



UDC 332

THE ROLE OF WOMEN FARMER GROUPS IN THE SUSTAINABLE FOOD YARD PROGRAM (P2L) AS AN EFFORT TO IMPROVE FAMILY FOOD QUALITY IN REMBANG DISTRICT, INDONESIA

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ABSTRACT

Agricultural statistics in the land use report at the Agriculture and Food Service of Rembang Regency found that in the last 3 years there has been a decrease in land use. The conversion of paddy fields can have a negative impact on food availability and food security of the population. One of the problems faced in agricultural and food development efforts in Rembang Regency is that food access is not yet optimal and food consumption is not yet diverse, nutritionally balanced and safe. The Sustainable Food Yard (P2L) activity is carried out to increase the availability, accessibility and utilization of food in order to realize household food security and support government programs to handle priority intervention locations to reduce stunting. Meanwhile, the women farmer group as one of the women farmer institutions in Rembang Regency is considered to have a very strategic role in the household as a provider of nutritious food for the family. The purpose of this study is to analyze the role of women farmer groups in the P2L program and analyze the influence of the role of women farmer groups on improving the quality of family food through the implementation of the P2L program in Rembang Regency. This research uses the *path analysis* method. The results showed that the role of women farmer groups had a significant effect on the level of food quality through the implementation of P2L. Efforts are needed to strengthen the institutionalization of woman farmer groups for the sustainability of group activities and to increase the capacity of women farmer groups in terms of accessing information, technology and knowledge through the internet.

KEY WORDS

Women farmer groups, farmer behavior, P2L, food quality, food pattern, path analysis.

One of the Ministry of Agriculture's strategic goals for the medium-term period 2020-2024 is to increase the availability of domestic strategic food. Law No. 18/2012 mandates that the Central Government and Local Governments are obliged to realize the diversification of food consumption to meet the nutritional needs of the community in accordance with local potential and wisdom in order to realize a healthy, active and productive life. From agricultural statistical data in the land use report at the Agriculture and Food Service Office of Rembang Regency, it is known that in the last 3 years there has been a decrease in land use. The conversion of paddy fields can have a negative impact on food availability and food security of the population. One of the problems faced in agricultural and food development efforts in Rembang Regency is also the unoptimal availability of food access and food consumption that is not yet diverse, nutritionally balanced and safe. Government Regulation No. 17/2015 on food security and nutrition Article 25 explains that food diversification is an effort to increase the availability of diverse and local resource-based food to (a) fulfill diverse, nutritious, balanced and safe food consumption patterns, (b) develop food businesses; and/or, (c) improve community welfare.

Women Farmer Groups (KWT) is an organization or community group that has the potential to encourage the use of yard land to fulfill family food security (Nuryana *et al.*, 2022). Amanah, Hubeis, and Tjitropanoto, (2015) in Pratama *et al.* (2022) said that women farmers provide participation in various activities to produce food, distribute food, utilize adequate and nutritious food to realize food security. The Ministry of Agriculture initiated the



optimization of yard utilization through the concept of Rumah Pangan Lestari (RPL). RPL is a house that intensively cultivates the yard to be utilized with various local resources wisely which ensures the sustainable provision of quality and diverse household foodstuffs, so that family nutritional needs can be met (Suryani & Elma Basri, 2017). Optimizing land utilization is one of them done through Sustainable Food Yard (P2L) activities. P2L activities are carried out to increase the availability, accessibility and utilization of food in order to realize household food security and support government programs for handling priority intervention locations to reduce stunting (Nugraha, 2022). In previous studies, the role of woman farmer groups in the P2L program only reviewed the role of groups in the technical implementation of sub-activities in the P2L program and several factors determining the effectiveness of the program. This study examines the role of woman farmer groups described through the behavior of women farmers in the implementation of the P2L program which will provide an explanation of the implementation of P2L and the achievements of its activities and provide an explanation of the food patterns and the level of food quality of the families of women farmers who are members of woman farmer groups receiving P2L activities. The purpose of this study is to analyze the role of women farmer groups in the implementation of P2L and analyze the effect of the role of women farmer groups on improving family food quality through the implementation of P2L in Rembang Regency.

