test activity.

Data Analysis

Descriptive Analysis

Sugiyono (2014), descriptive statistics are used to analyze data through the process of description or representation of data that has been collected. Data representation can be done through the format of tables, graphs, pie charts, figures, or percentage calculations. Data can be divided into three categories: knowledge (cognitive), attitude (affective), and skill (contive). Data analysis was carried out by quantifying questionnaire responses using a five-point likert scale. The response rate of farmers was measured using a likert scale with five categories, namely Very High (ST), High (T), Medium (S), Low (R), and Very Low (ST).

Spearman Rank Correlation Analysis

In this study, correlation analysis used *the spearman rank* correlation analysis method. This method, according to Sugiyono (2014), is a non-parametric statistical technique used to assess the relationship between two variables that have ordinal properties. This approach does not require normal distribution requirements on the data and can be applied to data at both nominal and ordinal scales, including in the case of limited samples. The value *of the Spearman Rank* correlation coefficient is in the range of -1 to 1. If the correlation value obtained is 0, then it can be concluded that there is no relationship or correlation between variable X and variable Y. If the value of r is positive, then the increase in variable X will be followed by an increase in variable Y (unidirectional relationship). Conversely, if the value of r is negative, then an increase in one of the variables will be followed by a decrease in the other variable (an inverse relationship). The *Spearman Rank* correlation formula is used to measure the level of strength of the relationship, in the following form:

$$RS = 1 - \frac{6^{n}_{i-1di^2}}{N^3 - N}$$

Explanation:
RS = correlation coefficient
n = number of research samples
at = the difference between rank X and rank Y in the first respondent

Nahraeni *et al.*, (2016) Descriptively, generally the value of RS is categorized as follows:
0.0-0.2 = very weakly correlated
0.2-0.4 = poorly correlated
0.4-0.6 = moderately correlated
0.6-0.8 = strongly correlated
0.8-1 = very strongly correlated

Effectiveness of Counseling (EP) and Effectiveness of Behavior Change (EPP)

Dukat *et al.*, (2015) the effectiveness of counseling is defined as the level of achievement of the goals of the extension program. The success of agricultural extension can be measured through an indicator of effectiveness, namely the level of achievement of agricultural extension goals reflected in empowering farmers to implement recommended innovations. The categories measured in Counseling Effectiveness (EP) and Behavior Change Effectiveness (EPP) include the very effective categories in the range of 80.0-100%, effective in the range of 60.01-80%, moderately effective in the range of 40.01-60%, ineffective in the range of 20.01-40, and ineffective in the range of 0-20% (Utami and Purwoko, 2016). The formula used in calculating the effectiveness of counseling and the effectiveness of behavior change are:

$$\text{EP} = \frac{skor\ post\ test}{skor\ maksimum} x\ 100\%$$

$$\text{EP} = \frac{skor\ post\ test\ -\ skor\ pre\ test}{skor\ maksimum\ -\ skor\ pre\ test} x\ 100\%$$

Explanation:
EP = Effectiveness of Counseling
EPP = Effectiveness of Behavior Change

Independent or independent variable (X)

Independent variables or independent variables are measured to see the characteristics of the breeder in relation to the breeder's response. Independent variables are also referred to as independent variables. This assessment was carried out by observing the following independent variables:

1. Age (X1) is the period from the birth of the respondent to the time the data was taken. Age was measured using an interval scale in units of years with the parameters of age >63 years = 1, age 55 to 62 years = 2, age 47 to 54 years = 3, age 39 to 46 years = 4, and age <38 years = 5
2. Education level (X2) refers to the level of formal education that has been completed by the respondent. Education level measurement is carried out using an ordinal scale. The details of the level of education are: for not finishing school = 1; Elementary education/equivalent = 2; Junior High Education/equivalent = 3; High school education/equivalent = 4; College Education = 5
3. Livestock experience (X3) is the duration or period of time spent by a farmer in carrying out livestock business activities. Breeding experience is measured using an interval scale in units of years. The classification of breeding experience 1-6 years = 1; 7-12 years = 2; 13-18 years = 3; 19-24 years = 4; and >25 years = 5.

