

The development strategy of organic rice farming in Bantul Regency, Special Region of Yogyakarta, Indonesia

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Abstract. The development of organic rice is also supported by the development of agricultural technology such as compost processing, biological pesticides, agricultural machinery. The conversion of agricultural land in Bantul Regency is unavoidable and has increased. This will have an impact on the development of organic rice farming. This study aims to formulate a strategy for developing organic rice in Bantul Regency based on internal and external factors. This research was conducted in Bantul Regency with the consideration of the most extensive Sustainable Food Agricultural Land. Respondents in this study amounted to 15 people including administrators of organic rice farmer groups, combined farmer groups, organic rice traders, field agricultural extension and Department of Agriculture. The stages in formulating a strategy for developing organic rice farming are (1) Data Collection Stages: IFAS (Internal Factors Strategy Analysis) and EFAS (External Factors Strategic Analysis); (2) Data Analysis Stages: SWOT matrix, and (3) Decision Making Stages: QSPM matrix. The results showed that the strategy that becomes a priority for the development of organic rice farming are skills training for organic rice farmers in farming management and marketing and use of natural resources potential in controlling plant pest organisms of organic rice.

1 Introduction

In Indonesia, the availability of rice can be achieved through three distinct agricultural systems: non-organic farming systems, organic farming systems, and semi-organic farming systems. The non-organic farming system, often known as conventional farming, is an agricultural approach which includes the use of chemical inputs during the planting phase, which could contribute to environmental harm [1]. The use of non-organic fertilizers and pesticides in large quantities and exceeds the dose, has begun to have negative environmental impacts, such as decreasing soil organic matter content, soil vulnerability to erosion, decreasing soil permeability, decreasing soil microbial populations, and so on [2].

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Organic rice is a solution for people who want to consume food products that are low in chemicals [3]. Organic rice production in Indonesia is still small when compared to the needs of its people. In 2018, the land area for organic farming was 251,630.98 hectares out of 8,087,393 hectares of total agricultural land in Indonesia. Meanwhile, the land area for organic rice commodities is 53,974.19 hectares [4].

Organic rice has a higher selling price when compared to inorganic rice. The high price of organic rice, for some farmers, is one of the impetus for carrying out organic rice farming [5]. Rice from organic rice is quite in demand by the public because it is considered healthy and safe for consumption [6]. However, the marketing of organic rice is still not widespread and is only limited to the upper middle class.

One of the producers of organic rice in Indonesia is the Special Region of Yogyakarta. The Regional Government has stipulated a regulation on the Protection of Sustainable Food Agricultural Land in Local Regulations Number 10 of 2011, which regulates the area of productive land that must be used as Sustainable Food Agricultural Land covering an area of 35,911.59 hectares. This productive land area is located in four regency, namely Bantul Regency 13,000 hectares, Sleman Regency 12,377.59 hectares, Gunung Kidul Regency 5,505 hectares, and Kulonprogo Regency 5,029 hectares. [7]. Bantul Regency is the district with the largest sustainable food agricultural land compared to the other three regency.

Support from the government with the Go Organic program in 2010 which is market-oriented is one of the opportunities for organic rice development in Bantul Regency [8]. The development of organic rice is also supported by the development of agricultural technology such as compost processing, biological pesticides, agricultural machinery [9]. On the other hand, the conversion of agricultural land in Bantul Regency is unavoidable and has increased. Opportunities for conversion on paddy fields are greater when compared to dry land [10]. This will have an impact on organic rice development.

Based on the above conditions, an organic rice development strategy is needed in Bantul Regency. This strategy is needed so that organic rice production can meet the increasing demand of the community. This research aims to formulate an organic rice development strategy in Bantul Regency based on internal and external factors.

