

Research Article

The Capacity of Farmers in Rice Farming in Kabupaten Lampung Tengah

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ARTICLE INFO

Article history

Received April 16, 2021

Revised March 02, 2022

Accepted March 05, 2022

Published March 30, 2022

Keywords

Farmer capacity, farmer characteristic, organization support, rice farming.

ABSTRACT

Rice is an important commodity and the availability of rice supply in Indonesia must be maintained, because rice is the staple food of the Indonesian people which must always be fulfilled at all times. However, the fact is that the average productivity of rice produced by farmers is still low. Low rice productivity reflects the capacity of farmers in rice farming. The aims of this research are: (1) to know the level of farmer's capacity? and (2) to find out what factors that affect the capacity of farmers. This research was conducted in Kabupaten Lampung Tengah with the number of respondents as many as 100 farmers. The data analysis method used is multiple regression analysis. The results showed that the level of farmer's capacity was in the medium category. Factors that have a significant effect on farmer's capacity are farmer's age, farming experience, farmer's motivation, community support, farmer group support, and agricultural extension support, while formal education, non-formal education, cosmopolitan level, land area, and family support have no significant effect on the capacity of farmers in rice farming.

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INTRODUCTION

Agriculture is an important sector in the stability of the national economy, especially in terms of maintaining the availability of food for the community. In addition, the fulfillment of food which includes basic needs which is one of the basic human rights whose fulfillment is guaranteed by law. According to Murniati et al. (2020), the proportion of household food expenditure is relatively high and the proportion of non-food expenditure is low to total expenditure. The government's efforts in maintaining the availability of food for the community have been taken since the Kasimo Plan in 1948 until now, both in terms of intensification and extensification. Baharsjah et al. (2014) added that the food self-sufficiency policy has been and will continue to be implemented in line with the increasing population of Indonesia

To realize Indonesia's food self-sufficiency, the government continues to increase rice production. Government policies in the agricultural sector have always been oriented to increasing rice production and programs carried out by the government are and will continue to be carried out to maintain food availability, especially rice commodities. However, current government efforts have not yet had a significant impact on increasing rice productivity. Apart from the negative impacts due to climate change, increased pest and disease attacks, high pest interactions with plants, drought, and flooding or increased rainfall in certain areas, which thereby reduce rice production (Las et al., 2011; Peng et al., 2004; Kusnanto 2011; Boer et al., 2017; Lewis et al., 2018) it is also because government programs that are often carried out only on technical aspects without paying attention to aspects of increasing the capacity of farmers' resources as the main actors in producing rice. According to Purwanto et al. (2012), program implementation that often occurs is only filled with pseudo-participation, program dependence and discontinuity. In fact, Kabupaten Lampung Tengah is an area that is the center of rice production in Provinsi Lampung, but its rice productivity is only 4.66 tons/ha, which is still below the potential rice productivity of 6 tons/ha (Central Bureau of Statistics of Kabupaten Lampung Tengah, 2019).

The low productivity of rice is correlated to the capacity of farmers in rice farming. Farmer capacity is the ability of farmers to run their farming. According to Herman et al. (2008), farmer capacity is the ability of individual farmers to be able to set farming goals appropriately and achieve the goals that have been set in the right way. Marliati (2008) defines farmer capacity as the ability of farmers to run an ideal farming business in accordance with the expected goals (better farming, better business, friendly environment, and better living). The level of capacity owned by farmers is in relation to the knowledge, attitudes and skills of farmers in farming. In order for farmers to be able to make the right decisions regarding their farming, capacity building for farmers is needed (Herawati, 2018). Farmers who have good capacity will more easily accept new innovations to increase farming success. Listiana et al. (2018) states that the capacity of farmers in carrying out agricultural businesses must always be improved and developed in order to be able to face global competition. Padillah et al. (2018) and Herawati (2018) from their research results state that success in farming is influenced by the capacity of farmers in farming in which there is institutional support and farmer characteristics. Fatchiya (2010) states that some farmers have low capacity, for that external assistance is needed to be able to develop and increase the potential and capacity that exists within the farmers. Rice farmers should be encouraged to enforce and improve their resilience capacity through farmer-to-farmer training and extension. According to Rustandi et al. (2020) results from an assessment of farmer capacity show that strategies to increase farmer capacity can be carried out by improving the function of farmer groups, expanding access to technology and market information, and increasing farmer knowledge through education and training and self-development. Based on the description above, it is necessary to research the area related to the capacity of farmers in rice farming. The objectives of this research are: (1) to investigate the level of farmer's capacity in rice farming and (2) to find out what factors that affect the capacity of farmers in rice farming.