Dependent or bound variable (Y)

The dependent variable in this study is the level of response of farmers to stimuli divided into three, namely the response of knowledge, attitude and skills. All aspects are summed together, then scaled using *the Likert* scale. The *Likert* scale used to measure responses is (a) Very Knowing, Very Agreed, Very Skilled and Very High rated at 5; (b) Know, Agree, Skilled and High is given a score of 4; (c) Lack of knowledge, Lack of approval, Lack of skills and Enough to be given a score of 3; (d) Do not know, do not agree, Are not skilled and Low are given a 2 degree; (e) Very ignorant, Very disagree and Very unskilled and Very low rated 1.

RESULTS AND DISCUSSION

Descriptive Analysis Results

Descriptive analysis was used to analyze the response of sheep farmers in Sriwedari Village regarding the use of papaya seed flour as a dewormer in sheep. The results of farmers' responses are divided into cognitive responses (knowledge), affective responses (attitudes), and conative responses (skills).

Table 1. Results of the analysis of farmers' responses

Aspects	Value *Pre-Test*	Value *Post Test*
Cognitive response (knowledge)	328	696
Affective response (attitude)	578	739
Conative response (skill)	304	553
Farmers' response	1.210	1.988

Source: Processed data 2025

Cognitive response (Knowledge)

The results of the pre test and post test from the attitude aspect can be seen in the form of a continuum line in Figure 3.

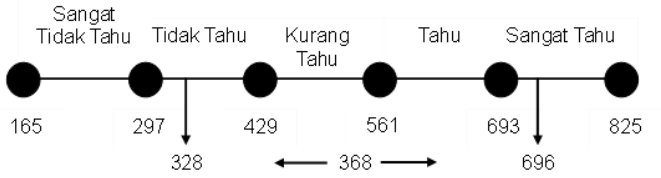

Figure 3. Continuum lines of knowledge aspects

Based on the continuum line in figure 3, it shows that the value of the knowledge aspect after counseling was carried out on farmers in Sriwedari Village about the use of papaya seed flour as a dewormer in sheep was in the Very Know category with a score of 696. From the beginning of the *pre-test,* there was an increase of 368 from 328 to 696. The results obtained were due to the accuracy of the material delivered according to the potential of the region and the needs of the respondents. According to the results of the identification of potential areas, the livestock commodity cultivated by farmers in Sriwedari Village is sheep breeding. In addition, there has been no alternative innovation in the use of papaya seed flour as a dewormer in sheep to farmers in the village. The counseling material presented also includes material that is practical knowledge using the results of applied studies that are easy to process. This is in accordance with Susanto and Suryana (2014) the results of counseling activities are influenced by several factors, including the material presented is practical and applicative, as well as the use of appropriate counseling methods and media. This activity was carried out with a group approach through lectures, discussions, and technical demonstrations. The media used include the viewing of material through Power Point and the distribution of information sheets (folders) that help farmers in understanding the material presented and the practices demonstrated.

Affective response (Attitude)

The results of the pre test and post test from the attitude aspect can be seen in the form of a continuum line in Figure 4.

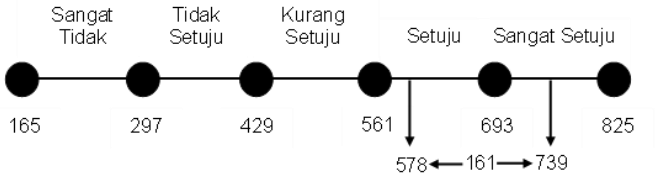

Figure 4. A continuum of attitude aspects

Based on the continuum line in figure 4, it shows that the value of the attitude aspect after counseling was carried out to farmers in Sriwedari Village about the use of papaya seed flour as a dewormer in sheep was in the Very Agree category with a score of 739. From the beginning of the *pre-test*, there was an increase of 161 from 578 to 739. Good results are obtained because they are considered useful for the target and the tools and materials used are easy to obtain, relatively cheap and the way to make papaya seed flour as a dewormer in sheep is easy to use and practice. That is what makes the target interested and agrees and is even willing to make technological innovations conveyed. According to

Budi (2017), a person's response to a process generally begins with the individual's attitude, because the attitude reflects a person's tendency or readiness to act when faced with certain stimuli. Thus, attitudes have an important role in encouraging a person to respond, or conversely, choosing not to respond to a stimulus.

