

The Impact of Extension on Sheep Haemonchosis Treatment Using Mango Leaf Powder on Farmer Adoption Through Motion Graphics Videos In Ngipik Village, Pringsurat District

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ABSTRACT

This research was conducted in Ngipik Village, Temanggung District, Temanggung Regency. The study aimed to determine the influence of extension on sheep haemonchosis treatment using mango leaf powder on farmer adoption through motion graphics videos in Ngipik Village, Pringsurat District. The respondents used in this activity were 35 sheep farmers in Ngipik Village, selected using purposive sampling. The study design used the One Group Pretest-Posttest Design to measure the effect, with pretest data collected before the extension and posttest data collected after the extension through field visits and interviews using questionnaires. The data analysis methods used were descriptive analysis and statistical analysis using the Wilcoxon test. The effectiveness value of extension in making mango leaf powder for haemonchosis through motion graphics videos was 68.15, categorized as effective, while the effectiveness value of behavior change in sheep farmers was 33.83, categorized as moderately effective. The results of the Wilcoxon test analysis showed that there was a significant change ($p < 0.01$) in the adoption stages (interest, awareness, evaluation, trial, and adoption) of farmers before and after the extension in making mango leaf powder for haemonchosis treatment in sheep through motion graphics videos in Ngipik Village, Pringsurat District.

Keywords: Mango Leaf, Haemonchosis, Sheep, Adoption, Farmers

INTRODUCTION

The livestock sector in Indonesia is a very strategic source of food security. One of the largest commodities is sheep. Sheep farming is generally carried out by farmers as a side business from their main business as farmers, the nature of the sheep livestock business that is carried out is usually used as savings, so that the livestock maintenance system that is carried out is not yet economically oriented. The health aspect is an aspect that needs to be considered in sheep rearing. A factor that affects sheep health is the presence of parasites (Rahayu, 2020).

In raising sheep, health aspects must be considered because if left aside, livestock are susceptible to disease. One of the diseases that often attack sheep is

worm disease in livestock. Although worm disease does not directly cause death in livestock, it can cause great losses economically. Disease control efforts need to be carried out, one of which is by giving deworming regularly.

Worm treatment is usually carried out by farmers using chemical drugs that can be purchased freely, but the continuous use of chemical drugs can cause resistance as a result of the use of chemical drugs. Therefore, worm treatment should utilize existing traditional ingredients.

Ngipik Village is a village located in Pringsurat District, Temanggung Regency, Central Java. This village has a large number of sheep farming commodities. Based on the results of Potential Problem Identification (HDI), it was found that many sheep affected by worm disease (*haemonchus contortus*) had an impact on the body weight of the sheep. Based on the results of the identification, the potential to develop new innovations by utilizing mango leaves as an ingredient to treat haemonchosis in sheep is obtained. Where mango leaves have a tannin content of 16.23% b/b which can be used as an anthelmintic substance (Widiarso et al., 2020).

A person receives an innovation or something new and involves stages (interest, awareness, assessment, try and apply) after the innovation is disseminated during extension activities (A. Heriaty et al., 2021). The level of innovation implementation may be influenced by support for farmer extension activities; Therefore, the more frequent support for extension activities, the higher the implementation of innovation (Gunawan et al., 2019).

According to Mardikanto (2009) explained that the adoption process involves several stages, namely: a) Awareness, where the target begins to realize the existence of innovations that have been conveyed by extension workers. b) Interest, indicating the emergence of interest or interest. c) Assess, on the good/bad or benefits of innovation after obtaining more complete information. d) Trying, involving trying innovations on a small scale to strengthen confidence in assessment. e) Apply, where a person accepts and implements innovation with full confidence, based on his or her personal assessment, trial, and experience.

The effectiveness of agricultural extension activities is greatly influenced by the use of appropriate media. Agricultural extension media serves as a tool for extension workers to convey extension messages to the audience (Suharti et al., 2023). Types of counseling media include print media, visual or audio-visual media, and board media (Derana and Hadiyanto, 2018).

