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Empowerment Activities Strategy of Facilitators of Sadar Tani II Farmer Group Towards Member Independence Based on PGPR NK-Grow Fertilizer (Case Study in Tumpukrenteng Village, Turen District, Malang Regency)

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Abstract

Introduction: The agricultural sector tends to rely on conventional systems where each agricultural method is focused on increasing maximum production by farmers. The most important problem in providing agricultural production facilities is limited fertilizer subsidies. The limited availability of fertilizer subsidies can make it difficult for farmers to carry out farming because fertilizer is one of the most important agricultural inputs in farming. This solution was provided by creating PGPR NK-Grow fertilizer by Poktan Sadar Tani II to help overcome this problem.

Objectives: This study aims to analyze the potential owned, analyze the empowerment activities carried out, and analyze the impact of empowerment activities carried out by Poktan Sadar Tani II on increasing the independence of farmer members through the application of PGPR NK-Grow in Tumpukrenteng Village, Turen District, Malang Regency.

Methods: This research was conducted in Tumpukrenteng Village, Turen District, Malang Regency using a qualitative approach with a case study method carried out from December 2023 to May 2024. The technique for determining informants used purposive sampling with a total of 10 informants. Data collection was carried out through in-depth interviews and observations. Data analysis uses descriptive analysis and Miles and Huberman. Test the validity of the data using a triangulation test of sources, techniques and time.

Results: The results of the research show that the empowerment strategy carried out by the Poktan Sadar Tani II Facilitator by creating the PGPR Nk-Grow fertilizer innovation has three strategies, namely through socialization carried out to introduce PGPR NK-Grow fertilizer products to Poktan members, training activities carried out to practice how to make it. fertilizer, and providing assistance for the application of NK-Grow PGPR fertilizer directly on agricultural land belonging to Poktan member farmers.

Conclusions: Based on this strategy, it has an effect on increasing the independence of Poktan member farmers as seen from the farmers' willingness to collect their own raw materials from livestock, make PGPR NK-Grow fertilizer by mixing their own mixture, apply it independently on agricultural land, and carry out intensive care for plant growth. which had been given NK-Grow PGPR fertilizer.

Keywords: Village Potential, Empowerment Strategies, Impact Of Empowerment.

Introduction

According to Yudha et al., (2023) the agricultural sector is one of the main drivers of a country's economic growth, thanks to its great ability to absorb labor. In addition, this sector also plays an important role as a provider of raw materials needed to meet the food needs of the community. Therefore, the agricultural sector has a major role in improving the welfare of farmers and maintaining environmental sustainability. According to Wahyuni & Warsiman (2023) currently, the agricultural sector tends to rely on conventional methods that focus on increasing production. This has caused the use of chemical fertilizers and pesticides to increase significantly, as well as the application of modern technology and heavy agricultural equipment. Although production has increased, the negative impact on the environment, ecosystem balance, and limited agricultural production facilities also need to be considered. However, at this time according to Wijaya Putra et al., (2022) the main problem in the provision of agricultural production facilities is the limited fertilizer subsidies. The limited fertilizer subsidies can make it difficult for farmers to carry out farming because fertilizer is one of the most important agricultural inputs in farming.

Most farming businesses in Indonesia often face constraints in the form of limited capital and lack of fertilizer subsidies. These capital limitations hinder farmers' ability to access modern agricultural technology, increase productivity, and improve agricultural infrastructure. Meanwhile, limited fertilizer subsidies make it difficult for farmers to obtain quality fertilizer at affordable prices, which results in decreased crop yields and farmer welfare. These constraints need to be addressed immediately so that the agricultural sector can develop more optimally and sustainably. One of the areas experiencing limited fertilizer subsidies is in Tumpuk Renteng Village, Turen District, Malang Regency because farmers currently do not receive fertilizer subsidies because they are limited, causing farmers to have difficulty in farming with increasing costs. Limited farmer capital can be overcome through several strategies, one approach that can be applied is through Poktan by creating fertilizer innovations and providing empowerment through the application of PGPR NK-Grow fertilizer to farmers to create independence for farmers.