RESEARCH METHODOLOGY

The research method used in this study is a survey method. The research was conducted in Kabupaten Lampung Tengah, in two *kecamatan* (sub-districts), namely kecamatan Seputih Raman and Kecamatan Trimurjo. The selection of this research location was determined purposively with the consideration that Kabupaten Lampung Tengah is the largest rice producer in Provinsi Lampung and is an area affected by irrigation improvements, while Kecamatan Seputih Raman and Kecamatan Trimurjo were chosen with consideration because they are the largest rice producers in Kabupaten Lampung Tengah and areas affected by irrigation improvements that have not been completed (Central Statistics Agency for Kabupaten Lampung Tengah, 2019). The research was carried out from October 2019 to March 2020. The respondents of this

research were rice farmers assisted by an extension. Those farmers were members of farmer groups totaling 17,988 people, with 11,070 people from Kecamatan Seputih Raman and 6,918 from Kecamatan Trimurjo. The determination of the number of samples in this study refers to the Yamane formula, namely:

$$n = \frac{N}{Nd^2 + 1}$$

Description:

n = Sample size

N = Size of the population

d² = Precision (determined at 10% with $\alpha = 90\%$)

Based on the calculations, the number of samples obtained is 100 people who are proportionally spread with 62 people in Kecamatan Seputih Raman and 38 people in Kecamatan Trimurjo. The types of data used are primary data and secondary data. This study is quantitative research. A quantitative approach is used to better understand the social facts that are the focus of the research. Data collection techniques were carried out through direct observation, interviews, and literature study.

Data were analyzed by using descriptive and inferential methods. Descriptive analysis is done by describing in detail by tabulating the results of respondents' answers and then presenting them. Descriptive analysis in this study is used to describe the characteristics of farmers, farmer institutional support and to analyze the capacity of farmers in rice farming, while to determine the factors that influence the capacity of farmers in rice farming is done through multiple linear regression analysis. The data was processed using the Statistical Package for the Social Sciences 23 (SPSS 23) tool. The framework for this research can be seen in Figure 1.

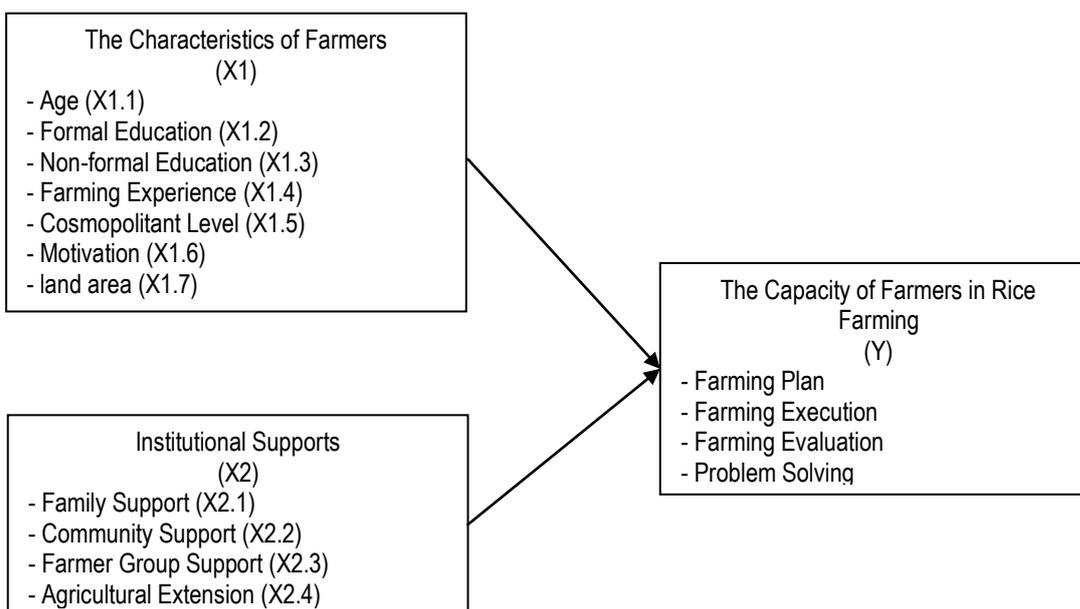


Figure 1. The framework of factors that affect the capacity of farmers in rice farming