Conative Response (Skill)

The *results of the pre test* and *post test* from the skill aspect can be seen in the form of a continuum line in Figure 5.

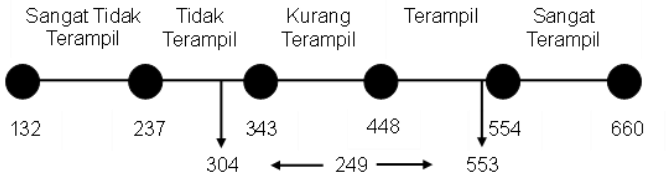

Figure 5. Continuum line of skill aspects

Based on the continuum line in figure 5, it shows that the value of the skill aspect after counseling was carried out to farmers in Sriwedari Village about the use of papaya seed flour as a dewormer in sheep, was in the Skilled category with a score of 553. From the beginning of the *pre-test*, there was an increase of 249 from 304 to 553. Good results are obtained because they are caused by farmers who have the ability to be physically trained for a long time to carry out livestock farming activities. According to Fadhilah *et al.*, (2018) the high skills possessed by farmers can be caused by the implementation of targeted counseling, which is reflected in the ability of farmers to carry out agricultural activities directly. These skills that have been honed are then optimally utilized in farming activities. The increase in *post-test* scores in the skill aspect also shows that farmers are able to apply innovations obtained during the extension process. This statement is in line with the opinion of Nuryanti (2003), who states that skills are the ability to apply an innovation, where farmers can imitate the movements observed through the learning process, and apply the concept appropriately and repeatedly until it becomes a correct and natural movement.

Farmers' response

The results *of the pre test* and *post test* of all aspects can be seen in the form of a continuum line in Figure 6.

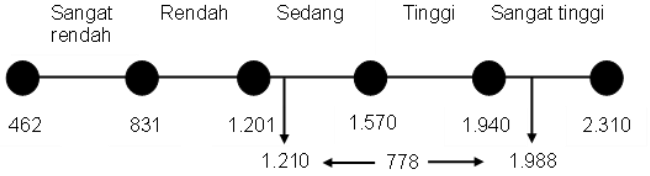

Figure 6. Continuum lines of farmer response

Figure 6 shows that the value of farmers' responses, which was originally moderate with a value of 1,210, became very high with a value of 1,988 with an increase of 778 after counseling was carried out. Response is a manifestation of an individual's attitude or behavior as a reaction to an innovation or technology received, either in the form of acceptance, rejection, or neutral attitude to the changes offered. The delivery of technology or information is carried out by agricultural counseling. With counseling activities, a

person can capture and understand the information that has been conveyed. The results obtained were due to the material presented in accordance with the potential of the region and the needs of farmers in Sriwedari Village. The use of papaya seed flour as a dewormer in sheep is relatively easy to understand and understand by farmers and its application is easy to apply. This is in line with Handayana *et al*., (2014) the high response shown by farmers is due to the perception that the information submitted by extension workers has met the criteria of completeness, is easy to understand, is relevant to their needs, and is delivered at the right time. They realize that there are advantages of this innovation, namely minimizing expenses and maintaining business stability from the resistance or immunity of livestock animals, namely sheep to worm diseases, and realize to utilize the natural resources that exist around. Mardikanto (2016) in Listyowati *et al*., (2021) acceptance of an innovation can be observed either directly or indirectly by other parties, as an indicator of changes in aspects of knowledge, attitudes, and skills of the individual concerned. This high response arises because of the self-awareness of the farmer concerned who is concerned and tries to provide an interpretation of what he is saying, where his attitude, motives, interests and expectations also play a role.

Counseling Evaluation

Counseling evaluation activities are carried out in stages, namely before and after counseling on the material on the use of papaya seed flour as a medicine for sheep deworming. The activity was carried out by conducting *pre-test* and *post test activities* to calculate the effectiveness of counseling (EP) and the effectiveness of behavior change (EPP). The following is the calculation of EP and EPP.

