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Farmer Group Members' Absorption of Agricultural Extension with Demonstration Methods and Lectures (Case Study in Gunungrejo Village, Kedungpring District, Lamongan Regency)

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Abstract: The development of food crop agriculture helps the role of agricultural extension workers, maintains the stability of food self-sufficiency, increases people's income, and improves nutritional conditions through diversification of food types. Research objectives: to determine the absorption of members of the Berkah Tani I and Berkah Tani II farmer groups to counseling using demonstration methods and lectures; to determine differences in the absorption of members of Berkah Tani I and Berkah Tani II farmer groups to counseling using demonstration methods and lectures from various age strata. Hypotheses proposed: there are differences in the absorption of Berkah Tani I and Berkah Tani II farmer groups towards counseling using demonstration methods and lectures in each group; there are differences in absorption at each age level towards the use of demonstration methods and lecture methods. Data analysis methods using tabulation, scored and to determine the absorption at various age levels used the F test. The conclusions of the study are as follows: the use of demonstration method and lecture method in extension activities carried out alone - alone can improve the knowledge of farmers, among others: in Berkah Tani I farmer group that uses the demonstration method from the criteria enough (average value - average 27.52) to good (average value - average 40.78); in Berkah Tani II farmer group.

Keywords: Absorbency; Agricultural extension; Methode demonstrations

Introduction

Agriculture is developed to understand advanced and efficient to increase production and yield diversity through diversification, intensification, extensification, and rehabilitation (Alif, 2017). Advanced agriculture, which is effective and resilient, helps regional development by increasing and diversifying the yield, quality, and processing of production. It is recommended that farmers, ranchers, and fishermen participate in agricultural development through farmer groups and agricultural businesses (Saputra et al., 2022).

Increasing food production includes increasing business productivity, guaranteeing quality and safety, improving technology and knowledge, providing quality products and services, increasing the efficiency of food production, and guaranteeing fair prices (Ramadhana & Subekti, 2021). Agribusiness that uses

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knowledge of soil, water, fire and air aims to combat climate change, high prices, a large workforce and diverse resources by improving the economy (Effendi et al., 2021; Wibowo et al., 2018). To ensure that business growth is successful, technology and knowledge development must match business needs. This can be achieved through education, training, and research, and sectoral coordination will enhance technology and knowledge development (Dinar, 2015). Research, education, training, and research are emphasized to improve the community's ability to develop and implement their own projects (Putra et al., 2022).

Several factors should be considered during the business development process, including the need for investment, advanced technology, local production, supply chain management, and quality of products and services. Other factors include education, credit for business production, cooperation, quality improvement and maintenance, and national planning for business development. These factors help ensure the achievement of desired results in business operations (Mosher, 1991). Agricultural extension is an out-of-school education system for rural farm families, where they learn by doing and can solve their own problems (Dadheech & Gehlot, 2023; Onunka & Eluwa, 2021). This activity is very important, although it is only a supporting component of agricultural development requirements (Sudarmo et al., 2021).

In the implementation of agricultural extension there are three parties involved in the extension process, namely, farmers, extension workers and researchers. Researchers who have a lot of agricultural knowledge are very much in step with farmers and vice versa farmers who have problems that must be known to researchers do not convey these problems (Umbara et al., 2021). Therefore, there are several things that extension workers have to be good liaisons, including: knowing where to get the knowledge to be discussion; knowing the nature of farmers, the language and terms they use; knowing communication techniques (Saputra et al., 2022).

In addition to the things mentioned above, the selection of material to be dissuaded is also very important because the extension material that can solve the problems of farmers is very interesting (Cisternas et al., 2020; Leta et al., 2020), in connection with this, in the treatment of extension this time the material is adjusted to the situation and conditions of farmers, namely about the maintenance of mango plants (Ram et al., 2020). Generally, farmers plant mango plants in their yards as side crops with less intensive maintenance so that the growth of mango plants is not good, branches grow irregularly, the growth of shoots and stems is slow, easily attacked by pests and diseases and low production. Whereas if this mango plant is intensively maintained, its growth will be better, it is not susceptible to pests and diseases and provides better quality results (Aga & Gagabo, 2024; González-Fernández & Hormaza, 2020).