2 Research method

2.1 Research method

This research was conducted in Bantul Regency with the consideration of the most extensive Sustainable Food Agricultural Land. Organic rice in Bantul Regency has been developed since 2008 and received organic rice certification in 2010 [11]. Data collection was carried out in Imogiri and Pandak districts. Imogiri district has developed organic rice farming since 2008 and obtained organic rice certification starting in 2010 from the Persada Certification Institute. Organic rice in Pandak District is still quite new and has not yet received certification, but it has received a healthy rice label from the Food Capability Authority of Special Region of Yogyakarta in 2010.

The Respondents involved in this study are those who have relevant knowledge and expertise in the development of organic rice cultivation within Bantul Regency. Respondents in this study amounted to 15 people including administrators of organic rice farmer groups (6 people), combined farmer groups (4 people), organic rice traders (2 people), field agricultural extension workers (2 people) and the Department of Agriculture, Food, Marine and Fisheries (1 person). The taking of research respondents regarding the strategy of organic rice development in Bantul Regency was carried out purposively or intentionally.

2.2 Data analysis technique

The stages in formulating a strategy for developing organic rice farming are as follows:

2.2.1 Data Collection Stages

IFAS (Internal Factors Strategy Analysis)

Identifying internal factors in organic rice, which includes strengths and weaknesses, then data on internal factors is entered into the IFAS matrix [12].

EFAS (External Factors Strategic Analysis)

Identifying external factors in organic rice farming, which includes opportunities and threats, then data on external factors is entered into the EFAS matrix.

IE Matrix

The IE matrix is used to determine the position of organic rice farming in Bantul Regency. The position of organic rice farming can be known by looking at the total score of the IFAS and EFAS matrices. From this matrix, the x and y axes are used for the IFAS and EFAS matrices.

2.2.2 Data Analysis Stages

At the data analysis stage, the SWOT Matrix is used, which clearly describes the weaknesses and strengths as well as opportunities and threats [13]. Strategy formulation with SWOT analysis will produce four alternative strategies, including [14]

SO, strategy, which is a strategy by maximizing strengths to get as big an opportunity as possible

ST strategy, which is a strategy to use the strengths possessed to overcome threats

WO strategy, namely by minimizing weaknesses to get opportunities

WT strategy, namely by minimizing the weaknesses possessed to overcome threats

2.2.3 Decision Making Stages

At the stage of data analysis will produce several alternative strategies with the QSPM matrix. Then this alternative strategy will produce an appropriate priority arrangement of organic rice farming development strategies in Bantul Regency.

3 Results and discussion

The purpose of this analysis is to determine the influence of internal and external factors in organic rice farming. Internal factors consist of strengths and weaknesses, while external factors include opportunities and threats.

3.1 Internal factor condition

Internal factor analysis aims to identify the strengths and weaknesses contained in organic rice farming in Bantul Regency.

3.1.1 Strengths

Strength factor is an internal factor that becomes an advantage, potential or advantage for organic rice farming. Factors - factors that become strengths in organic rice farming in Bantul Regency include:

1) Availability of certified rice seeds (S1)

Most of the organic rice farmers in Imogiri District have used seeds in accordance with the instructions for implementing organic rice cultivation issued by the Ministry of Agriculture through SNI 6729:2016. In the absence of certified organic seeds and with organic system cultivation, farmers in Imogiri district use seeds traded in agricultural shop and seeds from harvests from the previous growing season.

In contrast to farmers in Imogiri District, organic rice farmers in Pandak District do not yet have an organic rice plant breeder group. Organic rice farmers in this district obtain organic rice seeds from savings from previous season's harvests and agricultural shop. Organic farmers in Pandak District who use the previous season's harvest, if using seeds from non-organic products, they use rice plants that are in the middle and the height is the same.

2) Labor availability (S2)

The availability of labor for agriculture is very sufficient. The workers used in organic rice farming in both Imogiri and Pandak districts come from within and outside the family. Most farmers use Family Labor to complete simple activities, such as nursery, fertilizing, weeding and controlling pests and diseases. The use of non-family is usually in planting, land processing and harvesting activities.