From the above problems, the author took the title of research "The Effect of Counseling on the Treatment of Haemonchosis Disease in Sheep Using Mango Leaf Powder on the Adoption of Farmers Through Video Motion Graphics in Ngipik Village, Pringsurat District".

MATERIAL AND METHOD

The research activity was held from March 25, 2024 to June 2, 2024 in Ngipik Village, Pringsurat District, Temanggung Regency, Central Java. The type of research in this last task is a quantitative descriptive examination technique. This quantitative descriptive research is research on a specific population or test, collecting research

instruments, and dissecting information. Quantitative/measurable fully means testing theories (Sugiyono, 2013).

The object of the study observed was the adoption of farmers in Ngipik Village, Pringsurat District, Temanggung Regency for the treatment of haemonchus contortus worm disease in sheep using mango leaf powder through video motion graphics.

The design of this study uses the One Group Pretest-Posttest design, which means that the research on the research sample is tested first, followed by counseling (treatment) and the post test is given after counseling is carried out. This design is used to determine the results or influence of before and after being given extension workers (Arikunto, 2013). This design scheme can be described as follows :

$$O_1 - X - O_2$$

Figure 1. One group pretest-posttest design pattern

Population is the entire element of the research object such as groups of people, animals, events or objects that live together in a place that has certain characteristics in a study (Amin et al., 2023). The population in this research is 93 sheep breeders consisting of a combination of sheep breeders in Ngipik Village, Pringsurat District, Temanggung Regency.

Samples are part of the population that is the actual source of data in a study (Amin et al., 2023). Sample selection using the right method can describe or represent the actual characteristics of the population. The research of prospective samples used in the research is by the first method of purposive sampling by taking samples according to considerations or characteristics determined by the 3 points below. The characteristics determined for sample taking candidates in this research are as follows :

1. Farmers are active members of farmer groups in Ngipik Village
2. Farmers have a minimum of 5 sheep
3. Farmers have at least 3 years of breeding experience.

The results of the activity of determining samples using the purposive sampling technique produced 37 farmers who met the criteria of the 3 points. After that, it is continued using the slovin formula. The next technique to determine the number of samples is by using the slovin formula and producing 35 sheep farmers as samples.

The analysis used is descriptive analysis and statistical analysis. Descriptive analysis is data that is explained or to describe the current research object (current condition) based on existing facts (Sugiyono, 2013). Descriptive analysis is used to determine the stages of adoption and changes in farmers' behavior. According to Mardikanto (2009), the adoption stage can be known from the stage of awareness, interest, assessment, trying, and applying in the manufacture of mango leaf powder for the treatment of haemonchosis in sheep, while changes in the behavior of farmers can be known from the aspects of knowledge, attitude, and skills.

a. Descriptive analysis

1. Stage of adoption

The adoption of sheep farmers in Ngipik Village is a response to the existence of 5 stages of innovation adoption, namely awareness, interest, evaluation, trial, and adoption. It is described in the following formula:

Minimum score (Nmin) = lowest score x number of questions x number of respondents

Maximum score (Nmax) = highest score x number of questions x number of respondents

$$\text{Interval score (i)} = \frac{\text{maximum value} - \text{minimum value}}{\text{number of categories}}$$

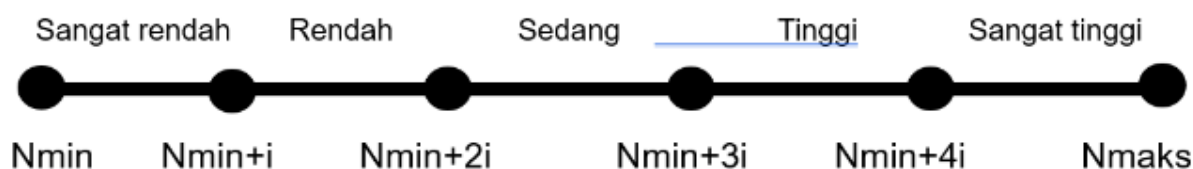


Figure 1. Adoption stage continuum

2. Behavior changes

Changes in the behavior of sheep farmers in Ngipik Village can be known through instruments in the form of aspects of knowledge, attitudes, and skills. It is illustrated in the following formula:

