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The Role of Extension Instructors on the Attitudes of Farmers in the Application of Inpari 32 Rice Seeds

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	Abstract
	One of the obstacles faced by the extension instructors (hereinafter referred to as 'the instructors') in providing extension is farmers' lack of understanding about the innovation of Inpari 32 rice seeds due to their low education. The objectives of this study are (1) to analyze the role of instructors in the application of inpari 32 rice seeds, (2) to analyze the attitudes of farmers in the application of inpari 32 rice seeds, (3) to analyze the influence of the role of the instructors on farmers' attitudes in applying Inpari 32 rice seeds. The research was carried out on January 6 – 30, 2020 at Sari Tani Farmer Group 01. The research method used was a survey. The research location was chosen purposively. Purposive sampling was used in determining the respondents. The number of respondents was 32 people. Data collection methods used were interviews and observation. The data analysis method used was descriptive analysis and statistical analysis. The results showed that the role of the instructors as educators, innovators, motivators, and facilitators was categorized as high as the scale ranges were 100%, 78%, 100%, and 88%. The attitude of farmers in applying inpari 32 rice seeds based on the sapta usahatani (seven actions that farmers must take to generate maximum income) is categorized as high as the percentage scale range is 100%. The role of the instructors as educators and motivators has a partial effect on farmers' attitudes and the roles of the instructors as innovators and facilitators do not partially influence farmers' attitudes. The role of the instructors simultaneously influences the attitudes of the farmers.

INTRODUCTION

The agricultural sector acts as the food source and influences the economic development of a country. The slow pace of the agricultural sector in Nigeria is due to the lack of ability of farmers to respond to new ideas or innovations in agriculture. Farmers need the role of extension instructors to be able to respond to innovation by educating them directly (Anaeto et al., 2012). An innovation system in agriculture can be defined as an agent that contributes to the development, diffusion and use of new technologies in agriculture (Agwu et al., 2008). In Africa, the role of the extension instructors is very important in the development of agricultural sector, so that the farmers receive information about new technologies that can be adopted in order to increase income and productivity. The instructors train farmers in development and communication in order to accept innovation more easily (Msuya et al., 2017). Agricultural innovation is needed in farming activities. For example, the role of the government in Vietnam in promoting specific technologies is very helpful for extension workers in transferring technology and making farmers more innovative in their farming (Friederichsen et al., 2013).

The role of the instructors in Indonesia greatly assists farmers in the application of Inpari 32 rice seeds. The instructors are able to provide broad knowledge of Inpari 32 rice seeds, since farmers' knowledge of inpari 32 rice seeds is still lacking. The information provided by the instructors to farmers can influence farmers' attitudes in applying inpari 32 seeds. Farmers apply inpari 32 rice seeds based on *sapta usahatani* (seven actions that farmers must take to generate maximum income) starting from soil cultivation, superior seeds, fertilization, pest and disease control, irrigation, harvesting, and harvest processing. The resulting rice production can be maximized if the farmers are capable to apply this system.

The application of 32 Inpari rice seeds is a program from the central government to the regional level. Pati Regency Government is one of several regional level governments that have started implementing inpari 32 rice seeds in farming activities. Wegil Village, Sukolilo District is one of the villages that has started implementing inpari 32 rice seeds in farming activities. In Sari Tani Farmer Group 01, this program has been implemented since 2015. Implementing inpari 32 rice seeds was done as a solution to the decrease in harvest production. Resulting from this condition, farmers switched to new varieties, namely inpari 32 rice varieties. 32 inpari rice seeds were superior varieties, making them suitable for planting in Wegil Village area because of its fertile soil, adequate water, and high production.

Based on previous research conducted by Syahputra et al. (2016) stated that the role of the instructors in lowland rice innovation was quite good and the attitude of farmers was excellent. The novelty in this study is to analyze the role of agricultural instructors (educators, innovators, motivators and facilitators) on the attitudes of farmers in applying inpari 32 seeds based on *sapta usahatani* (soil cultivation,

superior seeds, fertilization, pest and disease control, irrigation, harvesting, and harvest processing). The objectives of this study are 1) to analyze the role of the instructors in the application of inpari 32 rice seeds, 2) to analyze the attitudes of farmers in the application of inpari 32 rice seeds based on *sapta usahatani* and, 3) to analyze the influence of the role of the instructors in the application of inpari 32 rice seeds in Sari Tani Farmer Group 01.

