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Analysis of Needs and Constraints in the Farmer Group Empowerment Program in the Use of Organic Fertilizers in Kalisat District, Jember Regency

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Abstract

Procurement of organic fertilizers is one of the efforts that can be made to restore soil organic matter to increase the production value of the agricultural sector in Jember Regency. Issues about the environment and low soil organic nutrient content also occur in Jember District, especially in Kalisat District, which causes the importance of applying organic fertilizers. The importance of using organic fertilizers requires the participation of farmer groups to be more empowered in producing and using organic fertilizers. The purpose of this study was to analyze the needs and constraints faced to develop a strategy for developing a farmer group empowerment program in the use of organic fertilizers in the Kalisat subdistrict, regency Jember. This research is classified as a qualitative research which aims to analyze the key factors in the farmer group empowerment program. The results showed that in the elements of program needs there were two needs which were key factors, namely organic farming production facilities and local government policies. In the element of constraint there are two key obstacles namely the low knowledge of farmers and the limitations of organic fertilizer processing tools and machines. The resulting strategy is in the form of: 1) Addition of organic farming production facilities. 2) Alignment of local government policies by adding programs to promote the use of organic fertilizers in Jember Regency in the main program of Jember Mandiri. 3) Increase farmer's knowledge related to the manufacture of organic fertilizers through counseling.

Keywords: Empowerment, Organic Fertilizer, ISM, Jember Regency

Introduction

The agricultural sector is one of the sectors with a very high level of importance in Indonesia, this is because the agricultural sector has a high contribution to increasing the value of Indonesia's Gross Domestic Product (GDP). Based on data from the Central Bureau of Statistics (BPS), in 2020 the agricultural sector has been able to contribute 12.7% to an increase in Indonesia's GDP and the contribution value is expected to increase in 2021 and 2022 (BPS, Statistical Gazette No. 15/02 /Th.XXVI - Indonesia's Economic Growth Quarter IV-2022, 2023).

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The important role of the agricultural sector requires the government to be able to maintain the sustainability of the agricultural sector in Indonesia so that Indonesia does not lose its biggest contributing factor to continue to develop and increase the value of Indonesia's GDP. This is what causes the government to promote the development and improvement of the agricultural sector in all potential areas for the development of the agricultural sector as a leading sector (Permentan, 2016).

The development of the agricultural sector has been carried out in various regions in Indonesia, one of which was carried out in Jember Regency. Jember Regency is one of the areas located in East Java Province, Indonesia. Jember Regency is one of the areas with the agricultural sector as the leading sector which is currently being developed. Jember Regency has a paddy field area of 86,069 Ha, of which 85,231 Ha is irrigated rice field and the remaining 838 Ha is rainfed rice field. The distribution of this potential utilization is realized in the form of production of food crops including rice amounting to 1,006,042 tons (BPS, Kabupaten Jember Dalam Angka 2022, 2022).

The condition of agricultural land and plantations in Jember Regency is very fertile. Therefore, the majority of land use in the Jember Regency area is dominated by agricultural land and plantations. This condition is very suitable considering that the main livelihood of the people of Jember Regency is in the agricultural sector (TPHP, 2023), However, one of the strategic issues in the agricultural sector in Jember Regency that is currently happening is the conversion of agricultural land to non-agricultural land and the degradation of natural resources, in addition to the weak access of farmers to capital and the limited availability of agricultural production facilities and infrastructure (seeds, fertilizers, pesticides, alsintan are also the focus of the government to develop the agricultural sector. According to Ariwibowo (2022) the people of Jember Regency are still very dependent on chemical fertilizers, this causes contamination of soil nutrients. This condition causes the government to be required to create a movement to restore soil nutrients through the use of organic fertilizers (Wirawan, 2022).

Efforts to improve the agricultural sector in Jember Regency are in line with current national issues, where in recent years, environmental issues have become the focus of the community. The use of organic materials known as organic farming has received more attention in agricultural activities (Prasetyaningtyas, Maaruf, Sobir, & Aji, 2019). Promoting the organic farming movement is carried out in all regions with the agricultural sector as the leading sector. This is done because in general the condition of agricultural land in Indonesia has decreased fertility and soil damage, and has experienced a decrease in productivity, especially rice field intensification. (Hartatik, Husnain, & Widowati, 2015).