METHODS OF RESEARCH

The research was conducted from August to December 2023, in Rembang Regency. This study used a survey method, which is taking samples from a population using a questionnaire as a data collection instrument. Primary data were obtained from direct interviews with respondents, extension assistants and the P2L Technical Team of the Agriculture and Food Service Office of Rembang Regency. Secondary data were obtained from the Program Division of the Agriculture and Food Service Office of Rembang Regency, the Central Bureau of Statistics of Rembang Regency, related literature, the internet and other sources related to this research. Data collection was conducted by means of interviews, questionnaires and documentation.

The research population includes KWT in Rembang District which has been registered in the Agricultural Extension Management Information System (SIMLUHTAN) and is a recipient group of Sustainable Food Yard (P2L) activities in 2019-2022. In this study, researchers divided the Rembang Regency area into 2 zones, namely the lowland zone (0-100 masl) and the highland zone (100-797 masl). The research population was 13 KWTs located in 8 sub-districts with a total of 321 members. Furthermore, sample determination was carried out in stages, namely grouping locations based on the division of zones in Rembang Regency using the *stratified sampling* method. From the results of the sample determination, 8 KWTs were obtained in the lowland zone and 5 KWTs were in the highland zone. The second stage, sample determination, was carried out by determining the research sample using the Slovin formula, so that 178 respondents were obtained. The selection of respondents in each group was taken with *proportional random sampling*.

The instrument in this study consists of 3 exogenous variables and 2 endogenous variables. Exogenous variables include learning classes, cooperation vehicles and production units. The instrument of each indicator consists of 5 statements that include an explanation of the description of the role of the farm women group composed of indicators of the group's role in planning, organizing activities, implementing activities and developing group leadership. Endogenous variables include the implementation of P2L and the level of food quality. The instrument for the variable implementation of P2L consists of 30 statements that explain the behavior (attitudes, knowledge and skills) of respondents in the implementation of P2L (food availability, accessibility, utilization). The instrument in this study more specifically provides an overview of the success of the P2L program in terms of the role of women farmer groups, especially changes in the behavior of women farmers in the implementation of P2L to improve the quality of food for their families.

This study uses quantitative descriptive analysis through a *path* analysis approach with



the AMOS program. Descriptive analysis begins with determining the interval category of the value of each research variable in the low, medium and high categories. This was done to determine the level of role in woman farmer groups in Rembang Regency.

Furthermore, to determine the influence of the role of woman farmer groups through the implementation of P2L in improving food quality, path analysis was carried out, starting with determining the exogenous and endogenous variables of the study. The research variables are as follows: Z = food quality improvement variable Y = P2L implementation variable; X1 = farm women group variable as a learning class; X2 = variable farm women group as a vehicle for cooperation X3= variable farm women group as a production unit.

From these variables, the path analysis diagram and structural equation in this study can be presented as follows:

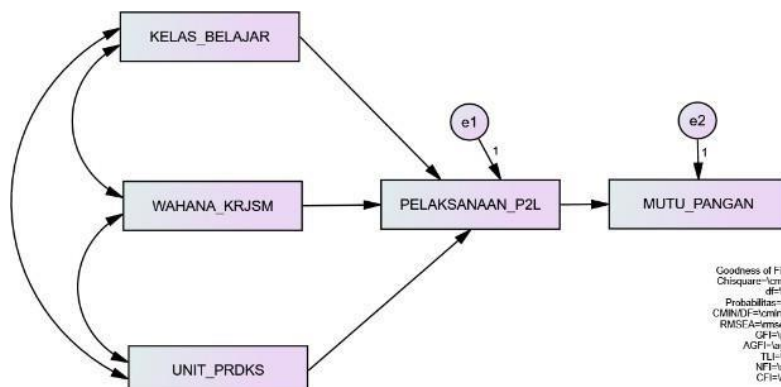


Figure 1 – Path Analysis Diagram

The structural equation from the path analysis diagram is:

$$Y = \gamma x + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3; Z = \gamma z + \beta Y$$