Minimum score (Nmin) = lowest score x number of questions x number of respondents

Maximum score (Nmax) = highest score x number of questions x number of respondents

$$\text{Interval score (i)} = \frac{\text{maximum value} - \text{minimum value}}{\text{number of categories}}$$

b. Statistical analysis

This statistical analysis was used to determine the influence of counseling on the adoption of farmers was used to determine the adoption (awareness, interest, assessment, try, and application) of farmers after receiving counseling in the manufacture of mango leaf powder for the treatment of haemonchosis in sheep through graphic motion videos.

The analysis of the influence of counseling on the adoption of farmers in this research uses a comparative test of two dependent samples because the type of data obtained is ordinal data in the form of categorical data, so the statistical technique used is the Wilcoxon Matched Pairs Signed Ranks Test to compare behavioral values before and after counseling.

The analysis of the influence of counseling on the adoption of farmers was carried out with the help of the Statistical Page for the Social Sciences (SPSS) program. The interpretation of the hypothesis test results was carried out by comparing the Z-count value (before counseling/pre-test results) with the Z-table value (after

counseling/post test results) at the level of significance (level of significance) α (0.05). The comparison of the Z-count and Z-table values is summarized as follows:

- If the value of Z-calculates $<$ Z-table by α (0.05), then it is said that H_0 is accepted. The conclusion was that there was no adoption (interest, awareness, assessment, trying, and applying) of farmers before and after counseling in making mango leaf powder for the treatment of haemonchosis through video motion graphics in Ngipik Village, Pringsurat District.
- If the value of Z-calculated $\geq$ Z-table with α (0.05), then it is said that H_0 is rejected. The conclusion was that there was a significant adoption (interest, awareness, assessment, trying, and applying) of farmers before and after.

RESULT AND DISCUSSION

Geographical conditions of Ngipik Village in the average altitude is 590 meters above sea level, 4 km from the Pringsurat District Office, and 19 km from the district capital. Ngipik Village covers an area of 307 hectares whose land is divided into rice fields and non-rice fields. Non-rice fields are used for buildings/yards, fields/moors/community forests, people's plantations, and others. Ngipik Village has 8 hamlets consisting of Krajan 1, Krajan 2, Gedompon 1, Gedompon 2, Dempel, Gedipan, Kutan, and Nglarangan hamlets.

Ngipik Village, located in Pringsurat District, Temanggung Regency, has a diverse topography. The southern part of the village is higher than the northern part, with an average altitude of 590 meters above sea level (masl). Condro Hill is the highest point in this village, reaching an altitude of about 700 meters above sea level. The landscape of this village is dominated by hills with moderate to steep slopes, interspersed with several valleys and plains. The Progo River flows in the western part of the village, providing a source of water for residents and agricultural land.

The soil type in Ngipik Village is dominated by fertile andosol and latosol soils. Andosol soils are derived from volcanic materials, while latosol soils have undergone advanced weathering. The land in this village is mostly used for agriculture, with coffee and rice as the main crops. In addition, there is also land used for plantations, community forests, and settlements.

Ngipik Village has quite abundant natural resources, such as water, soil, and forests. The water in this village comes from springs and the Progo River. The community forest in this village provides firewood, building materials, and food sources for the villagers.

Overall, the diverse topography of Ngipik Village and abundant natural resources provide great potential for village development, both in agriculture, livestock, and other sectors.