At present, the cultivation of mango plants has been widely cultivated in monoculture in gardens or drained rice fields with intensive maintenance, this is due to the availability of technology and specific production facilities for mango plants that are easily accessible, besides that the demand for mango fruit from year to year continues to increase and the price is quite good, so that some farmers have shifted their farming business to the cultivation of mango plants (Aak, 1991).

Absorbability is a person's ability to receive skills, information, or knowledge. Adoption is the idea of something new, action, or item that is considered new (Idawati, 2016). The focus of this research is the learning approach used in the Berkah Tani I and Berkah Tani II groups, which consists of demonstration and lecture. However, what distinguishes these two groups is that students do not often use the demonstration approach because they lack confidence in education, learning, and thinking. They have a greater possibility to act in certain situations because of their enthusiasm, their ideas, creativity, and good physical condition (Sudjana, 2013).

Whereas farmers in their old age have physically experienced a decline in the level of vision, hearing so that it is difficult to distinguish colors and sounds thus farmers in old age when given counseling by lecture method less response due to physical deterioration so that many are sleepy, different if given counseling by using the demonstration method how they follow in accordance with the existing instructions considering that in the process of extension farmers in addition to listening, seeing at the same time invited to do or practice it (Musyadar et al., 2014).

Method

This study was conducted prospectively in Gunungrejo Village, Kedungpring Subdistrict, Lamongan Regency, with emphasis on the research topics used: Gunungrejo Village is a mango plant development area and the maintenance of mango plants carried out by farmers is still less intensive. The delivery of counseling material to farmer groups in general carried out by the Agricultural Extension Service UPT Kedungpring District using the Lecture Method. The farmer groups determined are farmer groups whose members develop a lot of mango plants.

The target object of the study was a group of farmers who participated in counseling, namely farmers of the Berkah Tani I farmer group and farmers of the Berkah Tani II farmer group Both groups in Gunungrejo

village, all were taken as respondents based on the adopter group (Wiriatmadja, 1990), each stratum was taken 40% randomly. The age range was between 25 and 45 years; this was followed by 41 to 45 years for adults, 46 to 50 years for teenagers, and over 50 years for adults.

Preliminary data were collected through the first committee survey that has been prepared on members of the Berkah Tani I farmer group who were selected as samples (respondents), after counseling with the demonstration method. The second questionnaire was administered to members of the Berkah Tani II farmer group after counseling using the lecture method. Secondary data containing farmer group data and village potential were taken from the Village Office, Subdistrict UPT, and the Agriculture Office.

Table 1. Sampling and Number of Samples

Farmer Group Name	Age Strata (Years)	Number of Members (People)	Sample Size 40% (Person)
Berkah Tani I	25 – 40	11	5
	41 – 45	6	3
	46 – 50	7	3
	> 50	16	7
		40	18
Berkah Tani II	25 – 40	13	6
	41 – 45	5	2
	46 – 50	9	4
	> 50	13	5
		40	17

Data analysis method to determine the absorption of farmer group members to each extension method used, the results of the questionnaire were tabulated, then given a score (value) and then ranked or tabulated. Each question uses a standard value, namely 3 numbers one for real numbers, number two for abstract numbers, and number one for unreal numbers as correct so that a maximum value of 45 and a minimum value of 15 are obtained. To determine the level of absorption of each member of the sample group, among others (Sudjana, 2013).

Table 2. Level of Absorption

Absorption Value	Categories
X ≥ 3.75	Good
22.5 < X < 37.5	Simply
≤ 22.5	Less

To test the hypothesis, the variability of absorption at different age levels used the F test with the criteria: IF $F_{count} \geq F_{table}$ → the absorptive capacity of the two treatments has an unequal variance in magnitude; $F_{count} < F_{table}$ → the absorption capacity of the two treatments has the same variance.