RESULTS AND DISCUSSION

The implementation of P2L activities in Rembang Regency began in 2019. The basis for determining the recipient groups of P2L activities is the proposal for activities by the group and the results of field verification by the P2L Technical Team of the Agriculture and Food Service of Rembang Regency. Starting in 2019 until 2022, the number of woman farmer groups receiving sustainable food yard activities in Rembang District is 13 woman farmer groups spread across 8 sub-districts in Rembang District. In this study, respondents were divided into 2 regional zones, namely the lowland zone and the highland zone. The implementation of the P2L activity program in Rembang District includes seeding facilities, group demonstration plots, member planting and post-harvest facilities. Each activity is carried out in a planned and organized manner by woman farmer groups in accordance with the technical cultivation of yard plants. The commodities planted in this activity are tailored to the needs of the group and the characteristic of the region where the group's needs plan is contained in the Group Business Plan (RUK). The results of interviews with respondents found that there are differences in the types of commodities cultivated in P2L activities and food consumption patterns. Farmer women groups in the lowland zone choose horticultural commodities that are resistant to hot weather climates such as mustard greens, spinach, water spinach, eggplant, cayenne pepper and bitter melon. While farmer women groups in the highland zone choose more varied horticultural commodities that are suitable for planting in the highlands such as cauliflower, lettuce, pokcoy mustard greens, celery, spinach and kale. The achievements of P2L activities in woman farmer groups during the study (4 months) were found that from the results of P2L program activities, woman farmer groups could increase group income as well as family income through the sale of yard products after deducting consumption. Another achievement of the P2L program in Rembang Regency



based on the results of the 24-hour *recall* of respondents' food consumption is that there are differences in the food consumption patterns of KWT in the lowland zone and the highland zone. The differences in food consumption patterns are presented in Table 1.

Table 1 – Food consumption pattern

No. Meal Time	Consumption Pattern	
	Lowland Zone	Highland Zone
1 Morning	Rice + Animal side dish (fish)	Rice + vegetable side dish (tofu/tempeh) + vegetable
2 Afternoon	Rice + animal side dish (fish) + vegetable	Rice + vegetable/animal side dish + vegetable + fruit
3 Night	Rice + animal side dish (fish) +vegetables	Rice + vegetable/vegetable side dish + vegetable

From the table, it can be seen that vegetable consumption in the highland zone is frequent compared to the lowland zone. Meanwhile, the consumption of animal protein (fish) in the lowland zone is higher than the lowland zone. This is because the location of the farm women group in the zone is close to the sea where access to animal side dishes is easier and closer. Whereas in the highland zone, vegetable consumption in the highland zone has become a daily food because it is available both in the land and yard. According to respondents with P2L activities, food availability is fulfilled and food access is closer so that it can meet family food needs. Farmer women group members who lack money to meet their family's food needs are greatly helped by this P2L activity.

The characteristics of respondents in this study include age, number of family members, education, occupation, social status, length of membership, and presented in Table 2.

Table 2 – Characteristics of research respondents

No.	Characteristics	Number of respondents people	Percentage %
1 Age	30 - 40 years old	22	12
	41 - 50 years old	89	50
	51 - 60 th	67	38
2 Number of family members	2 people	18	10
	3 people	43	24
	4 people	98	55
	5 people	19	11
3 Education	Not in school	-	-
	SD	23	13
	SMP	79	44
	High School	56	32
4 Jobs	Higher Education	20	11
	Farmers	-	-
	Farm Laborer	25	14
	Self-employed	9	5
	ASN	18	10
5 Societal status	Housewife	126	71
	Other people	118	66
	Tomas	-	-
	PKK Management	46	26
6 Length of membership	Village Devices	14	8
	< 1 year	-	-
	1 - 2 years	44	25
	3 - 4 years	87	49
>4 years	47	26	

Source: Primary Analysis, 2023.