3) Availability of organic fertilizers and pesticides (S3)

Natural fertilizers and pesticides used in organic rice farming come from livestock manure and leaves. The availability of sufficient organic fertilizers and pesticides will support the development of organic rice farming. Most of the organic rice farmers in Imogiri and Pandak Districts have used natural fertilizers and pesticides in organic rice cultivation.

Organic compost fertilizer that is made by itself comes from fermented livestock manure known as Bioslurry fertilizer in the form of solid or liquid fertilizer. Green manure comes from various kinds of leaves such as neem leaves, banana stems, straw and other leaves which are then fermented and allowed to stand for two weeks. The natural pesticides used are derived from fermented leaves (neem leaves, "gadung", "munggur" and tobacco) mixed with animal urine.

4) Mastery and application of agricultural technology (S4)

Organic rice cultivation system with Integrated Pest Control (IPM) system and Jajar Legowo system is a technology in agriculture to increase organic rice productivity [15]. Most of the farmers in Imogiri and Pandak districts have implemented the "Jajar legowo" system with 30 x 30 cm and IPM so that the use of pesticides is not too much. Most of the farmers have used modern agricultural machines and tools. Agricultural tools and machinery used are owned by individuals and owned by the Agricultural Equipment and Machinery Service Business (UPJA) which is managed by local farmers. UPJA obtains agricultural tools and machinery from government assistance, thus facilitating agricultural cultivation.

5) Owned organic rice certification (S5)

Certification is carried out by an Organic Certification Agency which is accredited by the National Accreditation Committee (KAN) by providing written guarantees on organic products. Organic rice farmers in Imogiri District have had organic rice certification since 2010 which was given by the Persada Certification Institute with Register Number 001-2501-10. Imogiri organic rice farming obtained certification because it has implemented an organic management system in accordance with SNI 01-6782-2002 regarding organic rice cultivation. The organic rice certificate in Imogiri District which was obtained since 2010 has been extended in 2013 and 2016. The existence of certification means that the product has a written guarantee for organic rice consumers. And provides the benefit of a higher selling price [1].

Organic rice in Pandak District has not yet obtained organic rice certification. The advantage of organic rice is that farmers have used natural ingredients in their organic rice farming. Even though they don't have an organic rice certificate yet, organic rice in Pandak District has a healthy rice label. This healthy rice label was obtained because the way of organic rice cultivation has implemented Good Agriculture Practice (GAP) organic rice.

6) High motivation of organic rice farmers (S6)

Farmers in Imogiri and Pandak Districts apply rice with an organic system because they are aware of maintaining health and the environment. Organic rice farming is done by utilizing materials that come from nature so that the input costs are cheaper than inorganic rice farming [16]. Increasing consumer demand both from inside and outside the city for organic rice is one of the motivations and increases the enthusiasm of farmers in growing organic rice. The high selling price compared to inorganic rice is also one of the motivations for farmers. Good taste and safe quality of stale chemicals from organic rice is one of the factors for farmers to grow organic rice.

7) Good organic rice farming management (S7)

Good farming management is one of the factors in the development of organic rice farming. Good farming management can make it easier to obtain organic rice certification. This is because improving the quality of organic products depends on the management of the farm [1]. Organic rice farmers in Imogiri District are members of the "Madya" farmer group, while in Pandak District they are part of the "Taniharjo" farmer group. Good farmer group management is indicated by the division of tasks in several fields, such as marketing, production, pest control and so on.

8) Supporting production facilities (S8)

Agricultural facilities in Imogiri and Pandak Districts are very supportive of organic rice farming. In addition to production facilities in the form of agricultural tools and machinery assisted by the government which are managed by farmer groups, most farmers own agricultural tools and machinery individually.