The post test was given two weeks after *the pre-test* to the respondents, to find out the effect of behavior improvement (Wulandari and Anita, 2025). The assessment of the effectiveness of counseling activities is carried out by accumulating total scores obtained from three main aspects, namely knowledge, attitudes, and skills. The calculation of this level of effectiveness uses a formula adapted from research conducted by Susanto and Suryana (2014) as follows.

$$\text{EP} = \frac{1.988}{2.310} x\ 100\% = \ 86\% = \text{(Highly Effective)}$$

Based on the results of the calculation, it was stated that the effectiveness of counseling on the use of papaya seed flour as a dewormer in sheep was 86% (very effective) which indicates that the extension activity was very effective, it was said that the counseling was carried out with materials that were easy to process, group approaches in the form of lectures, discussions, demonstrations of methods and media used made it easier for farmers to understand what was conveyed and things that were easy to practice. This is in accordance with the statement of Susanto and Suryana (2014) that the results of counseling activities are influenced by the material in the form of practical knowledge, methods, and media used. This is strengthened by research (Akimi *et al*., 2023) the use of lecture, discussion, and demonstration methods with a group approach is able to create an interactive and informative counseling atmosphere, making it easier for business actors to understand and absorb the information conveyed. The response of sheep farmers in Sriwedari Village is very good, the results of the calculation are in line with Utami and Purwoko (2016), that the EP value obtained is in the very effective category, which is more than 80.0%.

The effectiveness of behavior change (EPP) is calculated using the following formula:

$$EPP = \frac{1.988 - 1.210}{2.310 - 1.210} x\ 100\% = 70.73\% \text{ (effective)}$$

Then the results of the calculation of the Effectiveness of Behavior Change (EPP) reached 70.73%. According to the category mentioned by Utami and Purwoko (2016), the EP value is included in the effective category, which is between 60.01%-80%. Supported by the delivery of material as needed and easy to understand. This is in accordance with the opinion of Nungrahini (2018) stating that counseling activities will be effective against behavior change if the timing of the implementation is right, the material delivered is according to needs and adequate facilities.

Statistical Analysis Results

The correlation analysis used was the *Spearman Rank Correlation analysis*, the variables analyzed were the characteristics of the respondents which included age, educational attainment, and experience in raising livestock, whether or not there was a significant relationship with the farmer's response to the given innovation. The relationship and level of relationship of breeder characteristics include age (X1), education level (X2), breeding experience (X3) to Response (Y). The results are presented in the following table 2:

Table 2. Results of statistical analysis of farmers' responses

Response	Age	Education level	Breeding experience
Correlation coefficient	0,103	0,560	0,192
Significance value	0,567	0,001	0,284
Respond			33

Source: Processed data 2025

The relationship between age and farmers' response to the use of papaya seed flour as a dewormer in sheep.

The results of the correlation analysis of age with the response of farmers based on table 2 can be found that the value of the correlation coefficient of the age aspect 0.103 (10.3%) in the correlated category is very weak in accordance with the interpretation guidelines of correlation coefficients according to Nahraeni *et al.*, (2016) if the value is closer to 1 and -1, the stronger the relationship and vice versa, if the further away, the lower or weaker the relationship. The relationship is very weak to the relationship of respondent characteristics, this is because 78.8% of respondents are in the productive age category where respondents have the ability to participate in economic activities, both as business actors and main actors. According to Lunadi (1993) in Listyowati *et al.*, (2021), the older a person is, the more difficult it will be to remember and concentrate on what teachings he has received. It can also be dictated that the significance value between the age of the farmer and the response of the farmer is 0.567 (P>0.05) which means that the age of the farmer does not have a significant relationship with the response of the farmer, The average respondent in the productive category has an unreal relationship with the response they give to this innovation, this is not in line with the findings of Herwati (2002) if age is closely related to the response of a technology, This means that the material or technological innovation provided can be accepted by all ages because it can be caused by the way the material is delivered and the media used during counseling activities is easy to understand

and very clear. These findings are in line with the research of Nahraeni *et al*., (2016) which showed that there was no significant relationship between age and response peternak. ini showed that counseling on the use of papaya seed flour as a dewormer in sheep was easily accepted by farmers regardless of age.