The innovation of PGPR Nk-Grow fertilizer developed by farmer group facilitators starting in 2013 has had a very positive impact on farmers today. This fertilizer not only provides practical solutions to various challenges in modern agriculture, but also brings significant changes in the way farmers manage their farming businesses. Utilizing PGPR (Plant Growth-Promoting Rhizobacteria) technology, PGPR Nk-Grow helps improve soil structure and fertility, thereby improving plant health and crop quality (Rohaeni & Mariani, 2022). In addition, this fertilizer also reduces farmers' dependence on chemical fertilizers and synthetic pesticides that damage the environment. By adopting this fertilizer, farmers can save production costs, increase crop productivity, and support the sustainability of their farming businesses. In addition to providing direct economic benefits, this fertilizer also maintains the long-term balance of the agricultural ecosystem. Thus, PGPR Nk-Grow is not only a sophisticated agricultural technology innovation, but also a solution to address agricultural challenges while maintaining environmental sustainability.

When this research is compared with the research conducted by Mario & Syaifullah (2013) entitled empowerment of farming communities through farmer group associations in Petanyamang Village as an effort to improve farmer welfare by providing training and assistance, this research will fill the gap in the discussion section on the impact of strategies created by Poktan through fertilizer innovation on the capacity of farmer independence in Tumpukrenteng Village, Turen District, Malang Regency.

Method

The research approach used is a qualitative approach with a case study research design. The research location was carried out in Tumpukrenteng Village, Turen District, Malang Regency. The location selection was carried out intentionally (purposive) with the consideration that at that location there was an innovation created by the head of Poktan Sadar Tani II, namely PGPR NK-Grow fertilizer. The population that was the object of the study were farmers who were members of Poktan Sadar Tani II and received PGPR NK-Grow fertilizer assistance. This study used a method in determining informants with purposive. The purposive method was carried out with the criteria that the informants in the study were farmers who were members of Poktan Sadar Tani II and received PGPR NK-Grow fertilizer. Data collection was carried out using in-depth interview methods, observation, and documentation.

In the research of empowerment strategy of Poktan Sadar Tani II using descriptive analysis technique and Miles and Huberman which explains that in qualitative data activities take place continuously until finished, so that the data obtained is saturated. Miles and Huberman analysis technique through the steps of data collection, data reduction, data presentation, and drawing conclusions.

The use of triangulation in this study was carried out to test data related to village potential in Tumpukrenteng Village, empowerment activities to increase farmer independence and the impact of empowerment activities on farmer independence. The triangulation used in this study is source triangulation, method triangulation, and time triangulation.

Results and Discussion

Informant Characteristics

The characteristics of informant farmers are a description of each individual as a factor that influences farmers' decision-making in carrying out farming and as a differentiator between one informant and another (Mandang et al., 2020). The characteristics of informant farmers presented in this study include the age level of farmers, education level and length of informant farmer farming. Farmer characteristics can be used as information to explain the overall agricultural activities that underlie farmers in determining a decision in the agricultural sector. The informants in this study were farmers who were members of the Sadar Tani II Farmer Group and received PGPR NK-Grow fertilizer in Tumpukrenteng Village, Turen District, Malang Regency with a total of 10 informants.

Characteristics of Informants Based on Age

Age is one of the factors that affect the income of andewi mustard farmers because farmers who are of productive age have optimal physical abilities in carrying out farming activities. This is in accordance with the opinion of (Hadi, 2017) that a person's age level determines physical abilities so that it also affects productivity.

Table 1. Age Level of Informant Farmers.

No	Informant Age (Years)	Number of Farmers	
		Person	Percentage (%)
1	<40	2	18,2
2	41-50	4	36,4
3	≥51	5	45,4
	Total	11	100

Source: Primary data processed, 2024.

Farmers who are members of Poktan Sadar Tani II are mostly farmers over 50 years old with the highest percentage of 45.4%. Meanwhile, for farmers who have a productive age under 40 years old have the lowest percentage of 18.2%. This is in accordance with the statement of Absharina et al., (2023) that when someone reaches a productive age, namely at the age of 15 years to 55 years old, then humans have a high level of physical ability and faster comprehension. Farmers who have passed their productive age have difficulty accepting new technological innovations in the agricultural sector because their physical abilities are starting to be vulnerable and affect the productivity of their farming business.