9) Distinctive Organic Rice Taste (S9)

Organic rice has a distinctive taste and is tastier than rice in general. This is due to the organic rice cultivation process which uses only a few chemicals. The use of natural ingredients in fertilizers and pesticides makes rice have a fluffier taste, does not spoil easily and is more fragrant [3]. Farmers and consumers of organic rice in Imogiri and Pandak Districts stated that the taste of organic rice is more distinctive than inorganic rice. Organic rice has a fluffier taste and is tastier when cooked. Apart from that, this organic rice does not spoil easily so it lasts longer. This is due to the use of organic fertilizers and pesticides in organic rice cultivation.

3.1.2 Weaknesses

1) Availability of land for rent or change of ownership (W1)

Most of the organic rice farmers in Imogiri and Pandak Districts use leased land for their farming. Land rented by farmers usually comes from village treasury land and private property which has a term in the lease of agricultural land. This situation also occurs in Cianjur Regency most of the organic rice farmers whose agricultural land is rented land [3].

2) Simple organic rice farmer's ability and financial management (W2)

Farmers generally manage their finances in accordance with the agricultural experience of fellow farmers and personal experience. Farmers in Imogiri and Pandak Districts also apply the same thing. Financial management from farmers is very lacking because they do not

record during organic rice cultivation. Financial management is also useful during the certification process for organic rice farming. Surveyors from the certifier can easily determine the feasibility of certifying the land if there is a farming analysis.

3) Less extensive marketing (W3)

Marketing of organic rice in Imogiri District is only limited to certain circles. This is due to the lack of information about organic products that are important for health and the higher price of organic rice compared to inorganic rice [17]. Marketing in Pandak District is better than Imogiri District. This is because there are organic rice traders who market outside the city. This organic rice trader gets consumers from various regions because they are more active in using social media and relations from an organic food festival. Consumers of organic rice from Pandak District come from outside the city, especially Jakarta, Bogor, and others.

4) Expensive labor cost (W4)

The workforce for organic rice farming in both Pandak and Imogiri Districts is the same as agricultural labor in general. The labor costs incurred by farmers are between IDR40,000 to IDR 70,000 per working day. This cost depends on the farming activities carried out and the area of land worked in organic rice farming.

Table 1. IFAS matrix of organic rice farming in Bantul Regency

No	Internal Strategy Factor	Imogiri District		Pandak District	
		Weight	Score	Weight	Score
Strength					
1	Availability of certified rice seeds	0.078	0.257	0.087	0.323
2	Availability of manpower	0.071	0.214	0.074	0.221
3	Availability of fertilizers and pesticides	0.095	0.340	0.087	0.311
4	Mastery and application of agricultural production machinery technology	0.071	0.184	0.080	0.218
5	Owned organic rice certification	0.095	0.327	0.094	0.214
6	Motivation of organic rice farmers	0.075	0.224	0.074	0.231
7	Good management of organic rice farmer groups	0.075	0.203	0.077	0.209
8	Supporting production facilities and infrastructure	0.078	0.279	0.080	0.252
9	Distinctive taste of organic rice	0.075	0.224	0.080	0.264
Weakness					
1	Availability of leased land/change of ownership	0.065	0.157	0.057	0.122
2	The ability and financial management of simple organic rice farmers	0.075	0.139	0.074	0.147
3	Marketing is not widespread	0.088	0.190	0.070	0.191
4	Expensive labor costs	0.058	0.149	0.067	0.153
	Amount	1.000	2,887	1.000	2,887

Based on table 1. regarding the internal factors in organic rice farming in Imogiri District, the main strength is the availability of organic fertilizers and pesticides with a score of 0.340. Organic fertilizers and pesticides are one of the determinants of farming cultivated with organic systems. The availability of organic fertilizers and pesticides in Imogiri is sufficient for organic rice farming. Farmers make organic fertilizers and pesticides in groups who are members of the "Madya" Farmer Group. The manufacture of organic fertilizers and pesticides by farmers can save costs for production [18].