Damage to land, especially paddy fields also occurred in Jember Regency. This condition then made the Jember Regency Government develop a Regional Government Strategic Plan related to the development of the agricultural sector through strengthening farmer institutions and the use of organic fertilizers (Jember, 2022). This applies to all sub-districts in Jember Regency, including Kalisat Sub-District which is the target area of the Sumberjambe Jember Agricultural Extension Center (BPP). Empowerment of Farmer Groups (Poktan) in the production and use of organic fertilizers in Kalisat District is carried out to improve degraded paddy fields (TPHP, 2023)

Some farmers who are members of farmer groups under the guidance of BPP Sumberjambe Jember have used organic fertilizers, but most of them still don't use organic fertilizers in farming,

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so most farmers are still very dependent on chemical fertilizers. The small number of farmers and farmer groups who are able to produce and apply organic fertilizers makes it important to empower groups in producing organic fertilizers and applying organic fertilizers by farmers.

Empowerment itself is the basic foundation at the individual and social level that leads to the ability of a person or group to be vulnerable and weak (Effendy & Diantoro, 2020). The current condition is that most farmers in Kalisat sub-district have a low level of awareness regarding the importance of applying organic fertilizers causing farmers to prefer using inorganic fertilizers rather than organic fertilizers. Organic fertilizer production independently by farmer groups in Kalisat sub-district is routinely carried out by only 3 farmer groups out of a total of 63 groups. The high level of dependence of farmers on subsidized chemical fertilizers raises the problem of always having a shortage with the availability of subsidized chemical fertilizers at the input supply kiosk level. The condition of the powerlessness of farmer groups is what causes the importance of empowering farmer groups so that group members can produce, use organic fertilizers and reduce dependence on chemical fertilizers which can damage soil organic content.

Proper planning to empower farmer groups in the production and use of organic fertilizers in Kalisat District will be able to realize a strategy that can be implemented effectively and efficiently in Kalisat District in particular, and in Jember District in general. The development of a program can be carried out using Interpretative Structural Modeling (ISM) where ISM is a modeling technique used to formulate strategic policies. ISM is able to structure a complex problem into a structure that can provide a more detailed picture of what needs to be done first by taking into account the key factors that exist in each element in developing a program.

Program development using ISM can be done by analyzing the important aspects needed by adjusting to conditions in the region. The development of a farmer group empowerment program in Kalisat District, Jember Regency can be carried out by analyzing the needs of the program, which includes what aspects are needed to empower farmer groups and the main constraints are covering aspects that can hinder the empowerment of farmer groups.

Literature Review

Institutional is a higher designation, includes behavior and structure that is parallel to the position of the organization. Meanwhile, behavior is formed from norms, values, and others. While the structure acts as a static aspect that guarantees the continuity of an institution. Institutions can be interpreted as software, rules of the game, exemplary, trust, and the consistency of the policies applied therein. Institutions are not only limited to working relations within and between institutions (Sukwika, 2018). Farmer Institutions are developed from, by and for farmers to strengthen and fight for the interests of farmers. One of the farmer institutions is Farmer Groups (Poktan) (Permentan No. 67, 2016). Farmers' groups are one of the institutions at the farmer level which are a forum for farmers to convey their aspirations regarding the agricultural sector and the progress of the agricultural sector they are working on.

Farmer Groups (Poktan) are farmer organizations formed from farmers and have direct contact with farmers. Based on the Minister of Agriculture (2016), is a group of farmers/breeders/planters formed by farmers on the basis of similar interests, similarities in social, economic and resource environmental conditions, commodity similarities, and familiarity to improve and develop members' businesses. Farmer groups have a very big role in realizing

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programs made by the government for farmers, this is because farmer groups are institutions that have direct contact with farmers. In terms of optimizing the use of organic fertilizers, farmer groups must be empowered to be able to become a place of learning for farmers who will carry out cultivation activities in the agricultural sector. Farmer groups must also be able to meet farmers' needs for organic fertilizer, either through the procurement of organic fertilizers from other parties or the supply of organic fertilizers through the production of organic fertilizers carried out independently by farmer groups.

Empowerment is the ability to carry out an action in the form of reason, an effort to improve the ability of a community or community group to be able to act in accordance with dignity in carrying out their rights and responsibilities as members of society. (Effendy & Diantoro, 2020). According to Nasdian (2015), empowerment is a process of continuous activity throughout the community or group if you want to make changes and improvements without being attached to a program. The principle of empowerment encourages a group to be independent and have participatory awareness to increase creativity. Participation in empowerment encourages the group to be aware of the situation and problems they are facing and try to find solutions to overcome the problems they are facing. Farmer group participation is needed in the group to be able to influence group members in acting and doing something. According to Nugraha (2016) there are several factors that influence the empowerment of farmer groups including: farmer independence, level of knowledge, support from the government or stakeholders and the availability of raw materials in the manufacture of fertilizers. The role of agricultural extension officers is also very helpful in empowering farmer groups, apart from being a motivator, extension officers also play a role as informers and facilitators. (Suryana & Ningsih, 2018).