For each age stratum with hypothesis :

H_0: $\sigma_1^2 = \sigma_2^2$

H_1: $\sigma_1^2 > \sigma_2^2$

$$F_{count} = \frac{{S_1}^2}{{S_2}^2} \quad (1)$$

With the critical point F at the 5% confidence level criterion: $F_{count} < F_{table}$ → accept H_0 or the absorption capacity of the two treatments has the same variance in magnitude. $F_{count} \geq F_{table}$ → accept H1¬ or the absorption of the lecture method has a greater variance.

$$S^2 = \frac{\Sigma(Xi-X)^2}{n-1} \quad (2)$$

Description: S_1^2 = variant of the lecture method; S_2^2 = variant of the way demonstration method.

To determine the difference in absorption at various age levels, the t-test was used with the criterion: If $t_{count} > t_{table}$ → there is a difference in absorption; $t_{count} \leq t_{table}$ → no difference in absorption. For each age stratum with hypothesis:

$H_0 : \mu_1 = \mu_2$

$H_1 : \mu_1 > \mu_2$

$$t_{count} = \frac{X_1 - X_2}{\sqrt{\frac{S^2}{n_1} + \frac{S^2}{n_2}}} \quad (3)$$

With the critical price of t at the confidence level 5% ($t_{df}^{\alpha/2}$). Criteria: $t_{count} \leq t_{table}$ → accept H_0 or there is no difference between method demonstration and lecture; $> t_{table}$ → accept H_1 or demonstration is better than lecture (Faisal, 1998).

$$S^2 = \frac{\Sigma {X_1}^2 - (\Sigma X_1)^2/n_1 + \Sigma {X_2}^2 - (\Sigma X_2)^2/n_2}{n_1 + n_2 - 2} \quad (4)$$

Description:

X_1 = average value of demonstration method

X_2 = average value of lecture

n_1 = number of way demonstration respondents

n_2 = number of lecture respondents

df = $n_1 + n_2 - 2$

Result and Discussion

At the beginning of this research activity, an initial test was conducted on farmer group members who were exposed to random sampling in both to determine the proportion of elderly, this study used two groups, Berkah Tani I and Berkah Tani II. The results showed that Berkah Tani I members were mostly in the food category (with an average value of 27.52), and Berkah Tani II members were mostly in the clothing category (with an average value of 28.88).

Table 3 states that in improving farmers' knowledge about the maintenance of mango plants, so that the level of ability is equal to the maximum value, then held counseling on both farmer groups with the material that has been prepared. After the counseling was held, a final test was conducted to determine changes in the knowledge of farmers about the maintenance of mango plants, the results of the final test after being interpreted there was an increase in knowledge in both farmer groups, namely the Berkah Tani I farmer group in terms of food, Berkah Tani II was successful. From the data above, it can be seen that in general the knowledge of farmer group members increased after being given counseling.

Table 3. Average Results of Initial Test and Final Test in Berkah Tani Farmer Group I and II

Farmer Group Name	Max Value	Preliminary Test Average	Category	Final Test Average	Category
Berkah Tani I	45	27.52	Enough	40.78	Good
Berkah Tani II	45	28.28	Enough	37.00	Good

The implementation of the counseling used two methods, namely demonstration method in Berkah Tani I farmer group, and lecture method in Berkah Tani II farmer group. Demonstration of how to pay attention is a certain group preparing to establish a new business. which is more perfect than the old way. The demonstration method is the basis of other methods, especially for people who have not been able to use materials or other methods such as writing materials, radio, TV and so on (Effendi et al., 2021). The research method is a way to provide information from a study to participants who are actively involved in the topic. And so that the lecture can be more effective and efficient, it is necessary to use aids (props) and those commonly used include: blackboards, newsprint, flipcharts, panel boards, overhead projectors, slides (Anwarudin et al., 2021).