The main weakness of organic rice farming in Imogiri District, seen from the lowest average score of 0.139, is the limited ability and financial management of organic rice farmers. Most of the organic rice farmers in Imogiri have not implemented financial management for their farming. Based on table 1 regarding the internal factors that become

the main strength of organic rice farming in Pandak District, namely the availability of organic rice seeds with a score of 0.323. The availability of organic rice seeds is very sufficient because the seeds used come from the previous season's harvest that were set aside.

The main weakness of organic rice farming in Pandak District is the availability of land, which is mostly leased land with a score of 0.122. Land ownership, which is mostly rented, is an obstacle for organic rice farming, especially in organic rice certification. In organic rice land certification, it is not only seen from the cultivation system, but also in terms of the organic rice farming environment.

3.2 External Factor Condition

3.2.1 Opportunities

Opportunities that can support development of organic rice in Bantul Regency are as follows:

1) Government programs that support organic agriculture (O1)

The government's program on Go Organic in 2010 had a good impact on agriculture. Its activities include developing organic farming technology, forming organic farmer groups, developing organic farming-based villages, and assisting farmers in marketing organic agricultural products [17]. This program provides production facilities assistance in the form of agricultural tools and machines, such as rice seed planting machines, tractors, harvesting machines and assists in certification of organic rice farming in Imogiri District.

2) Increasing market demand for organic rice (O2)

Consumers in Imogiri District can obtain organic rice through the "Madya" Farmer Group. Although consumer demand is stable, this group has regular customers from one of the agencies in Yogyakarta. Consumers of organic rice in Pandak District do not only come from Yogyakarta, but some come from outside the city. Demand for organic rice has increased due to increased awareness in the consumption of healthy food products. Regular consumers of organic rice in Pandak come from restaurants, hotels, restaurants, and catering which provide organic food menus.

3) High selling price of organic rice (O3)

The price of organic rice in Imogiri District is quite high compared to the price of non-organic rice. The price of organic rice from farmers to traders is between IDR 5,000 to IDR 7,000 per kilogram depending on the variety being sold. The varieties that are often produced by organic rice farming in Imogiri District are the varieties of "Menthik Wangi" and "Menthik Susu". The average price of organic rice sold to consumers for these varieties is IDR 8,000 to IDR 12,000 per kilogram.

Organic rice in Pandak District also has a relatively higher price than non-organic rice. The price of organic rice in Pandak is between IDR 6,000 to IDR 12,000 per kilogram. The price of rice at the consumer level is between IDR 9,000 to IDR 25,000 per kilogram depending on the variety and quality of organic rice. The highest price is black rice which per kilogram reaches IDR 20,000. Usually, organic rice in Pandak District is packaged in 5 kilograms.

4) Organic rice development training and research (O4)

The role of extension workers is very much needed in the development of organic rice farming, one of which is introducing and training new technologies to farmers[10]. Training on organic rice cultivation in Imogiri and Pandak Districts is often carried out by extension workers. Trainings on organic rice development are often held, such as training on the manufacture of natural fertilizers and pesticides, seeding with the "dapog" system, planting with "Jajar Legowo", and so on.

5) Public awareness of organic products (O5)

People are becoming aware of the dangers of excessive chemicals for the environment and health, so they have started to switch to organic agricultural products. Organic agriculture is a solution so that the quality of the environment returns as it should and ensures ecological sustainability [19]. Products produced by organic farming are healthier than inorganic ones. In addition, the costs incurred in organic farming are also lower because they use natural seeds, fertilizers and pesticides [20].

3.2.2 Threats

Threat factors are unfavorable conditions for organic rice farming and can interfere and are not expected by organic rice farming. In organic rice farming in Bantul Regency, the threats include:

1) Climate condition (T1)

Climatic conditions affect the attack of pests and diseases of organic rice. In the rainy season there are neck fractures and snail pests that attack organic rice farming. In the dry season, organic rice contains chemical residues because it uses the same irrigation as non-organic rice.