Research Methods

This research is classified as a qualitative research, because in order to formulate a strategy for developing a farmer group empowerment program, special phenomena that occur in the field are identified in depth to understand the experiences of the participants (Ghozali, 2016). This research was conducted to analyze the use of organic fertilizers by farmer groups to design strategies for developing farmer group empowerment programs in the use of organic fertilizers. This research was conducted in Kalisat District, Jember Regency. The selection of research locations and respondents in the research was determined purposively by taking into account the proportion of the areas determined, namely deliberately with these considerations.

The consideration for choosing the research location was because most farmer groups in Kalisat District started using organic fertilizers as a substitute for chemical fertilizers. The selection of respondents in the study was carried out purposively by considering the abilities and level of knowledge possessed by the respondents. The research was conducted for approximately 3 (three) months starting in January 2023 until March 2023.

The study population was all managers and assistants of farmer groups represented by the heads and deputy heads of farmer groups in Kalisat District, Jember Regency, namely 63 farmer groups. In addition, the research population also includes all parties who have the ability and knowledge to conduct or provide opinions based on their level of knowledge regarding the development of a program, especially the empowerment program for farmer groups in using organic fertilizers.

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The research sample was determined purposively (purposive) with the considerations that the respondents: 1) are managers of farmer groups in Kalisat District, Jember Regency, 2) have knowledge about empowering farmer groups, especially in using organic fertilizers, 3) have experience in implementing an empowerment program, 4) having the ability to provide an assessment related to key factors in empowerment, 5) having a working area in Jember Regency and knowing the institutional conditions of farmers, especially existing farmer groups. The research sample consisted of four people namely; 1) Coordinator of the Agricultural Extension Center (BPP) Sumberjambe, 2) Organic Fertilizer Entrepreneurs in the Kalisat sub-district, 3) Agricultural Extension Service from the TPHP Service who doubles as a data processor or agricultural paramedic in the target area in Kalisat District, Jember Regency, 4) Head of Glagahwero Village who drive the group's business for the production of organic fertilizers.

Interpretative Structural Modeling (ISM) is used to describe a problem that is abstract in nature so that it can be more structured. ISM in this study is used as a tool to structure the elements that will support the design of strategies to empower farmer groups in using organic fertilizers in Kalisat District, Jember Regency. ISM is used to formulate a strategic element hierarchy for the development of empowerment programs. The elements analyzed in this research are elements of needs and elements of constraints in empowering farmer groups in using organic fertilizers in Kalisat District, Jember Regency.

The sub elements of the need element include: 1) Intensity of Organic Fertilizer Making Training (E1), 2) Production Facilities for Making Organic Fertilizer (E2), 3) Organic Fertilizer Manufacturing Technology (E3), 4) Information on the Availability of Organic Fertilizer (E4), and 5) Local Government Policy (E5). The sub-elements in the constraints include: 1) Low Farmer Knowledge (E1), 2) Limited Organic Fertilizer Production (E2), 3) Continuous Availability of Organic Fertilizer (E3), 4) Fertilizer Transportation to Agricultural Land (E4), 5) Limitations of Organic Fertilizer Processing Equipment and Machines (E5), and 6) Standard Test of Organic Fertilizers (E6).

After the sub-elements on the needs and constraints for empowering farmer groups have been identified, the next step is to formulate contextual relationships between the elements established using the Structural Self Interaction Matrix (SSIM). The values that have been obtained and arranged into the SSIM table are then converted into a binary matrix with the conditions: V if eij = 1 and eji = 0, A if eij = 0 and eji = 1, X if eij = 1 and eji = 1, and O if eij = 0 and eji = 0

In the next stage, Matrix of Impact Cross Multiplicaton Applied to Classification (MICMAC) analysis is carried out, which is an analysis used to analyze the driving force and dependency power of a variable, so that in the final stage it will be known which variable has the highest driving force and the variable which has lowest driving force. The variables in the MICMAC analysis will be classified into 4 sectors. In the final stage of the analysis, a Directional Graph (Digraph) is drawn up which is a graph showing the position of the sub-elements, the relationships between the sub-elements and their influence on other sub-elements displayed simply in a structure diagram.