RESEARCH METHODS

This research was conducted on January 6, 2020 - January 30, 2020. It was conducted in Sari Tani Farmer Group 01. The research location was determined purposively with the consideration that Sari Tani Farmer Group 01 was the only farmer group that applied inpari 32 rice seeds in Wegil Village, Sukolilo District, Pati Regency. Survey method was used in this study. The method of determining respondents in this study was purposive sampling. The population of Sari Tani Farmer Group 01 was 124 farmers and the sample used in this study was 32 farmers who applied inpari 32 rice seeds. The data was collected by interviews and observation. Interviews were conducted with questions and answers between researchers and respondents using prepared questionnaires. Observation was carried out by collecting data by observing directly, namely observing the instructors in conducting visits or extension activities to the farmers

The types of data used in this study were primary data and secondary data. Primary data were obtained from interviews with 32 farmers who applied 32 inpari seeds in farming activities. Secondary data were obtained from the literature that supports the study and the results of inpari rice production 32 obtained from Agricultural Training Center data in Sukolilo District. The measurement of the variable of the role of agricultural extension agents which includes educators, innovators, facilitators, and motivators by means of the assessment was done using the scale range. The scale range is explained as follows: score of 14 to 33 is considered as low, 34 to 53 is considered as moderate, and 54 to 73 is considered as high. The method of assessment of farmers' attitude variables also used the scale range that is explained as follows: score of 19 to 44 is considered as low, 45 to 70 is considered as moderate, and 71 to 96 is considered as high. The data analysis methods used in this research were descriptive analysis method and statistical analysis.

Descriptive analysis is a method of analysis carried out by describing or explaining the answers of respondents who have responded to questions from the questionnaire given by measuring using the Likert scaling technique. The scores of the respondents' answers were sorted from the lowest to the highest with a score range of 1 is considered as low, 3 is considered as moderate, and 5 is considered as high. The analysis of objective 1 used descriptive analysis, as well as objective 2. The analysis of objective 3 used statistical analysis. The statistical analysis used in this study was multiple linear regression analysis. Multiple linear regression analysis can be done if there are at least two independent variables. In multiple linear regression analysis, the dependent variable (Y) is the attitude of the farmer, while the independent variable (X) is educators (X1), innovators (X2), motivators (X3), and facilitators (X4). The following is the multiple linear regression equation in this study:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

Explanation:
Y   = Attitude of Farmers
A   = Constant

X_1 = Educator
X_2 = Innovator
X_3 = Motivator
X_4 = Facilitator
E   = Standart Error

RESULT AND DISCUSSION

Characteristics of the Respondents

Measurement of the characteristics of respondents in this study was based on gender, age, number of family members, education, occupation, and farming experience.

Table 1. Number and Percentage of Respondents Based on the Characteristics of Respondents in Sari Tani Farmer Group 01

Characteristics of Respondents	Number	Percentage
	--person--	--%--
Gender		
• Male	28	87
• Female	4	13
Age		
• 26-35	2	6
• 36-45	7	22
• 46-55	10	31
• 56-65	10	31
• 66-75	3	10
Education		
• Elementary	27	84
• Middle School	4	13
• High School	1	3
Occupation		
• Farmer	32	100
Farming Experience (year)		
• ≤ 10	3	9
• 11-20	9	28
• 21-30	15	47
• 31-40	4	13
• ≥ 40	1	3

Source: Processed Primary Data (2020)

Respondents in this study were male and female, although most of them were male. The role of men is very much needed in physical terms for farming activities; male farmers are needed in planning farming activities from land processing to harvesting (Mulyaningsih et al., 2018). Women farmers usually carry out activities of planting rice, fertilizing, and pulling out weeds in the field. The farmers in Sari Tani Farmer Group 01have various ages ranging from 26 - 75 years. Someone's age is categorized as productive in 15 - 64 years old. According to Susanti et al. (2016), farmers in productive age usually support farming activities, are creative, and quick

to accept new technological innovations. The education level of the respondents in this study was varied from elementary to high school.

The level of education affects the competence of farmers in farming activities. Competence is a form of attitude and behavior in planning farming activities to achieve targets (Dewi et al., 2018). The entire occupation of the respondents in this study is farmer; However, some of them have side jobs to meet their family needs. These jobs include breeders, construction workers, and drivers. The farming experience of the respondents in this study was varied from less than 10 years to more than 40 years. Farmers with longer experience in farming have high knowledge and skills. They provide knowledge and skills to novice farmers who still lack experience in farming. According to Hartati et al. (2017), experienced farmers have more extensive experience and skills in managing farming.

