
Community participation in the special efforts to increase rice production program (UPSUS) in Ambarawa Pringsewu Regency, Lampung, Indonesia

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Abstract The Indonesian government in self-sufficiency in rice carried out a Special Effort Program (UPSUS) to increase rice production in Indonesia. To achieve sustainable self-sufficiency in rice, extension workers, students and village supervisory officers (babinsa) are important elements in mobilizing the main actor farmers to be able to apply technology. Extension workers, students and Babinsa are one of the driving factors for farmers (main actors) and can play an active role as communicators, facilitators, advisors, motivators, educators, organizers and dynamists in the context of implementing special efforts to increase rice production. The results showed that the level of farmers participation in the UPSUS program was in middle classification, the factors that related to farmers participation were knowledge of UPSUS program, the frequency of attending the extension activity, the level of farmer motivation, and cosmopolite character. The age, the level of formal education, and the large number of landowners were not related to farmer participation, and there was a correlation between farmers participation in UPSUS programs and the rice productivity in Ambarawa Sub-district. The results showed that the frequency of extension activities has a strong relationship with Farmer Participation in the UPSUS. This implies that more and more farmer activities have an impact on improving the UPSUS program. This program will be successful if it is supported by the land area owned by the farmers. Other findings in this study were age, and formal education were not associated with the success of the UPSUS Pajale program. This means that the success of the program does not depend on the education and age of the farmers, because most of the farmers do not have formal education and the average age is in the older group.

Keywords: Lampung province, Participation, Motivation, Productivity, UPSUS program

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Introduction

The agricultural sector is one of the mainstay sectors in national economic development because have a dominant contribution, both in terms of directly or indirectly in achievement of economic development goals national. In order to achieve the development mission national agriculture sector, Ministry of Agriculture, The Republic of Indonesia continues to strive to implement various innovations through various programs to develop the agricultural sector. Regulation of the Ministry of Agriculture of the Republic of Indonesia concerning guidelines for Special Efforts (UPSUS) improvement production of rice, corn, and soybeans through the program improvement of irrigation network and its supporting facilities has set special efforts achievement of sustainable self-sufficiency in rice, corn, and soybeans. Production achievement strategy rice include: increasing productivity, expanding planting area, and increasing cropping index.

Farmer participation is one of the keys to the success of agricultural development, the existence of farmers is an important factor in the manifestation of sustainable agricultural development (Ghimire, 2009; Aref, 2011; Madon *et al.*, 2018). Indonesia is one of the developing countries with a majority of the population making living in the agricultural sector (Quincieu, 2015), thus demanding policies in the agricultural sector are adjusted to the circumstances and developments that occur in overcoming various problems concerning the welfare of the nation. Development that brings changes to people's welfare will be assessed as successful by the community (Forsyth, 2014). Therefore, in the implementation of community participation development is a matter that greatly influences the success of the development process itself (Heck, 2003). Participation is cooperation in development, involvement in activities, and participating in utilizing as well as enjoying tangible development results (Mubita *et al.*, 2017). The active participation of the community in this case is the farmers (Aref, 2011; Fukugawa *et al.*, 2018), namely the involvement in the Special Efforts to Increase the Production of Rice, Corn, Soybeans Program, it is expected that rice production and productivity in Ambarawa SubDistrict of Pringsewu Regency can increase.

The current agricultural development paradigm must be adapted to community conditions, namely by referring to mobilizing the community by referring to equity and humanitarian justice in order to manifest an independent and competitive society (Indraningsih, 2011). Internet Usage in Agricultural Extension Activities in Lampung Province (Listiana *et al.*, 2019). Conceptually, the Special Efforts to Increase the Production of Rice, Corn, Soybeans Program, is a good program in increasing rice, corn and soybeans production as

well as farmer participation in agricultural development. However, factually it is necessary to examine the level of farmer participation in the program, particularly in the location of activities which the implementation has never been studied. Based on the description above, this study aimed to analyse the level of farmers participation in UPSUS program, to analyse the factors related to farmers participation in the UPSUS program, to find out the rice productivity after joining the UPSUS program, and to find out the relationship between the levels of farmers participation and UPSUS program.