ISM Analysis

1. Empowerment Needs

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Analysis of the need for farmer group empowerment programs in the use of organic fertilizers is carried out through a series of analyzes in Interpretative Structural Modeling (ISM) as follows:

a. Identify Sub Elements

Table 1. Sub Elements of Needs

Code	Sub Elemen
E1	Intensity of Organic Fertilizer Making Training
E2	Production Facility for Making Organic Fertilizer
E3	Organic Fertilizer Manufacturing Technology
E4	Information on Availability of Organic Fertilizers
E5	Local Government Policy

Source: Processed data (2023)

a. Compilation of SSIM

Table 2. Matric SSIM

	E1	E2	E3	E4	E5
E1		A	V	V	A
E2			V	V	X
E3				V	A
E4					A
E5					

Source: Processed data (2023)

2. Compilation of RM

Table 3. Matric RM

	E1	E2	E3	E4	E5	**DP**
E1	1	0	1	1	0	**3**
E2	1	1	1	1	1	**5**
E3	0	0	1	1	0	**2**
E4	0	0	0	1	0	**1**
E5	1	1	1	1	1	**5**
D	**2**	**2**	**4**	**5**	**2**	

Source: Processed data (2023)

c. MICMAC analysis

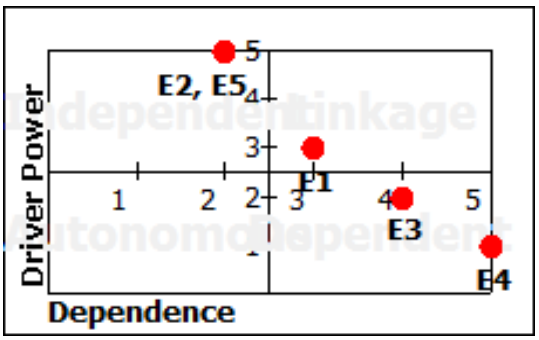


Figure 1. MICMAC Program Needs

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https://doi.org/10.47709/joa.v2i02.2494

Source: Data processed (2023)

d. Analysis *Digraph*

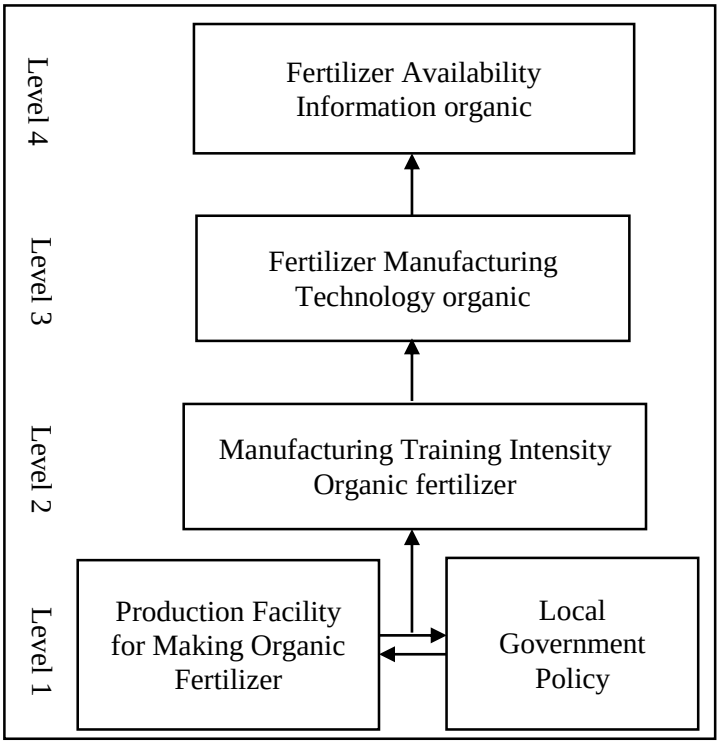


Figure 2. Program Requirements Digraph
Source: Processed data (2023)

Based on the results of the analysis that has been carried out, it can be seen that organic agricultural production facilities and the policies of the Regional Government of Jember Regency are needs that are a priority to fulfill in order to create empowerment of farmer groups in the use of organic fertilizers. Organic agricultural production facilities and the policies of the Regional Government of Jember Regency are two needs that influence each other, this indicates that the means of organic agricultural production will not be realized without the policies of the Regional Government of Jember Regency, and vice versa, the Regional Government of Jember Regency will not issue a policy if the means of organic agricultural production are properly available.