Table 4. Average Results of Preliminary Test and Final Test of Extension with Demonstration Method at Different Age Levels of Farmers

Age Strata (Year)	Number of Recipes	Max Value	Average		Level Ability	Percentage (%)
			Initial test	Final test		
25-40	5	45	31.00	40.60	9.60	21.33
41-45	3	45	25.33	42.00	16.67	37.04
46-50	3	45	27.00	41.00	14.00	31.11
> 50	7	45	26.14	40.28	14.14	31.42

In extension activities to determine the absorption of farmer group members implemented there are several things that affect, one of which among others is the age of farmers and extension methods used as shown in Table 4. Based on Table 4, it can be said that the extension conducted in the Berkah Tani I farmer group using demonstration methods at various age levels in general can increase the knowledge of farmers with an almost even percentage ranking, except for the age strata between 25-40 years which only reached 21.33%.

Table 5. Average Results of Preliminary and Final Tests of Extension with Lecture Method at Various Age Levels of Farmers

Age Strata (Years)	Number of Recipes	Max Value	Average		Ability Level	Percentage (%)
			Initial test	Final test		
25-40	6	45	26.16	40.00	13.64	30.75
41-45	2	45	31.50	37.50	6.00	13.33
46-50	4	45	28.25	35.00	6.75	15.00
> 50	5	45	31.60	34.28	3.20	7.11

Furthermore, extension using the lecture method after being analyzed obtained results such as Table 5. Extension activities carried out in Berkah Tani I farmer group and Berkah Tani II farmer group were each carried out 1 (one) time. In the implementation of extension using the demonstration method in the Berkah

Tani I farmer group, it was carried out directly in the field during the day using tools such as mango plants in the field, hoes, fertilizers, pruning shears, saws, mango fertilization handouts. Counseling with the lecture method carried out on members of the Berkah Tani II farmer group, as a whole, can increase farmers' knowledge with a fairly varied percentage value distribution.

As for the counseling using the Demonstration Method and the Lecture Method when compared in the acquisition of the final test scores as written in Table 5. From the test results on the implementation of extension with the demonstration method obtained a high enough value or close to the maximum value or more than 40.28 (> 89.51%) and the test results on the use of the lecture method of less than 40 (< 88.89%) and after testing the variance of the two methods of extension has the same variance, but after testing the difference temyata demonstration method is better than the lecture method. This is thought to be because in the implementation of the demonstration method farmers are faced with tools in the form of real objects, in the implementation of demonstration methods farmers learn more effectively because the target can hear, see, talk and carry out activities so that they do not need to imagine again about the implementation of what is explained or in other words they are directly involved in its implementation (Herawati et al., 2021).

Of the two extension methods above, when compared between one another, it appears that the Demonstration Method as a whole achieved high test scores of more than 40.28 or > 89.51% when compared to using the Lecture Method which obtained test scores of less than 40 or < 88.89%. The difference in test results between the demonstration method and the lecture is thought to be due to the ability of farmers to capture the extension material delivered using the two kinds of methods, farmers who use the index only see the power of capture reached 50% (Kamaruzzaman, 2016).

To find out whether the application of the Demonstration Method and Lecture Method in counseling on mango plant maintenance has a statistical variance amount will be collected using the F method or variance at the 5% level to determine whether there is a difference or not between the Demonstration Method and the Control Method in explaining the behavior of participants (Sudjana, 2013). From the variance test as a whole responders Demonstration Method and Lecture Method obtained F_{count} value 2.685 < F_{table} 3.27 or meaning that the Demonstration Method and Lecture Method have the same variance and from the difference test obtained t_{count} value 4.380 > t (33; 2.0376) or meaning that the Demonstration Method is better than the Lecture Method.

While to determine the influence of the age factor of farmers conducted tests based on each age stratum on the application of the Demonstration Method and Lecture Method. For age strata 25 - 40 years or early retirement farmers after the test of variance obtained a value as in appendix 12 that is F_{count} 0.176 < F_{table} 28.71 or meaning that the Demonstration Method and Lecture Method has the same variance and from the test of differences obtained a value of tit 0.5128 < t (9; 2.262) or counseling using the Demonstration Method is not different from the results when counseling using the Lecture Method, because at the age of 25-40 years is still a productive age, hearing tools, sight tools are still perfect. At a productive age the five senses still function very well (Malia & Rahayu, 2019; Putri et al., 2021).