Materials and methods

This research was conducted in Ambarawa Subdistrict, Pringsewu Regency, Lampung Province. The research location was selected purposively in Ambarawa Subdistrict which is the location of the implementation of the Special Efforts to increase the Production of Rice, Corn, Soybeans Program (UPSUS) which is located in 2 locations namely rainrice fields, and irrigated rice fields. The centre of government of Pringsewu Regency, where the majority of the farmer groups have advanced, seen from the farmer classification which belongs to advanced and middle farmer groups. The implementation area for extension activities by University of Lampung in Special Efforts to Increase the Production of Rice, Corn, Soybeans Program (UPSUS). Data collection was conducted in July-August 2017. The selection of research samples using non-probability sampling with judgment sampling technique which were 50 people of Margo Agung Gapoktan (Pekon Margodadi), and 43 people of Gapoktan Sumber Tani Manunggal (Pekon Sumber Agung).

The data used in this study are primary data and secondary data. Primary data were obtained directly through the interview process and direct observation of rice farmers by guided list of questionnaires. Secondary data were obtained from relevant agencies and institutions in the research site.

The data analysis method used in this study is descriptive, while hypothesis testing uses nonparametric Spearman's Rank correlation statistics (Kruska-Miller, 2014) using the formula:

$$rs = 1 - \frac{6 \sum_{i=1}^n di^2}{n^3 - n}$$

Description:

rs = correlation coefficient

d = Pairs difference for each rank

n = Number of samples

Because the number of samples used is greater than 10 (ten) respondents, then the testing of H_0 is continued with the t-Test using the formula:.

$$t_{\text{calculated}} = r_s \sqrt{\frac{n-2}{1-r_s^2}}$$

Description:

$t_{\text{calculated}}$ = t value which was calculated

n = Number of research samples

Decision criteria:

1. If $t_{\text{calculated}} \leq t_{\text{table}} (n-2)$ then H_1 is rejected at $\alpha 0.05$ or $\alpha 0.01$, meaning there is no correlation between the two variables.
2. If $t_{\text{calculated}} > t_{\text{table}} (n-2)$, then H_1 is accepted at $\alpha 0.05$ or $\alpha 0.01$, meaning that there is correlation on the two variables.

Measuring the accuracy of questionnaires by using validity and reliability tests. The validity value can be said to be good if the corrected item value of the total correlation is above 0,2. If the item correlation value of Corrected item from Total correlation item is above 0,2, then the items in the question are valid. The results of the validity and reliability tests in this research questionnaire found that the attributes used were valid and reliable.

The variables that will be examined in this study include three variables: (1) independent variable (X), namely factors related to community participation participants (in this case farmers) in the UPSUS Pajale program to increase rice production, (2) dependent variable (Y) includes community participation in special efforts to increase rice production, and (3) Z variable, namely rice productivity.

Results

Respondent condition based on age

The total respondents in Ambarawa Subdistrict were 93 people. Most of the respondents in Ambarawa Subdistrict were 48-57 years old with 41 persons (44.90%), while the lowest age group was 28-37 years old as many as 14 persons (14.23%). Based on age, the population of Ambarawa Subdistrict belonged to the productive age group with an average age of 46 years, thus the community is able to develop its potential by actively seeking information and

tends to be open to new innovations to carry out its farming activities. In detail the number of respondents based on age group can be seen in Figure 1.

The average respondent based on education level was at the junior high school level. This indicates that respondents in Ambarawa Subdistrict are aware of the importance of education and are a great potential that can support the progress of farming/livestock business. The level of education of junior high school/equivalent is considered to have been able to receive information obtained and apply it in daily life. Based on the level of formal education (Figure 1), respondents in Ambarawa Subdistrict have varying levels of education, ranging from elementary schools, junior high schools, and public high schools. Most of the respondents in Ambarawa Subdistrict have junior high school/equivalent education which is 35.49 %.