Organic fertilizer production facilities include compost houses, tools and machines for processing organic fertilizers, building communal stables, increasing the number of cattle, and providing animal feed stimulants and medicines for 6 months (Wicaksono & Marsoyo, 2022). Other production facilities needed in the manufacture of organic fertilizers according to Erawati, et al. (2018), namely production machines such as sewing machines, chopping machines, sieving machines, jet pumps and transportation in the form of pick-ups and trucks (Erawati, Suamba, & Asiti, 2018). The farmer group under the guidance of BPP Sumberjambe already has a composting house and has established partnerships with breeders so that the organic fertilizer production facilities that are urgently needed in the Kalisat sub-district, Jember Regency, namely a chopping machine (copper) to chop cattle manure that has clumped, a sewing machine to sew sacks compost

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or sacks of organic fertilizer, and a tricycle to transport manure from the community's cattle pens to the compost house (BPP Sumberjambe coordinator, 2023).

The need for organic fertilizer production facilities has a fairly high economic value or price so it is difficult to fulfill without the involvement of the Jember Regency government to help meet this need. Affect one another. The policy of the Jember Regency government contained in the Jember mandini program is to increase the empowerment of farmer groups through several things, one of which is the provision of agricultural technology facilities and infrastructure with achievement indicators in the form of the availability of organic fertilizer and alsintan production (Jember, 2022)

Basically, the policy of the Jember Regency government has supported the commitment to provide facilities for the procurement of production facilities and alsintan but is not optimized for the fulfillment of organic fertilizer production facilities (Coordinator of BPP Sumberjambe, 2023), so that the Government's commitment contained in the strategic plan of Jember Regency is Jember Mandiri need to be encouraged again regarding the procurement of alsintan, especially for the production of organic fertilizers. This is because without a local government policy, the procurement of organic farming facilities will not be created and vice versa if the organic farming facilities are incomplete it will affect the performance and achievement targets of the Jember Regency Government.

1. Empowerment Constraints

Analysis of the need for farmer group empowerment programs in the use of organic fertilizers is carried out through a series of analyses in Interpretative Structural Modeling (ISM) as follows:

a. Identifity Sub Elements

Tabel 4. Constraint Sub Elements

Code	Sub Elements
E1	Low Knowletge of Farmers
E2	Liminations of Organic Fertilizer Production
E3	Contionous Availability of Organic Fertilizer
E4	Fertilizer Transportation To Agricultural Land
E5	Liminations of Fertilizer Processing Tools and Machines Organic
E6	Standard Test of Organic Fertilizer

Source: Processed data (2023)

a. SSIM preparation

Table 5. SSIM Matrix

	E1	E2	E3	E4	E5	E6
E1		V	V	V	X	V
E2			X	O	O	O
E3				V	A	O

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E4		A	X
E5			V
E6			

Source: Processed data (2023)

c. RM preparation

Table 6. RM Matrix

	E1	E2	E3	E4	E5	E6	**DP**
E1	1	1	1	1	1	1	**6**
E2	1	1	1	1	0	1	**4**
E3	0	1	1	1	0	1	**4**
E4	0	0	0	1	0	1	**2**
E5	1	1	1	1	1	1	**6**
E6	0	0	0	1	0	1	**2**
D	**3**	**4**	**4**	**6**	**2**	**6**	

Source: Processed data (2023)

d. MICMAC analysis

MICMAC analysis of the organic fertilizer empowerment program in the Kalisat Subdistrict, Jember Regency can be seen in Figure 3.

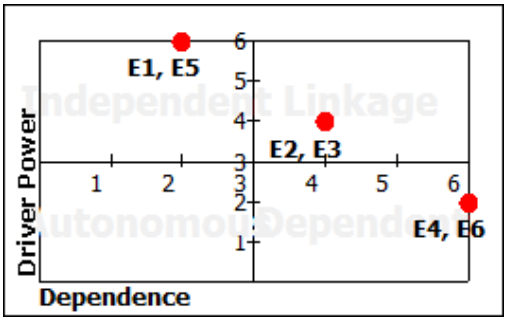


Figure 3. MICMAC Program Constraints
Source: Data proccesed (2023)