RESULTS AND DISCUSSION

The Characteristics of Farmers

Di penelitian ini, karakteristik petani meliputi umur, tingkat pendidikan formal, pendidikan nonformal, pengalaman usahatani padi, kekosmopolitan, motivasi petani, dan luas lahan (Tabel 1). Berdasarkan hasil penelitian, petani berada pada usia produktif yang artinya petani masih memiliki kemampuan secara fisik dalam mengelola usahatani. Tingkat pendidikan formal petani sebagian besar berpendidikan sekolah menengah pertama dan berkategori rendah. Rendahnya pendidikan formal petani dikarenakan faktor ekonomi keluarga petani. Namun tingkat pendidikan formal yang rendah tidak menjadi penghalang bagi petani untuk berusahatani padi. Akan tetapi menurut Narti (2015) tingkat pendidikan seseorang dapat mengubah pola pikir, membuat daya penalaran yang lebih baik, sehingga makin lama seseorang mengenyam pendidikan dia akan semakin rasional. Tingkat pendidikan nonformal petani berada pada kisaran 4-6 kali dan berkategori rendah, yang mana sebagian besar hanya mengikuti penyuluhan tentang iklim, hama penyakit tanaman, dan pengolahan tanaman terpadu. Hal ini sejalan dengan penelitian Wahyuni et al. (2017) yang menunjukkan bahwa pendidikan nonformal petani rendah hanya 0-2 kali mengikuti penyuluhan. Fatchiya (2010) dan Tahitu (2015) menunjukkan bahwa pendidikan nonformal rendah karena frekuensi petani mengikuti kegiatan pelatihan atau penyuluhan tidak secara rutin diadakan dan adanya kecerindrandungan penunjukan peserta pelatihan biasanya dilakukan oleh pengurus kelompok. Pengalaman usahatani padi yang dimiliki petani masih berkisar antara 4 tahun hingga 12 tahun artinya sebagian besar petani masih baru dalam berusahatani padi. Pengalaman berusahatani dapat memberikan kontribusi dalam keberhasilan usahatani.

In this study, the characteristics of farmers include age, level of formal education, non-formal education, experience in rice farming, cosmopolitan level, farmer motivation, and land area (Table 1). Based on the results of the study, farmers were at a productive age, which means that farmers still have the physical ability to manage their farming. The level of formal education of farmers was mostly junior high school education and is in the low category. The low level of formal education of farmers is due to the economic factors of the farmer's family. Nevertheless, the low level of formal education does not become a barrier for farmers to cultivate rice. However, according to Narti (2015) a person's level of education can change a person's mindset, make their reasoning better, so that the longer a person receives education, the more rational he will be. The level of non-formal education of farmers was in the range of 4-6 times and is in the low category, where most of farmers only attended counseling on climate, plant pests and diseases, and integrated crop processing. This is in line with Wahyuni et al. (2017) which shows that farmers' non-formal education is low with only 0-2 times participating in counseling. Fatchiya (2010) and Tahitu (2015) reveal that non-formal education is low because the frequency of farmers participating in training or extension activities is not routinely held and there is a tendency for the appointment of training participants to be usually done by group administrators. The experience of rice farming owned by farmers is still ranging from 4 years to 12 years, meaning that most of the farmers are still new to rice farming. Farming experience can contribute to the success of his farming.

Table 1. The Characteristics of Rice Farmers

The Characteristics of Farmers	Unit	Total (Persons)	Percentage
Age	Year(s)		
Productive (15-64)		96	96
Non-productive (>64)		4	4
Formal Education			
SD (Elementary School)		36	36
SMP (Junior High School)		42	42
SMA (Senior High School)		20	20
S1 (University Degree)		2	2
Non-formal Education			
4-6	Number of trainings	60	60
7-9		34	34
10-12		6	6
Farming Experience			
4-12	Years(s)	77	77
13-21		18	18
22-30		5	5
Cosmopolitant Level			
2-6	Visit	46	46
7-11		36	36
12-16		18	18
Farmer's Motivation			
Low	Score	8	8
Medium		70	70
High		22	22
Land Area			
< 0.50	Hectare	9	9
0.50 – 1.00		71	71
>1		20	20