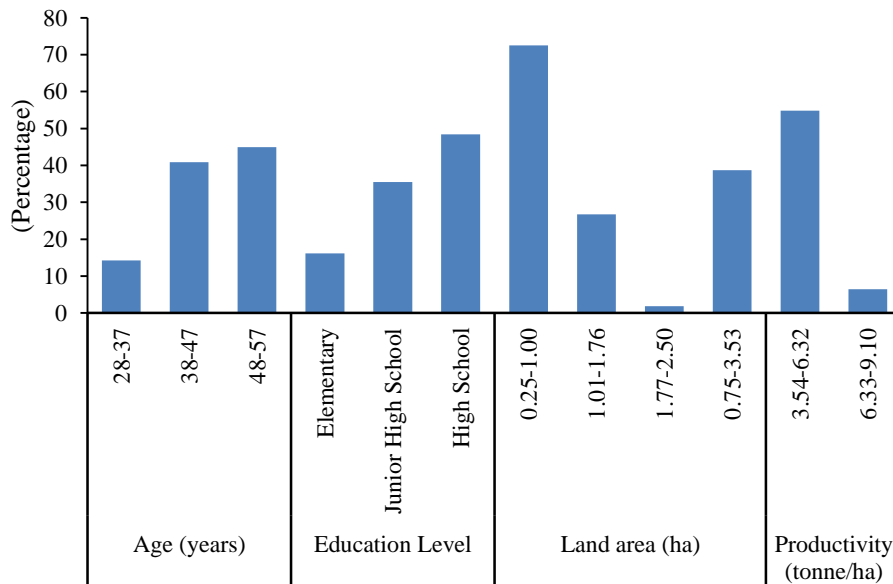


Figure 1. Number of respondents Population based on age group in Ambarawa Subdistrict

The total land area of respondents in Ambarawa Subdistrict was 0.25-1 ha for 67 people, 25 people had land area of 1,01-1,76 ha, and 1 person had land area between 1.77-2.50 ha. The average land area of respondents in Ambarawa Subdistrict was 0.65 ha (Figure 1). Based on Table 1, it is known that as many as 51 respondents had a productivity level of 3.54-6.32 with a percentage value of 54.85. The average productivity of respondents was at a value of 4.17 tonnes/ha.

Farmers' knowledge of UPSUS pajale program

Some respondents have high knowledge about the UPSUS Pajale program, with a percentage of 86.02 %. This means that the farmers participating in the UPSUS Pajale program already have good knowledge of UPSUS Pajale Program (Table 1).

Table 1. Distribution of respondents based on knowledge about UPSUS Pajale Program

Parameters	Classification	Person	Percentage	Average
1. Farmers' knowledge				
4.581 – 6.600	Low	1	1.08	
6.601 – 8.620	Middle	12	12.90	9.310
8.621 – 10.639	High	80	86.02	(High)
2. Extension Activities				
1.000 – 1.586	Less Active	76	81.72	
1.587 – 2.173	Moderately Active	0	0	1.340
2.174 – 2.758	Active	17	18.28	(Low)
3. Farmer motivation				
2.000 – 3.405	Low	45	48.39	
3.406 – 4.811	Middle	18	19.35	3.363
4.812 – 6.217	High	30	32.26	(Low)
4. Land area				
1.00 – 1.60	Small	13	19.69	
1.61 – 2.21	Medium	8	57.58	2.408
2.22 – 3.00	Large	5	22.73	(Medium)

This high level of knowledge is caused by the respondents having high knowledge of UPSUS Pajale Program (Table 1), namely the respondents knowing the purpose of UPSUS Pajale program is one of the programs of Ministry of Agriculture to optimize environmentally friendly fields in an area, and have been aware of the programs provided by the government. Most active respondents in extension activities were equal to 18.28 % or 17 people, while respondents who were less active in extension activities were 81.72 % or 76 people (Table 1). This shows that the respondent does not have good intensity in participating in the extension activity of UPSUS Pajale Program, namely the respondents have attended extension activities more than 3 times per year. Based on the conditions in the field the respondents were less enthusiastic when participating in extension activities, this can be due to when they took

part in extension activities they did not gain much information or knowledge of how to cultivate good plants and how to apply good and balanced fertilization.