Characteristics of Informants Based on Education Level

Education level is closely related to the success of farming. According to Eryanto et al., (2023) farmers with higher education have better access to the latest agricultural technology, information, and government programs, so they can adopt more efficient farming practices. Higher education allows farmers to develop side businesses and product innovations, thereby increasing productivity, income, and sustainability of farming. Farmers also have better managerial skills, which help in resource management and marketing of agricultural products.

Table 2. Education Level of Informant Farmers.

No	Level of education	Number of Farmers	
		Person	Percentage (%)
1	SD	1	9,09
2	SMA	10	90,9
	Total	11	100

Source: Primary data processed, 2024.

The number of farmers with the highest education level of high school has the highest percentage, which is 90.9%, while the lowest level of farmer education is at elementary school level with one farmer. This is in accordance with the statement of Theresia et al., (2016) which states that the level of education possessed by farmers will have an impact on the ability of farmers to make good decisions so that they can improve the quality of farmer work. The higher the education

possessed by farmers, the faster farmers will accept the latest innovations in the agricultural sector.

Characteristics of Informants Based on Length of Farming

The length of time spent farming is calculated based on the length of time spent by farmers in carrying out farming activities.

Table 3. Length of Farming Business of Informant Farmers.

No	Farming (Year)	Number of Farmers	
		Person	Percentage (%)
1	≤20	3	27,3
2	21-30	5	45,4
3	31-40	3	27,3
	Total	11	100

Source: Primary data processed, 2024.

Half of the total informant farmers have been farming for around 21 to 30 years, reaching a percentage of 45.4% of the total number of informants. Meanwhile, farmers who have been farming for less than 20 years and range from 31 to 40 years have reached the same percentage of 27.3%. This is in accordance with the statement of Eka Putra et al., (2017) that the length of farming carried out by farmers has implications for improving farmer performance, decision making, and risk management in carrying out farming.

Potential in Tumpukrenteng Village to Support Empowerment

The potential in Tumpukrenteng Village, Turen District, Malang Regency consists of two potentials, namely Natural Resource Potential and Human Resource Potential.

Natural Resource Potential

Natural Resources Potential is the potential of elements of the natural environment, both physical and biological, that can be used by humans to meet their needs and improve their welfare. The empowerment carried out by the facilitator of Poktan Sadar Tani II for member farmers in Tumpukrenteng Village has the potential that is supported by the natural resources in the village. The informants have several answers about the potential of natural resources in Tumpukrenteng Village that can support empowerment activities by the facilitator of Poktan Sadar Tani II. The answers related to this have been presented in the data in Table 4.

Table 4. Informant Statements on Natural Resource Potential

No	Natural Resource Potential	Number of Farmers	
		Answer	Percentage (%)
1	Livestock Waste	5	20
2	Agricultural Land	11	44
3	Plantation Land	9	36
	Total	11	100

Source: Primary data processed, 2024.

Based on the data from Table 4, it indicates that informants empowered by Poktan Sadar Tani II stated that the potential of natural resources in Tumpukrenteng Village is agricultural land that can be used as a container for applying PGPR NK-grow fertilizer from the results of empowerment activities, this answer has the highest percentage when compared to other statements, which is 44%. As many as 36% of all informant answers stated that the potential of natural resources in plantation land is also a potential in Tumpukrenteng Village, the purpose of which is the same as agricultural land. While the smallest percentage is in the statement of the use of livestock waste used to make PGPR NK-Grow by utilizing rabbit urine and dairy cow's milk, only has a percentage of answers of 20%.

Human Resources

Empowerment in Tumpukrenteng Village carried out by the facilitator of Poktan Sadar Tani II for member farmers is

an important step to optimize existing potential. The main goal is not only to improve the welfare of farmers through increasing productivity and quality of agricultural products, but also to strengthen the capacity of human resources in the village.