Most respondents (50%) were aged 41-50 years. This shows that the current membership of the women farmer group is still dominated by women of productive age. This is in accordance with what was conveyed by Gusti *et al* (2022) that farmers who have a productive age will usually work better and more optimally than farmers who are not productive. The results of this study showed that most respondents had a total of 4 family members. Purwati *et al* (2023) explained that an increase in the number of family members can reduce the household food availability score. The number of dependents in the family has a correlation with the amount of food expenditure needed in the household. The



education level of most respondents was junior high school. These results indicate that the formal education level of respondents is dominated by secondary education. As stated by Annisa *et al* (2022) that the level of education of women is very influential on interest in farm business development. It is known that as many as 126 respondents of this research are housewives (Badriyah *et al.*, 2023) explained that efforts to increase the knowledge and skills of housewives in providing diverse, nutritionally balanced and safe food can be done through counseling, training and courses in solving the problem of stunting in children. A total of 118 people are farm women with simple lives who still uphold the rules and norms of society that have been instilled since childhood and passed down from generation to generation. A total of 87 respondents have been members of woman farmer groups for 3-4 years. As stated by Gusti *et al* (2022) that as a farmer really needs experience in farming to get high productivity, because the more experienced farmers, the more they know the situation and conditions of farming, so they can correct deficiencies in farming.

In this study, the research instrument for the variable role of the farm women group is composed of the construct of role in its function as a learning class, vehicle for cooperation and production unit with indicators of the group's role in planning, organizing, implementing activities, evaluating reporting and leadership.

The results of the primary data analysis of the learning class variables, cooperation vehicle, and production unit are presented in Table 3 to Table 5.

Table 3 – Frequency of Learning Class Variable Values

Category	Value Interval	Frequency respondent	Relative %
Low	5-11	0	0
Medium	17-18	152	85
High	19-25	26	15

Source: Primary data analysis, 2023.

The frequency of values on the learning class variable is in the medium category as many as 152 respondents. From this analysis, it can be explained that the learning class of woman farmer groups in Rembang Regency is only through counseling by PPLs in routine meetings and the implementation of training / demonstrations / demonstration plots. The learning class still needs to add information and knowledge. As stated by Oktoriana & Suharyani, (2021) that farm women involved in farmer groups have a high intensity to interact among fellow farming actors so that they can obtain information and experiences about successes and failures in running their farms.

Table 3 – Frequency Score of Cooperation Vehicle Variable

Category	Value Interval	Frequency respondent	Relative %
Low	5-11	0	0
Medium	11-18	154	87
High	19-25	24	13

Source: Primary data analysis, 2023.

The frequency of the value of the cooperation vehicle variable in this study was in the medium category of 87% as many as 154 respondents. From the results of the analysis above, it can be explained that there is still not optimal cooperation in woman farmer groups in Rembang Regency, especially in the synergy of developing activities in each unit in several woman farmer groups where they still have not maximized the participation of third parties through group partnerships. This is in accordance with what is conveyed by Margayaningsih (2021) that good cooperation between fellow farm women group members, farmers in one group, between woman farmer groups and between woman farmer groups and other parties is expected to provide benefits for woman farmer groups, including providing more benefits to group members, farming businesses become more effective and efficient and are able to face obstacles or constraints in the group.



Table 4 – Frequency of Production Unit Variable Values

Category	Value Interval	Frequency respondent	Relative %
Low	5-11	0	0
Medium	11-18	136	76
High	19-25	42	24

Source: Primary data analysis, 2023.