Thirty respondents (32.26%) had high motivation in joining UPSUS Pajale Program, while 18 respondents (19.35%) had moderate motivation, and 45 people (48.39%) had low motivation in joining UPSUS Pajale Program (Tabel 2). Based on the conditions in the field, the farmer motivation comes from within themselves, because they consider that with UPSUS Pajale program they can obtain food crops independently. There are some respondents who are motivated by friends, this is because they get information that by conducting UPSUS Pajale program it can reduce the cost of food consumption.

Fifty three respondents (56.99%) had a non-cosmopolite character and 31 respondents (33.33%) had a less cosmopolite character, while 9 respondents had cosmopolite character (9.68%). Based on the conditions in the field, the respondent never held a meeting or *anjangsana* with a farmer figure. Almost all respondents rarely or even never utilize electronic media and print media to be used as a means of entertainment and information. There are some farmers who do not have television and radio and have never read newspapers, because farmers do not have time to watch television and read newspapers or magazines related to agriculture. Farmers use their free time to rest.

The distribution of respondents based on land area can be seen in Table 2. As many as 38 respondents (57.58%) belonged to the classification that had medium land area, while 15 respondents (22.73%) had large land area. Based on the conditions in the field, farmers who have small land area find it difficult to arrange or plant crops that are recommended by the local service, thus the plants planted in the fields are still relatively small. The productivity of rice farming was categorized as low for 76 people or (8.72%), while productivity of the farming of 13 people (13.98%) was classified into the medium classification, and four people (4.30%) was classified as high (Table 2). When it is viewed from the average productivity of rice farming, it is in the middle classification which is equal to 7.47 tonnes/ha. As many as 70 people or (75.27%) stated that the level of farmer participation in the UPSUS Pajale Program belonged to the high classification, while 14 people or (15.05%) belonged to the middle classification, and 9 people or (9.68%) with low participation, it means that farmers already have high willingness to participate in the UPSUS Pajale Program. Likewise, when viewed from the average of farmer participation in the UPSUS Pajale program, this result belonged to the middle classification with 62 %.

Relationship between farmer age and farmer participation in UPSUS pajale program

Based on the results of testing the hypothesis, it is known that there is no relationship between age and the effectiveness of group communication. Age does not affect the process of communication that runs in groups, because whatever age of the members is, the communication process will always be running and all members can provide information in the group without questioning the age factor. Statistical test results on factors related to farmer participation in the UPSUS Pajale program can be seen in Table 2.

Table 2. Results of Spearman's Rank correlation analysis on factors related to farmer participation in the UPSUS Pajale Program

Variable X	Variable Y	r_{spearman}	$t_{\text{calculated}}$	t_{table}
X1 : Age	Farmer Participation in the UPSUS Pajale Program	-1,241	-1,241	1,662
X1 : Formal Education Level				
X2 : Knowledge of UPSUS Pajale Program		-0,180	-1,774	1,662
X3 : Frequency of extension activities				
X4 : Farmer Motivation		0,299**	3,132**	2,368
X5 : Cosmopolite character				
X6 : Land Area		0,221*	2,216*	1,662
		-0,236*	2,384*	1,662
		0,317**	3,362**	2,368
		-0,110	-1,062	1,662

Description :

* Significantly related at the 95 percent confidence level ($t_{\text{table}} = 1,662$)

** Very significantly related at the 99 percent confidence level ($t_{\text{table}} = 2,368$)

tn not correlation

The relationship between the formal education level and Farmer Participation in the UPSUS Pajale Program. In testing the hypothesis between the level of education with the level of farmer participation, it is known that the level of education does not significantly influence the level of farmer participation in UPSUS Pajale program. Respondents in Ambarawa Subdistrict had a low level of education, but this did not affect them to

participate in activities of UPSUS Pajale program. The relationship between Knowledge of UPSUS Pajale Program and Farmer Participation in UPSUS Pajale Program. Based on the hypothesis testing it is known that there was no correlation between knowledge level of UPSUS Pajale program and farmer participation in UPSUS Pajale Program. This situation illustrates that the higher the level of knowledge of farmers of UPSUS Pajale program, the higher the farmer participation in UPSUS Pajale Program. It can be due to the increase in farmers' knowledge of UPSUS Pajale Program, farmers will be motivated to get to know and participate in each of the activities carried out.