Table 5. Informant Statements on Human Resource Potential.

No	Human Resource Potential	Number of Farmers	
		Answer	Percentage (%)
1	Quickly Absorb Information	8	24,2
2	Have a Willingness to Learn	9	27,2
3	Aware of Sustainable Agriculture	7	21,4
4	Communicative Members of Science	9	27,2
	Total	33	100

Source: Primary data processed, 2024.

Based on the data in Table 5, it can be concluded that informants empowered by the Facilitator of Poktan Sadar Tani II stated that the potential of human resources in Tumpukrenteng Village, with members who showed a willingness to learn and were communicative, had the highest percentage (27.2%). As many as 24.2% of informants stated that the potential of human resources was also supported by a high level of education (high school graduates), which increased farmers' ability to absorb information. The smallest percentage (21.4%) showed that the quality of human resources in the village was already aware of sustainability. In addition, there is the potential for social capital which is included in the mutual cooperation activities which are usually carried out when cleaning irrigation channels and repairing roads. These activities are usually carried out for one to two months by members of Poktan Sadar Tani II. However, this is different when it is the rice harvest season, then usually the same farmers who participate in mutual cooperation are at the beginning of planting rice. This shows that farmers help each other, during the planting season farmers help each other or in the term "farmers need results not money" and feel the results of the harvest. In addition, the physical capital reflected is two elementary schools, two junior high schools, one Islamic school, one senior high school, and two kindergartens that already have decent buildings and meet standards.

In addition, most of the roads have been paved on hotmit. Health facilities for the community such as midwives, and usually farmers buy medicine at stalls because there is no health center in the village. Meanwhile, the financial capital for farmers who are members of Poktan Sadar Tani II is mostly in the form of livestock. Farmers who have savings are only 10% and not in the form of savings in the bank. Farmers prefer to save in the form of livestock. The potential of human resources in Tumpukrenteng Village, Turen District, Malang Regency, can be used to support empowerment activities carried out by Poktan Sadar Tani II. The illustration has been presented in Figure 1.

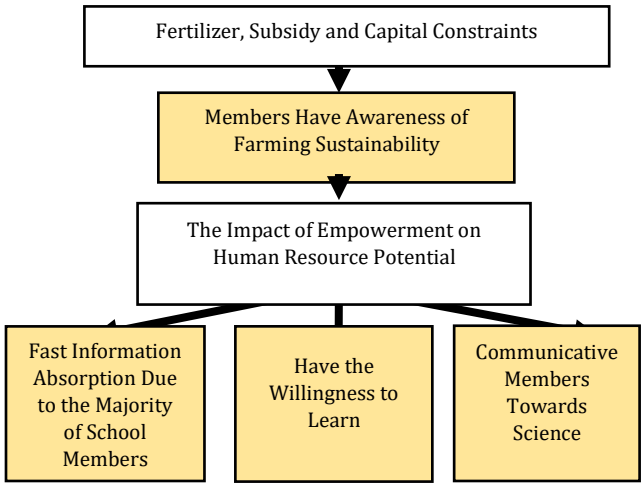

Figure 1. Human Resource Potential Utilization Flow
Source: Primary data processed, 2024.

Based on the descriptive analysis that has been done and the data validity test through triangulation on the potential of human resources that can be a supporting factor in empowerment activities carried out by the facilitator of Poktan Sadar Tani II in Tumpukrenteng Village, Turen District, Malang Regency, four types of potential human resources were obtained, namely because members have an awareness of the sustainability of farming businesses, fast information absorption because the majority of school members, members of Poktan Sadar Tani II have the will to learn, then the last member is communicative towards knowledge.

Empowerment Activities of the Sadar Tani II Farmer Group

Farmers who are members of Poktan Sadar Tani II in Tumpukrenteng Village get solutions to current problems. Facilitators of the Sadar Tani II Farmer Group (Poktan) created an innovation for farmers through empowerment activities that use several types of activities that have been presented in Table 6.

Table 6. Empowerment Activities of the Sadar Tani II Farmer Group.