A. Characteristics Responden

The respondents in this research are 35 farmers in Ngipik Village who have met the criteria in sample selection. The characteristics of the respondents in this study

consisted of age, education level, livestock experience, and the number of livestock ownership. The characteristics of each respondent were obtained through primary data mining through interviews in a casual manner.

Table 1. Characteristics of respondents

No	Characteristic of Farmers	Category	Number of People	Presented(%)
1	Age	0-14 year	0	0
		15-64 year	34	97
		>65 year	1	3
		Total	35	100
2	Education	SD	10	28,5
		SMP	15	42,8
		SMA	8	22,8
		College	2	5,9
		Total	35	100,0
3	Breeding Experience	1-5 year	9	26,0
		6-10 year	17	48,5
		11-15 year	8	23,0
		>15 year	1	2,5
		Total	35	100
4	Livestock Ownership	5-10 Tail	9	26
		10-15 Tail	14	40
		>15 Tail	12	34
		Total	35	100

Source : Processed Data 2024

Age is one of the characteristics inherent in respondents. Age is one of the factors that can affect a person's productivity in carrying out activities. Age can also influence a person in making decisions. The age grouping is divided into 3 categories, including the age group of 0-14 years is the unproductive age, the age group of 15-64 years is classified as the working age group or productive age, and the age > 65 years is the unproductive age (Simamora et al., 2018). Based on Table 1, it is known that the age of the respondents ranged from 15 to 64 years with a total of 34 people (97%) classified as working age or productive age and > age of 65 years with a total of 1 person (3%) classified as old or unproductive age group. Age can be a benchmark for the success of farming activities. Farmers who have a productive age will usually work better and more optimally compared to farmers who are not productive. In line with the opinion of Kusumawati et al., (2015) stated that in productive age a person has optimal physical abilities and has a good reaction in adopting an innovation to improve his farming business.

The characteristics of respondents based on education level in Table 1 show that the largest percentage of data comes from junior high school education with a

total of 15 people (42.8%), followed by elementary school education with a total of 10 people (28.5%), while the percentage of the population who have a high school education level with a total of 8 people (22.8%) and the population with a university education with a total of 2 people (5.9%). The level of education of farmers will affect the way of thinking of farmers in the ability to manage farming businesses and accept new innovations and try new things, the higher a person's education level, of course, the higher the absorption of technology and the faster a person will accept innovations that come from outside (Mulieng et al., 2018).

Livestock farming experience is a very fundamental thing for a person in developing their business and is very influential on the success of the business. Livestock experience is a long time that has been passed by a farmer in running and engaging in farming activities. The breeding experience in this study uses breeders who have at least 3 years of breeding experience. Based on Table 1, it shows that the state of respondents in Ngipik Village based on livestock farming experience is on average in the range of 6 to 10 years with a percentage of 48.5%. The longer farmers pursue and carry out livestock activities, the more it will give an indication that the knowledge, skills of livestock breeding and livestock maintenance management are carried out properly (Leleng et al., 2021).

The ownership of the number of livestock in this study is the number of livestock owned by the breeder in the business he runs. The number of livestock ownership is an indicator of the success of a business. Livestock ownership in this study is a minimum of 5 sheep owned by breeders. Based on Table 1, it is stated that the average livestock ownership is dominated by 10-15 sheep with a percentage of 40%. Farmers with little livestock ownership tend to be more open to counseling because farmers have a high interest in developing their sheep business, while farmers with a lot of livestock ownership tend to have high skills because farmers spend more time taking care of a lot of livestock so that habits are formed in carrying out activities related to physical and high confidence in skills (Kurnia et al., 2019).

B. Farmer Adoption

Basically, the adoption process takes place through a series of stages before the community is willing to accept and implement the given innovation, although the time interval between each stage is not always the same (Mardikanto, 2009). The results of the overall breeder adoption stage were measured during counseling on the manufacture of mango leaf powder for the treatment of worms in sheep through graphic motion videos .