Discussion

Variables related to farmer participation in UPSUS pajale program

Based on the research that has been done, respondents aged between 28 to 57 years. The majority of respondents were at the age of 28 to 57 years which was classified as middle age. Based on the average age of the members of farmer groups in Ambarawa Subdistrict, it was shown that most people were in the productive age group, hence the community was able to develop its potential by actively seeking information and tending to be open to new innovations to carry out farming activities. The mature age of an individual will influence the mindset and actions of the individual in carrying out their duties and obligations (Listiana *et al.*, 2018a). This means that the average age of extension agents in the research site is classified as productive age. Economically productive age can be interpreted that in general the level of willingness, enthusiasm and ability in conducting their duties is higher and has great responsibility of the UPSUS Pajale program where one of the reasons is rice intensification. Furthermore, internet usage in agricultural extension activities can utilize for farmer (Listiana *et al.*, 2019).

The results of the study showed that the level of formal education of the respondents was mostly at the junior high school level. Formal education followed by individual will make it easier in improving career ladder. Most people perceived that education can add insight and experience of learning as a provision in life including provisions to raise career ladder (Listiana *et al.*, 2018a). The level of formal education of the respondents is presented in Table 1. Formal education that has been taken by individuals (farmers) has no real relationship with their capacity. The capacity of a person tends to be related to external factors (the role of extension workers, the role of farmer contacts and the nature of innovation) (Kuehne *et al.*, 2017). Formal education as an effort to increase knowledge and change the mindset of individuals and to help extension workers improve their career paths (Listiana *et al.*, 2018b).

The existence of correlation between the activities of attending extension activities with farmer participation in UPSUS Pajale Program was caused by the extension material provided was quite interesting and in accordance with the needs of farmers in implementing UPSUS Pajale Program. Thus, with the increasing frequency of farmers participating in extension activities, the higher the level of farmer participation in the UPSUS Pajale Program. The relationship between Farmer Motivation and Farmer Participation in UPSUS Pajale Program. The farmer motivation encourages farmers to join and participate in a program. Every program implemented is seen from the needs of the community (Chitambo *et al.*, 2002; Nikkhah and Redzuan, 2009).

Hypothesis testing results of the relationship between farmer motivation and farmer participation in UPSUS Pajale Program were tested by Spearman's Rank correlation obtained by the value of $t_{\text{calculated}} -2,384$. The value of $t_{\text{calculated}} -2,384$ was smaller than the value of t_{table} at 95 percent confidence level which was equal to 2,386 means that it accepted H1 at α 0.05, meaning there is a correlation between farmer motivation and farmer participation in Pajale UPSUS Program.

The relationship between the Cosmpolite Character and Farmer Participation in UPSUS Pajale Program that the results of the hypothesis testing of the relationship between cosmopolitan nature and farmer participation in the UPSUS Pajale Program were tested by Spearman's Rank correlation obtained by the value of $t_{\text{calculated}}$ of 3,362. The value of $t_{\text{calculated}}$ was 3.362 greater than the value of t_{table} at the confidence level of 99 percent which was equal to 2,368, thus H1 was accepted at α 0.01, there was a correlation between cosmopolite character and farmer participation in UPSUS Pajale Program. The most dominant influence on the participation of cattle ranchers is the level of the cosmopolitan and the attitude of cattle ranchers towards the program (Listiana, 2010). The relationship between Land Area and Farmer Participation in UPSUS Pajale Program. There was no correlation between land area and farmer participation in the UPSUS Pajale Program. This situation illustrates that the wider land area does not mean the higher the farmer participation in UPSUS Pajale Program. The results of the field research showed that the average land area of the respondents belonged to the low category. This certainly affects the farmer participation in UPSUS Pajale Program.