In the age stratum 41 - 45 years or early pengetrap farmers group after testing the variance obtained a value of F_{count} 0.125 < F_{table} 98.49 or meaning that the Demonstration Method and Lecture Method has the same variance and after testing the difference obtained the same results as the early pengetrap farmers group and obtained a value as in appendix 15 namely t_{count} 2.928 < t (3;3.182) or meaning that the application of the demonstration method is not different from the application of the Lecture Method. Judging from the age level which is one of the things that affects the absorption in counseling, then after testing the variance in the age strata of 25 - 40 years and age strata 41 - 45 years, the two extension methods have the same variance as well as after the difference test, the use of the demonstration method is not different from the use of the lecture method, meaning that if the age group is counseled with lectures alone, the same level of absorption will be obtained when given counseling with the demonstration method alone (Lumongga & Syahrial, 2013).

This similarity is thought to be due to their young age because at a young age, curiosity about new things usually increases, this is very visible during the implementation of extension activities both at the time of using the demonstration method and the lecture method (Herawati et al., 2021). Farmers in the age strata of 25 - 45 years showed enthusiasm when the material was given, among others, many farmers asked questions-questions, proposed-usuk, filed interruptions - interruptions so that the communication process took place not unilaterally but took place reciprocally between communicators and communicants in the implementation of extension activities They often do not realize innovative ideas because they want to apply them quickly (Rais, 2022).

In the age stratum of 46 - 50 years or the late pengetrap farmer group after the variance test obtained a value of F_{count} 12.66 < F_{table} 4999 or meaning that the Demonstration Method and Lecture Method have the

same variance and after the difference test obtained different results with the early and early pengetrap farmer groups by obtaining a value of t_{count} 2.928 > t (3; 3.182) or meaning that the application of the Demonstration Method is better than the application of the Lecture Method when used in extension whose targets are more than 46 years old (Martina & Praza, 2020).

Next, in the age stratum > 50 years or the group of late farmers after the variance test, the calculation is F_{count} 0.156 < F_{table} 9.15 or meaning that the demonstration method and the lecture method have the same variance and after the difference test, the value obtained is t_{count} 2.776 > t (5; 5.571) which means that the use of the Demonstration Method is better than the use of the Lecture Method (Solikah & Dew, 2019).

This difference is thought to be the result that humans are getting older and experiencing physiological decline in learning activities, including diminishing hearing, difficulty distinguishing sounds, vision begins to blur (Haswar et al., 2022; Nurfathiyah, 2019; Rasyid, 2012; Safitri et al., 2020; Zainal, 2019), this can be achieved by doing extension tasks taking place in listening to material delivered at an age that is getting old or already less enthusiastic, the communication process rarely occurs reciprocally so that messages only take place in one direction between communicators and communicants, this can be seen in the presence of sleepy farmers, not many who ask questions, less aggressive, farmers often wait for command (Leilani et al., 2015). When extension activities are carried out using the demonstration method, farmers in their old age actively participate in activities. This shows that humans with guidance and guidance, learning becomes more effective and even better (Lunandi, 1998). In addition, the delivery of counseling using the sense of doing is 90% (Musyadar et al., 2014).

Differences and similarities using the lecture and demonstration methods as in the description above, does not mean something absolute or in the sense that at any time in different situations and conditions can also be different conclusions obtained. This is because in counseling the influential factors are very complex, including: the ability of farmers as target recipients of information; the ability of extension workers to process and deliver extension materials; environmental factors where the teaching and learning process takes place; and the tools used (Imran et al., 2019).

Conclusion

The results of research and conclusions can be said that the use of demonstration methods and lecture methods in extension activities carried out alone - alone can improve the knowledge of farmers. In the Berkah Tani I farmer group using the demonstration method from sufficient criteria (average value - average 27.52) to good (average value - average 40.78). In the Berkah Tani II farmer group using the lecture method from sufficient criteria (average value 28.28) to good (average value 37.00). In the age strata of 25 - 40 years and age 4l - 45 years, counseling using the demonstration method is not different from counseling using the lecture method. In the stratum between 46 and 50 years old, with the oldest being fifty years old, counseling using the demonstration method was better than the lecture method alone.

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