2) Agricultural land conversion (T2)

The conversion of agricultural land is a change in the function of agricultural land, either partially or completely, which initially functions as agricultural land into other functions that have a negative impact on the environment. If the conversion of agricultural land continues to increase, it is possible that agricultural production will decrease due to the unavailability of agricultural land [7]. The land use change that occurs in Imogiri and Pandak Districts is a problem because it is a center for organic rice production. Land conversion, both on agricultural land and land close to agricultural land, is one of the obstacles in organic rice certification in terms of the environment.

3) Organic rice pests and diseases (T3)

Organic rice is an agricultural commodity that is susceptible to pests and diseases. Despite using natural ingredients, organic farming has not been able to handle the problem of pests and diseases of organic rice [21]. Organic rice farmers in Imogiri and Pandak Districts in overcoming pests and diseases using natural pesticides and integrated pest control. However, eradicating pests and diseases with natural pesticides requires a relatively longer time compared to chemical pesticides.

4) The existence of organic rice substitution products (T4)

Substitute products from organic rice are also a problem in Imogiri and Pandak districts. People who do not own agricultural land or do not cultivate organic rice choose to consume ordinary rice. This is due to the selling price of organic rice which is considered expensive, and people do not have the ability to buy organic rice.

5) Inappropriate price of production output (T5)

Even though the price of organic rice is higher than that of inorganic rice, farmers who do not have consumers of inorganic rice are forced to sell to the market at the same price as rice in general. This was experienced by farmers in Imogiri and Pandak Districts, who once sold organic rice at prices that did not match the price of organic rice.

Based on table 2 regarding the external factors of organic rice farming in Imogiri District, the main opportunities with a score of 0.384 are government programs that support organic farming. Programs to support organic farming, one of which is the "Go Organic" program, was carried out in 2010 by the Ministry of Agriculture. The government provides agricultural

tools and machinery in the form of land processing machines, rice planters and harvesting machines to each organic farmer group. The government also helps in obtaining organic rice certification. Organic rice certification in Imogiri District is carried out by the Organic Certification Institute "Persada" and the KAN Organic Food Certification Institute.

Table 2. EFAS matrix of organic rice farming in Bantul Regency

No	External Factors Strategy	Imogiri District		Pandak District	
		Weight	Score	Weight	Score
Opportunity					
1	Supportive government programs for organic farming	0.112	0.384	0.111	0.349
2	Market demand for organic rice needs is increasing	0.121	0.346	0.116	0.396
3	High selling price of organic rice	0.103	0.309	0.107	0.335
4	Training and research on organic rice development	0.108	0.354	0.111	0.333
5	Public awareness of organic products	0.094	0.256	0.093	0.267
Threat					
1	Climatic conditions	0.103	0.221	0.107	0.259
2	Land conversion	0.081	0.242	0.080	0.240
3	Pests and diseases	0.108	0.246	0.111	0.238
4	There are substitute products	0.094	0.256	0.084	0.241
5	Inappropriate price of production output	0.076	0.229	0.080	0.240
	Amount	1.000	2,842	1.000	2,899

The main threat in organic rice farming in Imogiri District with a score of 0.221 is climatic conditions. In the rainy season it can pose a threat to organic rice farming because the newly developed rice grains will be damaged affecting the growth of rice. Climatic conditions also have an impact on the emergence of pests and plant diseases [22]. One of the pests and diseases that often appears in organic rice farming in Imogiri is a broken neck.

In the dry season, lack of water supply is also a threat to organic rice farming. If the availability of water is lacking, the growth of organic rice will be hampered and can cause crop failure. In addition, the lack of water availability causes organic rice farming in Imogiri to use irrigation canals along with inorganic agriculture. Usually, organic rice in Imogiri District uses irrigation from drilled wells in several organic agricultural lands.