The Role of Extension Instructors

Table 2. Number and Percentage of Respondents Based on the Role of Extension Instructors in Sari Tani Farmer Group 01

Role of the Instructors	Scale Range		Number	Percentage
			--orang--	--%--
Educator (Variable X_1)	•	Low	0	0
	•	Moderate	0	0
	•	High	32	100
Innovator (Variable X_2)	•	Low	0	0
	•	Moderate	7	22
	•	High	25	78
Motivator (Variable X_3)	•	Low	0	0
	•	Moderate	0	0
	•	High	32	100
Facilitator (Variable X_4)	•	Low	0	0
	•	Moderate	4	12
	•	High	28	88

Source: Processed primary data (2020)

Based on table 2, the role of the instructors as educators in Sari Tani farmer group 01 is considered as high. Evaluation of the instructors as educators in carrying out their duties is by providing knowledge to farmers in carrying out farming activities, starting from land processing to processing products. Compared to India, the role the instructors as educators is still low, since the training and knowledge provided by extension instructors to farmers ranging from composting, fertilization, and crop rotation are still low. Because of this, farmers in India often experience crop failure (Yadav et al., 2013)

The role of the instructors as innovators in Sari Tani Farmer Group 01 is considered as high. Evaluation of the instructors as innovators in carrying out their duties is by providing innovation of the inpari 32 variety and combine harvester machines in order to save labor. According to Asdar et al. (2013) stated that extension instructors must provide innovations on efficient agricultural cultivation to increase crop production. There are similarities in the role of agricultural instructors in Vietnam; they have a role in transferring technology to the farmers in order to make

them become innovative in farming, and private companies support extension instructors by selling seeds at low prices (Friederichsen et al., 2013). The role of the instructors as motivator in Sari Tani Farmer Group 01 is considered as high. The extension of the evaluation as motivator in carrying out their duties in supporting farmers to participate in extension activities related to inpari 32 rice seeds carried out by the local agriculture agency. The instructors should encourage farmers to participate in extension activities

The role of the the instructors as facilitators in Sari Tani Farmer Group 01 is categorized as high. Evaluation of the instructors as facilitators in carrying out their duties is assisting farmers in making proposals for assistance with agricultural equipment that support farming activities. Extension agents facilitate or provide assistance to serve the farmers' needs, such as using capital in farming activities or other assistance for farmers (Suwarningmas et al., 2017). Compared to Africa, the role of agricultural instructors is still low since they do nothing in increasing agricultural production and do not facilitate agricultural credit for farmers' farming activities. They also do not facilitate research centers with farmers (Msuya et al., 2017).

Attitude of Farmers

Table 3. Number and Percentage of Respondents based on the Attitudes of Farmers in Sari Tani Farmer Group 01

Scale Range	Number	Percentage
	--person--	--%--
Low	0	0
Moderate	0	0
High	32	100

Source: Processed primary data (2020)

The attitude of farmers in applying inpari rice 32 in Sari Tani Farmer Group 01 is categorized as high since the percentage of the scale range is 100%. The assessment of farmer attitudes is seen from the time the farmer carried out farming activities based on the *sapta usahatani*, starting from land processing to harvest processing. The excellent attitude of farmers in applying inpari 32 seeds is due to the superiority of planthopper resistance and the resulting crop production that reaching 8, 42 tons / ha. This quality can be compared to IR 42 variety. IR 42 variety has the advantages of expensive grain selling price, high production of 12 tons / ha, resistance to pests and diseases, good growth power and easy selling of grain compared to Inpari 32 variety (Syamsiah et al. ., 2015). Inpari 32 variety has higher production than Ciherang variety. 56% of farmers in Laren Village, East Java Province agree to use the new Ciherang variety due to its potential yield of 8 tons / Ha and resistance to brown planthoppers and bacterial leaf blight (Susana et al., 2010).

The attitude of farmers in using certified rice seeds is in medium category, as they are still hesitant in using certified seeds due to their poor economic conditions, the narrow area of land, and the age of farmers who are no longer productive (Rahmawati & Ariani, 2019). The attitude of farmers in using Pandanwangi seeds is

categorized as high since it is considered the high-quality seeds that has high productivity (Prafithriasari & Fathiyakan, 2017). The use of hybrid seeds with *legowo* row system (one of the rice planting systems in Indonesia, which is basically done by adjusting the distance between the seeds at the time of planting) is categorized as low, since the need for subsidized hybrid seeds is still low. Therefore, the farmers are still doubtful in their need for hybrid seeds (Arifin et al., 2017). The attitude of farmers in the use of inpari 32 is categorized as high compared to the IR 42, Ciherang, Pandanwangi, and hybrid varieties.