The cosmopolitan level of rice farmers was still relatively low, it can be seen that only 2 to 6 visits were made by farmers on their trips and the use of mass media to seek information related to their farming activities. The visits that were only often carried out by rice farmers were visits to other farmer groups and the information sought by rice farmers was mostly related to the problem of using production facilities and plant pests in rice farming. The motivation of farmers in rice farming is categorized in the medium classification. Farmer motivation that farmers had was due to physiological needs, security, social, appreciation, and self-actualization. The area of land cultivated by farmers ranged from 0.5 hectares to 1 hectare and did not include smallholders.

Institutional Supports

In this study, institutional support includes family support, community leader's support, farmer group support, and extension support. Based on the research results, the farmer institutional support was categorized as medium (Table 2).

Table 2. Farmer External Support

Farmer External Support	Category (%)		
	Low	Medium	Low
Family Support	22	66	12
Community Support	44	53	3
Farmer Group Support	41	57	2
Extension Support	40	56	4

Table 2 shows that family support, community support, farmer group support, and extension support are in the medium category. Family support that played a role in supporting rice farming activities was the support from the wife of the main actor in farming and the relatives of the farmers who live in their neighborhood. The assistance provided was only in the form of information provision, especially information related to the procurement of production facilities. Community support, in this study, was in the medium category, which was in the form of encouragement given by community leaders (traditional leaders, village officials) to farmers in carrying out their farming. Indrangisih (2011) argues that the existence of village officials or traditional leaders provides benefits for farmers because farmers can observe the successes achieved by village officials or traditional leaders and farmers can exchange information about various matters relating to their farming. Farmer group support in this research is in the form of support related to farming. Farmer groups played a role in providing agricultural production facilities needed by farmers. The research results of Rukka et al. (2008) in Somba Upu shows the same thing that the role of farmer groups in meeting the needs of farmers in farming is still weak due to the lack of availability of group facilities and infrastructure. Extension support in this research is agricultural extension support. Agricultural extension agents are agents who have competence in the field of agriculture and can communicate effectively with farmers, so that they can encourage farmers' interest in learning to help farmers face problems related to their farming. In addition, the role of extension workers is to assist farmers in increasing knowledge in the field of agriculture. Sundari and Nurliza (2015) state that the role and function of extension workers is very important as the spearhead of the government in direct contact with farmers. According to Inten et al. (2017), extension workers play a very important role in developing farmer productivity in farming.

The Capacity of Farmers in Rice Farming

Farmer capacity is the ability that a person has in carrying out rice farming activities to achieve the desired goals. According to Managanta (2018), farmer capacity can be understood as the ability of farmers to cultivate farming as a capital in thinking, making considerations, making decisions and trying the best in farming development to increase farm productivity. From the results of the study, it was found that the level of capacity of farmers in rice farming was in the medium category based on indicators of planning, execution, evaluation, and problem solving (Table 3).

The level of capacity of rice farmers still needs to be improved so that later it will have an impact on the success of farming. The capacity of farmers in planning was in the medium category. The capacity of farmers in farming planning is seen from their personal abilities related to regular and planned farming efforts, starting from the provision of seed production facilities to land preparation that will be used in rice farming. The planning activities are intended to prepare a well-planned farming, so that optimal results in farming can be obtained. The capacity of farmers in the implementation of rice farming was in the medium category. The capacity of farmers in the implementation of farming refers to farmer's personal abilities related to technical activities in rice farming. The technical farming activities carried out include land management, planting, fertilizing, maintenance, harvesting, product processing, and marketing. The capacity of farmers in the implementation of rice farming is an important part that needs to be considered. The capacity of farmers in evaluating rice farming was in the low category. Evaluation activities in farming are activities that were rarely carried out by farmers. Evaluation activities are activities that allow farmers to make efficient decisions in rice farming. In addition, evaluation activities will enable farmers to find out how many revenue transactions will be

achieved and through evaluation activities farmers will know weaknesses and strengths in an expected farming process. Farmer's capacity in evaluating farming includes activities of recording the use of production facilities, quantity and price, farming costs and selling price of farming products. The capacity of farmers in solving problems in rice farming was categorized as medium. Problem solving activities in farming are activities that should be carried out by farmers in order to provide optimal production results. Problem solving activities are activities carried out by farmers in dealing with problems, looking for solutions and alternatives for solving the problems, and implementing these solutions until the problems can actually be resolved. The capacity of farmers in problem-solving activities in farming includes activities carried out by farmers in overcoming problems such as scarcity of seeds, fertilizers, pests and plant diseases, water availability, and overcoming problems related to selling prices.