Table 2. Number of farmers in the adoption stage

Adoption stage	Number of breeders
Aware	35
Interest	35
Judge	35
Try	12

Based on Table 18, it shows that at the conscious stage, all respondents totaling 35 people took the test at the conscious stage, then in the second stage, namely the interest stage, followed by 35 respondents, the assessment stage at the stage of farmer adoption during counseling on the making of mango leaf powder for the treatment of worms in sheep was followed by 35 respondents, at the trial stage was followed by 12 respondents, And at the implementation stage, only 11 respondents were followed who only participated in the demonstration activity of how to make mango leaf powder for the treatment of worms in sheep.

Based on the results, it shows that only a few farmers have managed to reach the implementation stage, which is the highest stage of the adoption process. Farmers who have successfully gone through various stages from the awareness stage to the implementation stage, where they begin to realize that there is an innovation in making mango leaf powder for the treatment of worms in sheep, then are interested in the innovation and begin to consider the benefits and disadvantages. Then, farmers start trying it on a small scale and if the results are good, they will continue to apply it to their efforts.

. The distribution of respondents' answers to the adoption of farmers to provide counseling on the production of mango leaf powder as a treatment for worms in sheep through video motion graphics in Ngipik Village. Before the counseling (pre test) and after the counseling (post test) are as follows:

Known:

1. Minimum value (N_1) = 700
2. Maximum value (N_2) = 3500
3. Interval value = 560
4. Number of pre test scores = 819
5. Total post test score = 2017
6. Criteria = 5

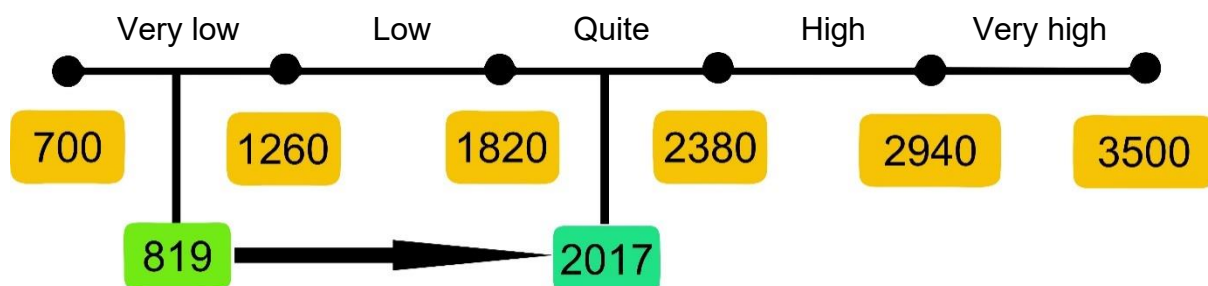


Figure 2. Adoption stage continuum

The change in the adoption of farmers in Figure 3 shows that the extension material presented can be said to be quite successful, because it can change and increase the stages of adoption of farmers from initially very low to enough about

making mango leaf powder for the treatment of worms in sheep.

The increase in the assessment of farmers was influenced by the provision of interesting information through the display of motion graphics videos related to the manufacture of mango leaf powder and worm diseases in sheep. This is in accordance with the opinion of Amanda (2013), that the design of agricultural extension presentation media with multimedia technology produces agricultural extension presentation media to be more interesting and more interactive. This was also clarified by Romadi and Hamyana (2016), the media must also be appropriate to support the content of counseling materials that are facts, concepts, and general principles in order to help the teaching process effectively. Wibawanto (2017) explained, if learning media is made with a good design involving graphics, audio, video, and interactivity, it will increase the effectiveness of material absorption by up to 80-90%.

Another cause of this increase in adoption stages is that sheep farmers realize that innovation in making mango leaf powder for the treatment of worms in sheep is necessary to reduce resistance in the livestock body caused by chemical drugs, and farmers also know that mango leaves are easy to obtain and have not been used.