The frequency of values on the production unit variable was in the medium category at 76% as many as 136 respondents. From the results of this analysis, it can be explained that the role of the women farmer group as a production unit in Rembang Regency is still experiencing obstacles in the provision of production infrastructure, business development and marketing of products resulting from the utilization of the yard. As stated by Harfina (2017) in Machmudah (2019) which states that the role of the group as a business unit is to seek information and take advantage of opportunities for the success and sustainability of its members' businesses.

The level of food quality of woman farmer groups in Rembang Regency is in the medium category. From the results of the analysis, it can be explained that some members of woman farmer groups in Rembang District have not understood and implemented good handling of fresh and processed food products. In addition, the consumption of diverse, nutritionally balanced and safe food is only done at certain times. The results of the frequency analysis of variable values of food quality level are presented in Table 5.

Table 5 – Frequency Score of Food Quality Level Variables

Category	Value Interval	Frequency respondent	Relative (%) %
Low	15-35	0	0
Medium	36-55	178	100
High	56-75	0	0

Source: Primary data analysis, 2023.

The analysis results are in accordance with those submitted by Wardana *et al* (2023) that the composition of food diversity based on the nutritional balance of several food groups both in quantity and quality by considering the aspects of acceptability, food availability, economic culture and religion is a manifestation of the community's expected food pattern. Nutrient content as a variable constituent of family food quality improvement provides an overview of the elements that must be met for the Nutrient Adequacy Rate (RDA), the content of nutrients and their functions for the human body, and proper food consumption to prevent stunting in children/youth. According to Damongilala (2021) food and nutrition are important components in realizing quality healthy human resources; malnutrition will result in suboptimal growth. Safe food is food that is free from physical, chemical and biological contaminants found in the food. The implementation of food safety can be done independently by protecting food from contamination by applying food treatment in an effort to maintain food hygiene. Food safety as a variable constituent of food quality improvement provides an overview of the types of food contamination, special treatment in post-harvest handling of horticultural crops and the effects of chemical use.

The data normality test in this study was carried out using the AMOS program. The criterion used in the data normality test is if the multivariate *Critical Ratio* (C.R.) value in the *Assessment of normality* is within the limits of the C.R. normality value of the data, namely - 2.58 to 2.58, meaning that the data is normally distributed. The *multivariate critical ratio* value in the *assessment of normality* is 0.693. This shows that the data is normally distributed and meets the normality test for path analysis. After the validity and reliability values are accepted, the *Goodness of Fit* test is then carried out, the results of which are presented in Table 8. From the overall test results, it can be concluded that the data meets the assumptions of the structural equation and can be continued for further assessment.



Table 6 – Goodness of Fit (GOF) criteria test results

Criteria	Limitations	Value	Description
Chi Square	Small, $\leq \chi^2 \text{ á ; df}$	5,637	fit
Probability	$\geq 0,05$	0,131	fit
CMIN/df	≤ 2	1,879	fit
RMSEA	$0,05 < RMSEA < 0,08$	0,07	fit
GFI	$> 0,90$	0,988	fit
AGFI	$\geq 0,90$	0,938	fit
TLI	$> 0,90$	0,988	fit
NFI	$> 0,90$	0,993	fit
CFI	$> 0,95$	0,997	fit

Source: Primary data analysis, 2023.

To analyze the influence of the role of women farmer groups in improving food quality through the implementation of P2L, this study uses *path* analysis to test the magnitude of the contribution indicated by the path coefficient on each path diagram and the causal relationship between variables X1, X2, X3 to Y and their impact on Z. Delivered by Ghodang (2020) that the path analysis technique is a technique for analyzing the cause and effect that occurs in multiple regression if the independent variable affects the dependent variable not only directly, but also indirectly. The results of path analysis using the AMOS program show the results presented in Figure 2.