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e. Analysis *Digraph*

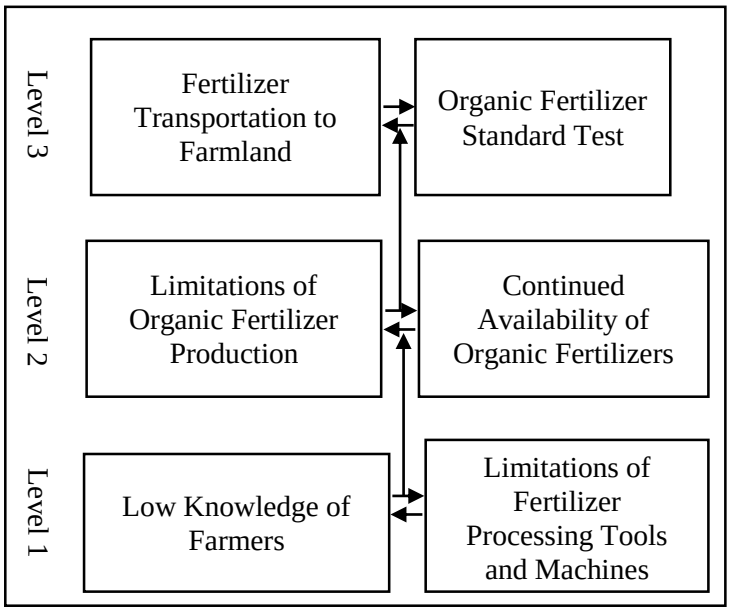


Figure 3. MICMAC Program Constraints
Source: Data processed (2023)

The implementation of the farmer group empowerment program in the use of organic fertilizers in the Kalisat sub-district, Jember Regency is certainly inseparable from several existing obstacles. Of the various obstacles that have been identified, there are major obstacles that could potentially hinder the sustainability of the farmer group empowerment program in the use of organic fertilizers. The obstacle is the low knowledge of farmers about the benefits of organic fertilizers for agricultural land in a sustainable manner.

The level of knowledge of farmers and the limitations of tools and machines for processing organic fertilizers are two obstacles that are interconnected and influence each other, this is because farmers with a low level of education generally have an inadequate knowledge base to be able to digest information, or knowledge, and understand the working principles of agricultural machinery and apply them in the field (Anwarudin, et al, 2021). And vice versa, even though the farmer's level of knowledge is high, the tools and machines for processing organic fertilizers are not available, so farmers only have knowledge without experience and cannot make and apply organic fertilizers, so as to achieve the success of the farmer group empowerment program in the use of organic fertilizers. it is necessary to improve the quality of human resources for farmers through the procurement of organic fertilizer production facilities and infrastructure in the form of tools and machines needed for the production of organic fertilizers as well as training in the manufacture of organic fertilizers which are carried out intensively by the government through related agencies, namely the TPHP Office which is continued through outreach activities carried out by extension workers to farmers. This training can be carried out during extension activities both at the Sumberjambe Agricultural Extension Center (BPP), combined farmer groups, farmer groups or directly held at the farmer level.

Completion of the constraints on the low level of farmer knowledge and the limited tools and machines for making organic fertilizers will have an impact on solving the limited production

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of organic fertilizers and the continuous availability of organic fertilizers. The limited production of organic fertilizers is caused by the lack of interest from farmers to make or produce organic fertilizers. In addition, few farmer groups have come up with the idea to produce organic fertilizers from animal manure collected from farmers in the surrounding environment, causing no production of organic fertilizers in a farmer group. so that farmers who want to apply organic farming are also constrained because there is no or limited organic fertilizer in their surroundings or in their farmer groups.

Conclusion

Based on the results of the analysis that has been carried out to develop a farmer group empowerment program in the use of organic fertilizers in Kalisat District, it can be concluded: In the elements of program needs there are two needs which are key factors, namely organic farming production facilities and local government policies, and in the elements of program constraints there are two key obstacles, namely the low knowledge of farmers and limited tools and machines for processing organic fertilizers Strategy what needs to be done include adding policies that support organic farming and adding indicator points to the government's strategic plan in the form of procuring facilities and infrastructure to produce organic fertilizer. The facilities and infrastructure in the form of a chopping machine (copper) to chop the clumped manure, a tailoring machine to sew packaging for compost sacks or organic fertilizer sacks, meters and a tricycle to transport the manure from the community's cattle pens to the compost house. Minimizing obstacles that can hinder the empowerment of farmer groups in the use of organic fertilizers in the form of increasing farmers' knowledge through counseling activities, training activities and farmer coaching activities in producing and applying organic fertilizers and facilitating the existence of tools and machines for organic fertilizer production so that farmers more easily understand manufacturing techniques and organic fertilizer application.

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