No	Empowerment Activities	Number of Farmers	
		Answer	Percentage (%)
1	Socialization	11	33,3
2	Training	11	33,3
3	Mentoring	11	33,3
	Total	33	100

Source: Primary data processed, 2024.

Based on the data from Table 6, it indicates that informants who were given empowerment by the facilitator of Poktan Sadar Tani II stated that the strategy in empowerment through socialization activities carried out by introducing PGPR Nk-Grow fertilizer, training with practical PGPR Nk-Grow fertilizer production, and assistance in applying PGPR Nk-Grow fertilizer on the informant's agricultural land received a positive response from farmers, the answers had the same percentage, namely 100%.

The first activity used by the Poktan Facilitator as the person in charge of empowerment for farmers, namely through socialization, this activity functions to introduce the fertilizer innovation used, which can help plant growth well. Socialization is carried out to farmers by gathering Poktan members during official and unofficial community gathering events. This training aims to improve their skills and knowledge in the PGPR NK-Grow fertilizer business. Furthermore, the Poktan Sadar Tani II facilitator implemented an empowerment strategy in the form of assistance to supervise farmers in implementing the PGPR NK-Grow fertilizer innovation independently. This empowerment not only improves the technical abilities of farmers, but also encourages them to be more independent and innovative in their agricultural practices. The flow of PGPR NK-Grow fertilizer creation has been illustrated in Figure 2.

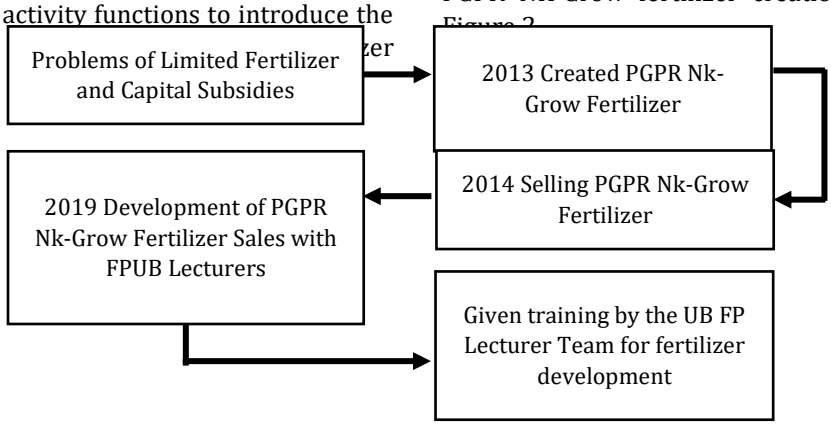

Figure 2. PGPR NK-Grow Fertilizer Creation Flow
Source: Primary data processed, 2024.

The innovation of PGPR Nk-Grow fertilizer created by Mr. Nurkholis, as the Facilitator of Poktan Sadar Tani II in 2013 was first introduced to farmers directly with simple packaging. Over time, Mr. Nurkholis conducted training, mentoring, and socialization. The empowerment strategy of the Poktan Sadar Tani II Facilitator for Poktan members through the innovation of PGPR Nk-Grow fertilizer with socialization, training, and mentoring activities was said to be successful in increasing farmer independence. Organizing empowerment activities for Poktan Sadar Tani II members led by Mr. Nurkholis as the facilitator of the farmer group involved his role in facilitating discussions, creating a conducive learning environment, and implementing appropriate learning methods such as group discussions and practical demonstrations. The facilitator also assisted in solving problems that arose, encouraged reflection and evaluation from participants, and maintained involvement and motivation during extension sessions.

Impact of Empowerment Activities on Member Independence

A successful strategy can increase the efficiency and effectiveness of an organization, maximize the use of available resources, and ensure that all actions taken are in accordance with predetermined goals (Mulianingsih, 2020).

Table 7. Impact of Empowerment Activities of Farmer Group Sadar Tani II.

No	Impact of Empowerment Activities	Number of Farmers	
		Answer	Percentage (%)
1	Able to Sort Production Materials	7	19
2	Able to Produce Themselves	8	21,6
3	Able to Apply Their Own Fertilizers	11	29,7
4	Able to Maintain Fertilizer Application Land	11	29,7
	Total	37	100

Source: Primary data processed, 2024.