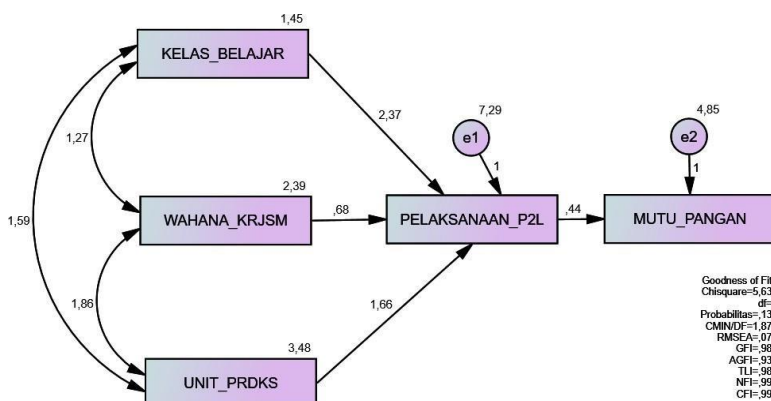


Figure 2 – Diagram of Path Analysis Results

Table 7 – Regression Weight

		Estimate	S.E.	C.R.	P
Y	< X3	1,664	0,162	10,296	***
Y	< X1	2,37	0,262	9,059	***
Y	< X2	0,677	0,189	3,58	***
Z	< Y	0,442	0,024	18,295	***

Source: Primary data analysis, 2023.

The results of the above analysis show that the C.R. value ≥ 1.996 and the probability value < 0.05 so that all indicators in this study are declared significant.

Table 8 – Direct Effect, Indirect Effect and Total Effect between Exogenous Variables and Endogenous Variables

Production Unit	Cooperation Vehicle		Study Class	Implementation of P2L
<i>Direct Effects (Group number 1 - Default model)</i>				
Implementation of P2L	0,677	1,664	2,37	0
Food Quality Level	0	0	0	0,442
<i>Indirect Effects (Group number 1 - Default model)</i>				
Implementation of P2L	0	0	0	0
Food Quality Level	0,299	0,735	1,047	0
<i>Total Effects (Group number 1 - Default model)</i>				
Implementation of P2L	0,677	1,664	2,37	0
Food Quality Level	0,299	0,735	1,047	0,442



The results of path analysis with exogenous variables of the role of woman farmer groups as learning classes, vehicles for cooperation and production units and endogenous variables of P2L implementation show the following equation results:

$$Y = 22.942 + 2.370X1 + 0.677X2 + 1.664X3$$

The regression coefficient value of X1 (study class) on Y (P2L implementation) is 2.37. These results indicate that between the learning class variables and the implementation of P2L directly have a positive relationship. If the learning class increases by one unit, the implementation of P2L will increase by 237%. From this explanation, it can be conveyed that there is a significant influence between the learning class variable on the implementation of P2L. This states that Hypothesis 1 is accepted.

Participation in training, one of which is training on the utilization of yard land, will increase the capacity of members to accept information and technology more openly. This is in accordance with what was conveyed by Farahdiba *et al* (2020) that the role of the group as a learning class is useful for increasing the knowledge, attitudes and skills of members. Women farmer group activities through regular meetings are a forum for information exchange between farmer women. Meanwhile, in research Oktoriana & Suharyani (2021) also stated that farm women who are active in farmer groups are more eager to seek information related to these matters, which will increase their knowledge and skills in farming.

The regression coefficient value of X2 (vehicle of cooperation) on Y (implementation of P2L) is 0.68. This gives the understanding that the role of woman farmer groups as a vehicle for cooperation on behavior in the implementation of P2L directly has a positive relationship, if the vehicle for cooperation increases by one unit, the implementation of P2L will increase by 68%. From this explanation, it can be conveyed that there is a significant influence between the variable roles of KWT in its function as a vehicle for cooperation on the implementation of P2L. Or it can be stated that Hypothesis 2 is accepted.