Based on the above explanation from the adoption stage, it shows that at the conscious stage, all respondents totaling 35 people took the test at the conscious stage, then in the second stage, namely the interest stage, followed by 35 respondents, the assessment stage at the farmer adoption stage during counseling on the making of mango leaf powder for the treatment of worms in sheep was followed by 35 respondents, At the trial stage, 12 respondents participated, and at the application stage, only 11 respondents were followed by only 11 respondents who only participated in the demonstration activity of how to make mango leaf powder for the treatment of worms in sheep.

The reduction of sheep farmers made by respondents in Ngipik Village in the stage of trying and implementing this is because many sheep farmers are still using chemical drugs for the treatment of worms in sheep and also fear of failure or risks associated with the application of innovations on the manufacture of mango leaf powder for the treatment of worms in sheep. In addition, the sheep from the respondents selected in Ngipik Village were healthy/not affected by the haemonchus contortus worm disease in sheep.

C. Extension Evaluation

Evaluasi penyuluhan dapat It is carried out by measuring the effectiveness of counseling and the effectiveness of behavior change. The effectiveness of counseling was measured based on the number of scores obtained by respondents in each aspect consisting of knowledge, attitudes, skills, and behaviors. From the results of the class interval, the effectiveness of counseling was sought. To analyze the Effectiveness of Counseling and the Effectiveness of Behavior Change (EPP).

The changes in the knowledge, attitudes, and skills of farmers in the above study show that the counseling material presented can be said to be successful, because it can change and improve the behavior of farmers about making mango leaf powder for the treatment of worms in sheep. The good results in the change in farmer

behavior were also influenced by the age of the respondents, most of whom were classified as productive age groups where the reception of extension materials became better. This is in line with the opinion of Gusti et al. (2022) which states that farmers who are of productive age work, the level of knowledge of the farmer is high. Farmers who are entering old age will have a little difficulty understanding new information. In addition, the increase in changes in farmers' behavior can also be shown through the participation of several farmers in counseling activities for making mango leaf powder. The reduction of chemical drugs is often one of the factors that causes sheep farmers in Ngipik Village to have the will and motivation to participate in extension activities.

The counseling activities that have been carried out have been accompanied by demonstrations of how to make mango leaf powder into worm treatment. The results of the excavation of extension evaluation data can be seen in the following description:

Table 3. Total pretest and posttest values for behavior change

Farmer Behavior	Nilai Pre Test	Nilai Post Test
Knowledge aspect	559	721
Attitude aspects	867	1073
Skill aspects	389	591
Sum	1815	2385

Source : Processed data 2024

Effectiveness of Extension (EP):

$$EP = \frac{\text{achieved score}}{\text{maximum value}} \times 100\%$$

$$EP = \frac{2385}{3500} \times 100\%$$

$$EP = 68,14 \%$$

Based on the calculation, it was stated that the effectiveness of counseling on the manufacture of mango leaf powder for the treatment of worms in sheep was 68.14%, which indicates that the counseling activities were effective. In accordance with the opinion of Ridwan (2013) that the effectiveness of counseling from 61-80% is effective. The calculation is obtained from the results of the score achieved from the aspects of knowledge, attitude, and skills and then divided by the maximum value of the score achieved, then multiplied by 100%.

Behavior Change Effectiveness (EPP) :

$$EPP = \frac{\text{score post test} - \text{score pretest}}{\text{maximum score} - \text{pretest score}} \times 100 \%$$

$$EPP = \frac{2385-1815}{3500-1815} \times 100 \%$$

$$EPP = 33,83 \%$$

Based on the calculation, it was stated that the effectiveness value of behavior change regarding the production of mango leaf powder for the treatment of worms in sheep was 33.83 %, which indicated that the behavior change that occurred was quite effective. In accordance with the opinion of Ridwan (2013), the level of effectiveness

of behavior change is quite effective if it is 21-40%. The calculation is obtained from the results of the post test score minus the pre test score and then divided by the maximum score obtained minus the pre test score, then the result is multiplied by 100%.