Factors Influencing Farmers' Capacity in Rice Farming

The result of multiple regression analysis shows that the factors that influenced the capacity of farmers in rice farming were the age of farmers, farming experience, farmer motivation, community support, farmer group support, and extension services support, while formal education, non-formal education, cosmopolitan level, land area, and family support did not significantly affect the capacity of farmers in rice farming (Table 4).

Table 4. Factors influencing farmers' capacity in rice farming

No	The Characteristics of Farmers and Institutional Support	The Level of Farmers' Capacity in Rice Farming
1	Age	0.090**
2	Formal Education	0.014
3	Non-Formal Education	-0.019
4	Farming Experience	0.083*
5	Cosmopolitan Level	0.029
6	Motivation	0.521**
7	Land Area	0.031
8	Family Support	0.058
9	Community Support	0.258**
10	Farmer Group Support	-0.171**
11	Extension Service Support	0.214**

Description:

n =100 people

* Correlation is significant at $\alpha = 0,05$

**Correlation is significant at $\alpha = 0,01$

Table 4 shows that the age of farmers had a significant and positive effect on the capacity of farmers in rice farming. This is in line with the research of Susilowati and Nurliza (2012) which explains that the age of the farmer has a significant effect on farming efficiency, where the older the farmer, the more efficient he is in running his farm. Murphy et al. (2011); Burton et al. (2014) stated that it was easier for young farmers to innovate in farming than older farmers. Formal education of farmers does not significantly affect the capacity of farmers. Based on the results of the study, it is explained that farmers thought that the results of farming activities obtained by farmers who have low and high levels of education were the same. In addition, if a person's education is high but does not have experience in farming, it will not affect the capacity of farmers in farming and most farmers at the level of education did not have an agricultural school background. In line with

Listiana's research (2017) which shows that the formal education that has been taken by individual farmers does not have a significant correlation with their farming capacity.

Non-formal education of farmers did not significantly affect the capacity of farmers in rice farming. This is because farmers in the research area rarely participated in training activities due to difficult access. Amanah (2014) explains that non-formal education is education obtained outside of the formal education level which is an effort to increase individual capacity, such as: training, extension, field schools and others. Brain et al. (2013) revealed that the capacity of farmers can develop through a learning process to change behavior. Farmer's experience in farming had a significant and positive effect on the capacity of farmers in rice farming with a coefficient of 0.083, which means that the more experience in farming, the capacity of farmers will increase. The value of the effect of farmer's farming experience on the capacity of farmers to cultivate rice was 8.30 percent. This is in line with the results of Listiana's research (2017); Asta et al. (2015) which shows that farming experience is significantly and positively related to farmer capacity. This is supported by research by Ruhimat (2014) which also states that the level of farmer capacity is directly influenced by farming experience. The experience is very valuable for farmers, and the experience itself can be given to other farmers to be used and be a lesson in pursuing the success of their farming.

The cosmopolitan of farmers had no significant effect on the capacity of farmers in rice farming. Facts in the field show that most farmers had a low level of cosmopolitan because farmers were not really active in making visits to the agriculture office, cooperatives, other farmer groups, universities, agricultural UPTs, and companies (seeds, fertilizers, pesticides) to seek information related to their farming. The results of this study are in line with the research of Yusliana et al. (2020) which states that the cosmopolitan of farmers had nothing to do with the ability of farmers in farming. The motivation of farmers had a significant and positive effect on the capacity of farmers in farming with a coefficient of 0.521, which means that the higher the level of motivation of farmers, the capacity of farmers will increase. The value of the influence of the level of motivation of farmers on the capacity of farmers is 52.10 percent. The high level of motivation of farmers is motivated by the motivation to fulfill physiological needs, security, social, appreciation, and self-actualization which will have an influence on the capacity of farmers. In line with Managanta's research (2018) that motivation in farming development has a highly significant influence on increasing farmer competence. The area of land did not significantly affect the capacity of farmers in rice farming. Facts in the field show that most farmers had land with an area of not more than 1 hectare, so that the limited land owned by farmers makes it difficult to develop their farming capacity. In line with the research of Asta et al. (2015) that land area does not significantly affect the capacity of farmers. Supported by Listiana's research (2017) that land area does not have a real relationship with farmers' capacity in the implementation of IPM technology for lowland rice.