The relationship between Rice Farmer Participation Level in UPSUS to Increase Rice Production Program with Rice Productivity. The success of a program cannot be separated from the role and participation of the community, the role and participation of the community in government programs will increase the success of the program (Madon *et al.*, 2018). Based on the

hypothesis testing it is known that there was no correlation between rice farming productivity and the level of farmer participation in Special Effort to Increase Rice Production Program (UPSUS) in Ambarawa Subdistrict. Based on the data in the field, the productivity of rice farming has increased after participating in the program activities. Special effort to increase rice production by 7,47 tonnes/ha, and when viewed from the average productivity of rice farming was classified as low, while the average level of farmer participation in the UPSUS program was classified as medium. Hence, the higher the rice productivity, the higher the level of farmer participation in the UPSUS Pajale program. The results of this study are in line with the results of the (Sitopu *et al.*, 2014).

Relationship between Farmer Age and Farmer Participation in UPSUS Pajale Program

Based on the results of testing the hypothesis, it is known that there is no relationship between age and the effectiveness of group communication. Age does not affect the process of communication that runs in groups, because whatever age of the members is, the communication process will always be running and all members can provide information in the group without questioning the age factor. This is in line with research (Listiana, 2010) which states that the most dominant influence on the participation of cattle ranchers is the level of cosmopolitan and attitudes of cattle ranchers, while age does not affect the participation. (Prasmatiwi *et al.*, 2012) research results said that the application of rice intensification can increase rice farmers' production and income. This is very supportive of the UPSUS Pajale program where one of the reasons is rice intensification.

The existence of correlation between the activities of attending extension activities with farmer participation in UPSUS Pajale Program was caused by the extension material provided was quite interesting and in accordance with the needs of farmers in implementing UPSUS Pajale Program. Thus, with the increasing frequency of farmers participating in extension activities, the higher the level of farmer participation in the UPSUS Pajale Program. The relationship between Farmer Motivation and Farmer Participation in UPSUS Pajale Program. The farmer motivation encourages farmers to join and participate in a program. Every program implemented is seen from the needs of the community (Chitambo *et al.*, 2002; Nikkhah and Redzuan, 2009).

Hypothesis testing results of the relationship between farmer motivation and farmer participation in UPSUS Pajale Program were tested by Spearman's

Rank correlation obtained by the value of $t_{\text{calculated}} -2,384$. The value of $t_{\text{calculated}} -2,384$ was smaller than the value of t_{table} at 95 percent confidence level which was equal to 2,386 means that it accepted H1 at α 0.05, meaning there is a correlation between farmer motivation and farmer participation in Pajale UPSUS Program.

Based on the results of the study, it was concluded that the farmer participation in the UPSUS Pajale program in Ambarawa Subdistrict belonged the medium classification. Factors related to farmer participation in the UPSUS Pajale Program were knowledge of the program, attending extension activity, farmer motivation and cosmopolite character, while unrelated factors were farmer age, formal education level, and land area and there was a correlation between level of farmer participation in UPSUS Pajale program with productivity of rice farming in Ambarawa District. The results showed that age and education level had a significant relationship with the level of farmer participation in the UPSUS program. The participation is very important instrumental in the success of this program. It showed that the behavior of farmers had significantly affected on the success of the program. The existence of the role of extension workers as assistants, security/military apparatus as implementing supervisors, and academics as consultants made rice farmers in Ambarawa Pringsewu Regency implement the UPSUS program in accordance with technical and implementation instructions. In addition, government support in the form of non-formal education through training and technical guidance to farmers needs to be increased so that the majority of Ambarawa rice farmers in Pringsewu Regency follow the formal education level to elementary school were able to manage their farming. Government support for irrigation infrastructure through the rehabilitation of tertiary irrigation networks as well as the construction of trench dams needs to be further increased in order to ensure the availability of water, and able to flow from the upstream to downstream rice fields during the dry season to optimize the expansion of planting area, and increase the rice cropping index.

Other research developments need to be carried out with additional studies in the economic field in the UPSUS program so that the UPSUS program is carried out sustainably.

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