D. Statistical Analysis

The test to determine the effect of counseling on the manufacture of mango leaf powder for worm treatment in sheep through video motion graphics on the adoption of farmers in Ngipik Village was used to obtain a comparison of the adoption scores (awareness, interest, assessment, try, and apply) of farmers before and after the extension. The analysis is carried out by paying attention to the average, minimum, and maximum values. The results of the wilcoxon test in this study can be seen in the table below.

Table 4. Wilcoxon test results of farmer adoption scores before and after extension

Variable	Average grade	Minimum value	Maximum value	Signification
Pre test	23	20	28	0,00
Post test	58	47	74	

Source : Processed data 2024

Based on Table 3, it is known that the average score of respondents before the counseling (pre-test) is 23 with a minimum score of 20 and a maximum of 28. The average score of respondents after the post test was 58 with a minimum score of 47 and a maximum of 74. Based on the wilcoxon test that has been carried out, a significance value of 0.00 (≤ 0.01) was obtained, which means that there was a significant change in the adoption (awareness, interest, assessment, trying, and applying) of farmers before and after counseling in the manufacture of mango leaf powder for the treatment of worms in sheep through video motion graphics in Ngipik Village, Pringsurat District.

Motion video graphics have a very significant influence on the adoption of farmers for several reasons. First, the video is engaging and easy to understand, so that information is conveyed more effectively. Second, graphic motion videos can explain complex concepts in a simple way, increasing the understanding of farmers. Third, graphic motion videos provide timely and easily accessible information through various online platforms. Overall, motion graphics video is a great video medium to increase extension and adoption of farmers. By using videos that are interesting, informative, and easy to understand.

This shows that the use of graphic motion videos is interesting, increases the respondents' understanding of the material being taught, and invites the respondents to pay more attention to the material being taught so that there is a change that is produced through increasing the level of awareness, interest, assessing, trying, and applying the respondents to the counseling on making mango leaf powder for the treatment of worms in sheep that was presented.

This is in accordance with the opinion of Amanda (2013), that the design of agricultural extension presentation media with multimedia technology produces agricultural extension presentation media to be more interesting and more interactive. This was also clarified by Romadi and Hamyana (2016), the media must also be appropriate to support the content of counseling materials that are facts, concepts, and general principles in order to help the teaching process effectively. Wibawanto (2017) explained, if learning media is made with a good design involving graphics, audio, video, and interactivity, it will increase the effectiveness of material absorption by up to 80-90%.

This is also in accordance with research from Supriyanto et al., (2017) which shows that most farmers (83.33%) have adopted the detection of livestock estrus in Balinese cattle, while those who do not adopt as many as 16.67% are due to incomplete observations. In addition, from the research of Nurdayati et al., (2023) that the higher the farmer participates in counseling activities and accesses the internet, the higher the farmer's behavior, so that there is an increase in farmer behavior in the technology of making mango leaf powder for the treatment of worms in sheep.

CONCLUSION

The conclusions obtained from the results of the implementation of the research regarding "The Effect of Counseling on the Treatment of Haemonchosis Disease in Sheep Using Mango Leaf Powder on the Adoption of Farmers Through Video Motion Graphics in Ngipik Village, Pringsurat District" resulted in the following conclusions:

1. The adoption stage of sheep breeders in Ngipik Village, Pringsurat District is varied, with the awareness stage amounting to 35 people, the interest stage amounting to 35 people, the assessment stage amounting to 35 people, the trial stage amounting to 12 people, and the implementation stage amounting to 11 people.
2. There was a very significant change in the stages of adoption (awareness, interest, assessment, trying, and applying) of farmers between before and after counseling in the manufacture of mango leaf powder for the treatment of haemonchosis disease in sheep through video motion graphics in Ngipik Village, Pringsurat District.

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