The forum for group cooperation is a place to strengthen cooperation among farm women members with other farm women members. Delivered by Tobing *et al* (2018) that the role of woman farmer groups in utilizing yard land which is an activity of the Yard Utilization program is not only to cooperate in yard farming activities, but also to participate in increasing income to be even more prosperous.

The regression coefficient value of X3 (Production unit) on Y (P2L implementation) is 1.66. This gives the understanding that between the production unit and the implementation of P2L has a positive relationship, if the production unit increases by one unit, the implementation of P2L will increase by 166%. From this explanation, it is conveyed that there is a significant influence between the variable roles of KWT in its function as a production unit on the implementation of P2L. Or it can be stated that Hypothesis 3 is accepted.

This is in accordance with what was conveyed by Tobing *et al*. 2018) that as a production unit, women farmer groups are expected to be able to utilize yard land that is planted with vegetables that can meet the food and nutritional needs of their own families, while increasing household income and income. In addition, the utilization of yards in woman farmer groups is designed to increase the consumption of a variety of local foods with balanced nutrition principles. From the results of the study, it was explained that the response of farm women in yard utilization activities was very high at 89%, this was due to the fact that farm women who utilized yard land could have a very good response with a productive age so that they had a strong spirit and physical ability, by having a long enough experience, interests / hobbies of farm women, the knowledge they had, a large enough area of land to do yard land utilization.

The results of path analysis with exogenous variables of P2L implementation and endogenous variables of food quality improvement show the following equation results:

$$Z = 3.163 + 0.44Y$$

The positive constant value shows the positive effect of exogenous variables (P2L



implementation) on endogenous variables (food quality improvement). The regression coefficient value of Y (P2L implementation) on Z (food quality level) is 0.44. This can be explained that the implementation of P2L with the level of food quality has a positive relationship, if the implementation of P2L has increased by one unit, the improvement of food quality will also increase by 44%. This positive relationship indicates that there is a significant effect of the P2L implementation variable on improving food quality or in other words Hypothesis 4 is accepted. This can be explained that the P2L program in Rembang Regency changes the behavior of women farmers in fulfilling food availability, facilitating food access and utilizing food into nutritionally balanced food.

Rembang Regent Regulation No. 52/2020 states that nutrition-sensitive interventions are indirect activities in overcoming the causes of stunting which include increasing access to nutritious food, increasing awareness, commitment and nutritional care practices of mothers and children, increasing access and quality of nutrition and health services and improving clean water and sanitation facilities. The implementation of P2L activities provides sufficient food availability for families and facilitates access to nutritious food for families in Rembang District. Meanwhile, this is also in line with the results of research by Sukmawani *et al* (2022) whose research shows that the P2L program has a positive impact on the level of household nutritional adequacy. So it can be said that the P2L Program has an influence on the level of household nutritional security of woman farmer groups.

CONCLUSION AND SUGGESTIONS

The level of the role of women farmer groups as study classes, vehicles for cooperation and production units is included in the medium category. It is concluded that the role of woman farmer groups still requires assistance by relevant agencies in increasing institutional capacity and group dynamics, especially in the implementation of the P2L program in an effort to improve the quality of family food. The role of woman farmer groups is stated to have a significant effect on the implementation of the P2L program, namely as the main actor in fulfilling the availability, access and utilization of food for families. The role of women farmer groups through the implementation of the P2L program has a significant effect on improving the quality of family food, namely in providing diverse, nutritionally balanced and safe food for families.

There is a need to increase the capacity of women farmers in farmer women groups in the mastery of the internet as a means of information, knowledge of agribusiness management of yard utilization and strengthening partnership patterns with other parties in yard utilization activities. Assistance by related agencies or the private sector in the institutional development of women farmer groups in the continuity of group activities, group dynamics and utilization of local resources needs to be intensified to strengthen group institutions and change the behavior of women farmers in terms of attitudes, knowledge and skills.

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