Based on the data in Table 7 on the impact of empowerment strategies by the Facilitator of Poktan Sadar Tani II, it was found that the empowerment strategy carried out by Mr. Nurkholis as the Facilitator of Poktan Sadar Tani II in Dusun Sumber Gong, Tumpukrenteng Village, Turen District, Malang Regency had an impact on increasing farmer independence. This is in accordance with the results of interviews conducted by researchers that farmers who are members of Poktan Sadar Tani II are able to apply PGPR Nk-Grow fertilizer independently to their agricultural land and carry out their own maintenance on land that has been applied with PGPR Nk-Grow fertilizer with the highest percentage of 29.7% because all informant farmers answered that they were more independent after the fertilizer innovation.

Meanwhile, the indicator of farmers being able to collect production materials has the lowest percentage of 19% and being able to produce their own has a percentage of 21.6%. This is because some farmers tend to be lazy and not patient in looking for materials, collecting, and producing themselves. The data in Table 7 also indicates that the empowerment activity strategy implemented in Poktan Sadar Tani II can influence members' ability to absorb information or improvise.

Overall, the empowerment strategy implemented by the Facilitator of Poktan Sadar Tani II not only increases farmers' independence in technical aspects, but also strengthens their capacity in managing resources and farming businesses as a whole. These results indicate that a comprehensive and sustainable approach to farmer empowerment can produce significant positive impacts, helping them become more independent and competitive in the agricultural sector. These results indicate that farmers who are members of Poktan Sadar Tani II are able to adopt innovations that have various benefits such as increased productivity, operational efficiency, effectiveness of use and/or even market transformation. Adoption of innovations can also lead to positive social change, increase opportunities, or overcome environmental challenges. Understanding and utilizing the innovation adoption process well can help individuals and organizations achieve competitive advantage, drive economic growth, and provide sustainable positive impacts for society.

Conclusions

Based on the research objectives, after conducting the analysis listed in the discussion section related to the Empowerment Activities Strategy of Facilitators of Sadar Tani II Farmer Group towards member independence based on PGPR NK-Grow Fertilizer, several conclusions were obtained. First, the potential of Tumpukrenteng Village in Turen District, Malang Regency, consists of two types of potential that support empowerment activities, namely natural

resources and human resources. The natural resource potential includes livestock, agriculture, and plantations, while the human resource potential comprises members' awareness of farming business sustainability, their ability to absorb information quickly due to a generally educated background, their willingness to learn, and their ability to communicate scientific knowledge. Second, empowerment activities carried out by Poktan Sadar Tani II through the PGPR NK-Grow fertilizer innovation were implemented with three main activities: socialization (both official and unofficial) to introduce the fertilizer, training (unofficial) on how to produce it, and mentoring (unofficial) on agricultural land to ensure proper dosage application. Third, the impact of empowerment activities carried out by Mr. Nurkholis in increasing members' independence is evident in four aspects: farmers' ability to collect raw materials from livestock breeders, their willingness to produce PGPR NK-Grow fertilizer independently, their ability to apply it on their agricultural land, and their capacity to manage their land after fertilizer application. These findings show a significant increase in the independence of Poktan Sadar Tani II members.

As a conclusion, the researcher provides several suggestions related to the use of the Empowerment Activities Strategy of Facilitators of Sadar Tani II Farmer Group towards member independence based on PGPR NK-Grow Fertilizer. Farmers are encouraged to create their own innovations in agricultural production facilities to minimize costs, while facilitators and administrators are advised to expand cooperation with related agencies to improve farmers' access to capital. Future researchers interested in this topic are recommended to focus on the effectiveness of empowerment activities carried out by agencies or farmer group administrators in enhancing farmer independence. Furthermore, the government is expected to establish an institution responsible for promoting PGPR NK-Grow Fertilizer so that its benefits can be accessed by farmers beyond Tumpukrenteng Village, and to recommend its official recognition as a registered trademark.

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