Family support did not significantly affect the capacity of farmers in rice farming. Facts on the ground show that family support was only limited to helping provide information related to farming activities and some family members also mentioned that they were trusting the father (the farmer who managed the farm), with the reason that apart from being more experienced, the father also knew more about what to do. The support of community leaders had a significant effect on the capacity of farmers in rice farming with a coefficient of 0.258, which means that the higher the community support, the better the capacity of farmers. The value of the influence of the level of support from community leaders on the capacity of farmers in rice farming was 25.80 percent. Community support was influential because the community leaders had high mobility and were easy to obtain information related to rice farming. The information obtained was distributed to farmers around the working area. In addition, community leaders also worked as farmers because they had high mobility and were considered to have good knowledge and skills in running the farming. This is in line with Kusrini's research (2017) which reveals that community leaders have a real relationship with the perception of the farming community in making decisions. The results of Azwar's research (2003) explains that an individual tends to choose an attitude in the same direction of people they consider important, one of whom is a public figure. Farmer group support had a significant but negative effect on farmers' capacity in rice farming with a coefficient of -0.171, which means that farmer group support had a significant negative effect on farmers' capacity. The existence of farmer groups was only a place to obtain agricultural production facilities in the form of subsidies from the government because to obtain such assistance, it is necessary to have group legality.

Extension support had a significant and positive effect on the capacity of farmers in rice farming, with a coefficient of 0.214, which means that the higher the extension support, the better the farmer's capacity. The value of the influence of extension support on the capacity of farmers was 21.40 percent. Extension workers provided support to farmers in the form of providing information and facilitating farmers' needs in farming. In addition, extension workers often provided assistance to obtain production facilities in rice farming. Farmers thought that the support of extension workers was needed for the sustainability of farming. The results of this study are in line with the research of Asta et al. (2015) and Listiana (2017) that extension support has a very significant and positive correlation with farmers' capacity. This indicates that the higher the extension support provided to farmers, the capacity of farmers will increase. Suprayitno (2018) actually adds that the support of extension workers has a real effect on the capacity of farmers. Leeuwis (2004); Ozor and Cynthia (2011) see that the role of extension workers can increase the capacity of farmers in developing skills and knowledge as well as providing material inputs and credit, so it can be said that the role of agricultural extension workers is very important in developing agricultural farming. Ijeoma and Adesope (2015) argue that the mission of extension is to provide research-based information, educational programs, and transfer of technology and people's needs, to enable one to make informed decisions about economic, social and cultural well-being. This is in line with Fatchiya's research (2010) which reveals that increasing the capacity of farmers requires support from extension workers. Yunasaf and Tsapirin (2011) stated that extension has an effect on the ability of farmers in their farming and encourages the growth of empowered farmers through extension workers who can facilitate learning activities. The research results of Muddassir et al. (2016) explains that agricultural extension services in the region can overcome factors that hinder farming results.

CONCLUSION

Tingkat kapasitas petani dalam berusahatani padi berada pada kategori sedang. Faktor-faktor yang berpengaruh nyata secara signifikan terhadap kapasitas petani dalam berusahatani padi yaitu umur petani, pengalaman usahatani, motivasi petani, dukungan masyarakat, dukungan kelompok, dan dukungan penyuluh, sedangkan pendidikan formal, pendidikan nonformal, tingkat kekosmopolitan, luas lahan, dan dukungan keluarga tidak berpengaruh nyata terhadap kapasitas petani dalam berusahatani padi.

The level of capacity of farmers in rice farming was in the medium category. The factors that significantly influenced the capacity of farmers in rice farming were farmers' age, farming experience, farmer motivation, community support, farmer group support, and extension service support, while formal education, non-formal education, cosmopolitan level, land area, and family support did not significantly affect the capacity of farmers in rice farming.

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