From the results of multiple linear regression between the educator (X1), innovator (X2), motivator (X3), and facilitator (X4) variables towards farmer attitudes (Y), the following regression model is formulated:

$$Y = 17{,}615 + 0{,}791 \, X_1 - 0{,}54 \, X_2 + 0{,}315 \, X_3 + 0{,}55 \, X_4 \, e$$

Table 4. Multiple Linear Regression Results

Variable	Betta
Constant	17,615
X_1= Educator	0,791
X_2= Innovator	-0,54
X_3= Motivator	0,315
X_4= Facilitator	0,55
R Square	0,557

Source: Processed primary data (2020)

Based on table 4, the role of the instructors as innovators (X2) has no effect on farmers' attitudes in applying inpari 32 rice seeds since they are negative. The role of agricultural extension agents as educators (X1), motivators (X3), and facilitators (X4) has an effect on farmers' attitudes in implementing inpari 32 rice seeds. The R Square value was 0.557, this indicates that 55.7% of the independent variables (educators, innovators , motivator, facilitator) was able to explain the dependent variables (farmer attitudes). The remaining 44.7% was influenced by other factors that were not examined. Another factor that influences the attitude of farmers in applying inpari 32 rice seeds is the experience and knowledge of the farmers. Another factor that was not examined in this study could occur in the role of the instructors as communicators and mediators.

Based on table 5, the T test results show that the t value of the educator variable is 4.752; therefore, the educator variable partially has an influence on the attitude of the farmers. The role of the instructors as educators is already going well. The role of the instructors as educators is to provide knowledge of good soil cultivation of Inpari 32 rice before the planting process is carried out by plowing the land with approximately 15-25 cm depth. The instructors provide knowledge and skills to control rat pests by using fumigator and use *legowo* row cropping patterns to control disease in rice. According to Isnani (2016), the method of controlling rat pests with fumigator is carried out by smoking the sulfur material mixed with rice straw then the smoke is inserted into the rat hole. The rats will try to run out of the other hole. After the rats come out, they are beaten to die.

Table 5. T Test Results

Variable	T
X1= Educator	4,752
X2= Innovator	-0,344
X3= Motivator	1,739
X4= Facilitator	0,33

Source: Processed primary data (2020)

The t value of the innovator variable is -0.344. The innovator variable partially has no effect on farmer attitudes. The instructors provide less innovation to farmers in using organic fertilizers to control disease in rice. The t value of the motivator variable is 1.739. The motivator variable partially has an influence on farmer attitudes. The instructors motivate farmers in extension activities carried out by the agriculture department regarding superior rice seeds based on *sapta usahatani.* The t value of the facilitator variable is 0.33. The facilitator variable has no partial effect on the attitude of the farmers. The instructors have less role in helping the farmers to make proposals for submitting thresher, a useful farming tool for farmer groups.

The significance value of the f test results is 0.000, which means that Ho is rejected and HI is accepted; therefore, there is a simultaneous influence on the attitude of the farmers (Y), since the value is smaller than the 0.05 significance level. This shows that the role of the instructors as educators, innovators, motivators, and facilitators has a simultaneous influence on the attitudes of farmers. If the significance value is less than 0.05 then there is a simultaneous influence on the dependent variable (Y) and if the significance value is greater than 0.05, there is no simultaneous influence on the dependent variable (Y).

CONCLUSION

The roles of agricultural instructors as educators, innovators, motivators, and facilitators are categorized as high in the terms of scale ranges. The attitude of farmers in applying inpari 32 seeds based on sapta usahatani (seven actions that farmers must take to generate maximum income) is considered as high based on the scale range. Based on the partial t test, the role of the instructors as educators and motivators has an effect on the attitudes of farmers in applying inpari 32 rice seeds. Simultaneously, the f test of the role of the instructors has an effect on farmers' attitudes in applying inpari 32 rice seeds.

RECOMMENDATION

The role of the instructors as innovators is expected to be further improved so that farmers can make the latest innovations in using inpari 32 rice seeds based on sapta usahatani by introducing organic fertilizers in the fertilization process and using a combined harvester machine to help the harvest and thresher process. The role of the instructors as facilitators can be carried out again by identifying the

problems and needs of farmers. This way, the instructors can facilitate the farmers' needs. The instructors should schedule individual visits to farmers in order to make the visiting activities run well.

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