The relationship between education level and farmers' response to the use of papaya seed flour as a dewormer in sheep.

The results of the correlation analysis between education and the response of farmers based on table 2 of the correlation coefficient analysis results obtained 0.560 (56%) in the medium correlated category, this is in accordance with the correlation coefficient interpretation guidelines according to Nahraeni *et al*., (2016) if the value is closer to 1 and -1, the stronger the relationship and vice versa, if the further away, the relationship will be lower or weaker and the significance value can be known between the level of education and the response of farmers was 0.001 ($P<0.05$), which shows that the level of education has a significant relationship with the response of farmers regarding the use of papaya seed flour as a dewormer in sheep.

In this study, the majority of farmers in Sriwedari Village have high formal education, with 49% of respondents having high school education in the high category, where higher education is the basis of thinking patterns, learning abilities and intellectual capacity that make respondents can easily understand the material presented, as well as have openness to new knowledge, so that they have an awareness of the importance of the innovations conveyed. This is in accordance with the opinion of Soekartawi (1988) the level of education of farmers, both obtained through formal and non-formal channels, affects the mindset applied in running their business. This education forms rationality in business decision-making and improves farmers' ability to take advantage of various available economic opportunities. In this study, it is shown that the readiness and willingness of farmers to accept innovation plays a greater role in the adoption of innovation compared to their level of education. It is strengthened by the opinion of Listyowati *et al*., (2021) that the level of education of farmers affects the way of thinking in the rationality of the business that will be applied.

The relationship between the experience of raising livestock and the response of farmers to the use of papaya seed flour as a dewormer in sheep.

The results of the correlation analysis between the experience of breeding and the response of farmers based on the statistical analysis contained in table 2, obtained a correlation coefficient of 0.192 (19.2%) in the very weak category, this is in accordance with the guidelines for the interpretation of the correlation coefficient according to Nahraeni *et al*., (2016) if the value is closer to 1 and -1, the stronger the relationship and vice versa, if the further away, the lower or weaker the relationship, Although the correlation value is low, it still shows that there is a relationship between the variable characteristics of livestock experience and response, this is caused by the length of livestock experience that almost all of the respondents have is more than 2 years so that the longer the livestock experience, the higher the response they give. This finding is in line with the opinion of Rahmah (2014) that the longer a person's experience in livestock farming, the higher the level of response shown to activities related to his livestock business.

The significance value of 0.284 ($P>0.05$) shows that there is no significant relationship. According to Makmur (2001) in Rahmah (2014) which states that a person's

education will contribute to his interest and hope to learn. The experience of raising livestock that the respondents have is not significant with a high response, which means that the respondents have an interest in innovation, and with low experience they want to increase their insight so that they are enthusiastic about this innovation technology. The low experience of respondents encourages respondents to want to know more and respond high to the innovations provided because of the lack of experience so that respondents are willing to accept new technological innovations, this is not in line with research by Listyowati *et al.*, (2021) the more Iama the adoption of livestock in livestock, the more the response of farmers to accept new technological innovations.

CONCLUSION

Based on the results of the implementation of research activities that have been carried out regarding the response of farmers to the use of papaya seed flour as a dewormer in sheep in Sriwedari Village, Muntilan District, the following conclusions were obtained:

1. The response of farmers to the implementation of counseling on the use of papaya seed flour as a dewormer in sheep in Sriwedari Village, Muntilan District is classified as very high.
2. The variables of age and experience of livestock farming did not have a significant relationship with the response of farmers while the variable of education level had a close relationship in the medium category, meaning that there was a significant relationship between the level of education and the response of farmers with significant results ($P<0.05$).
3. The results of counseling effectiveness and the effectiveness of behavior change obtained in the implementation of counseling regarding the use of papaya seed flour as a dewormer in sheep in Sriwedari Village, Muntilan District are in the category of very effective for the effectiveness of counseling and effective for the effectiveness of behavior change.

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