The external factor that became the main opportunity with the highest score was the increasing market demand for organic rice. The demand for organic rice in Pandak comes from the Yogyakarta area and outside Yogyakarta, such as Jakarta, Bogor and others. Although rice in Pandak District is not yet certified organic, the demand continues to increase. Organic rice is still considered as semi-organic rice or known as healthy rice.

The main threats in organic rice farming in Pandak are pests and plant diseases. Although pests and diseases of organic rice are rare, they can pose a threat to organic rice. The threat of pests and diseases in organic rice is still considered dangerous because it is still in the conversion period from inorganic to organic agriculture.

3.3 Internal – External matrix (IE matrix)

The IE matrix of organic rice farming in Imogiri and Pandak Districts has a slight difference in the values of the X and Y axes. The values of the XY axis in Imogiri District are (2.87; 2.84), while in Pandak District it is (2.85; 2, 89). Although there are differences, the position of organic rice farming in Imogiri and Pandak Districts is in a moderate position, namely in cell V. Figure 1 is an Internal and External Matrix for organic rice farming in Imogiri and Pandak Districts:

The position of organic rice farming in Imogiri and Pandak Districts is in cell V which means it is in the hold and maintain position. This position is identified as maintaining and

maintaining organic rice farming. The right strategy for this position and has been widely developed is market penetration or expansion and product development from organic rice farming. This is also explained in research conducted by [3] where the strategy in cell V is in the form of market penetration and product development.

	4.00	Strong 3.00	Average 2.00	Weak 1.00
Tall	3.00	I	II	III
Currently	2.00	IV	V	VI
Low	1.00	VII	VIII	IX

Fig. 1. IE Matrix of organic rice farming in Imogiri and Pandak Districts

Organic rice farming in Imogiri District needs to maintain certified products and reach a wider market. The strategy that can be done with product development is to add organic rice varieties. The varieties grown by organic rice farmers are “menthik wangi” and “menthik susu”. Product development that can be done by organic rice farmers by planting varieties or other types of local rice, such as black rice, brown rice and so on. In addition, a market expansion strategy needs to be carried out to avoid a decline in sales and profits of organic rice.

Farming in Pandak District must maintain and maintain its organic rice consumers. The strategy that can be applied is to develop organic rice products so that they have an organic rice certificate from a certification agency. Organic rice farming in Imogiri District, Bantul Regency

3.4 Priority Strategy

After knowing the alternative strategies that need to be applied for organic rice farming in Imogiri District and Pandak District, the next step is to develop a QSP matrix .

Table 3. QSP matrix of organic rice farming in Imogiri District, Bantul Regency

Alternative strategy	Linkages	STAS
1. Maintaining the quality of organic rice farming products	S1, S3, S4, S5, O1 and O5	1.747
2. Skills training for organic rice farmers in farming management and marketing	S2, S6, S7, S8, O2, O3, S9 and O4	2.155
3. Training and mastery of farmers' financial management skills	O3, O4, W2 and W4	1.009
4. Expanding the marketing of organic rice	O1, O2, S9, O5, and W1, W3	1.228
5. Improved pest control by farmers	S1, S2, S3, S4, S6, T1 and T3	1.687
6. Uniform and suitable selling price for organic rice	S7, S8 and T5	0.711
7. Organic rice certification to address land conversion and consumer confidence	S5, T4 and T2	0.824
8. HR quality improvement	W4, T1, and T3	0.657
9. Adding varieties of organic rice products	W2 and T4	0.413
10. Define organic land	W1, W3, T4 and T5	0.848

Based on the Quantitative Strategy Priority (QSP) matrix in table 5, the main strategy that needs to be applied in organic rice farming in Imogiri District, Bantul Regency is the skills

training of organic rice farmers in farming management and marketing. This needs to be applied to organic rice farming due to the marketing of organic rice that has not been widespread so that there is a need for farmer marketing management training. In addition, the management of organic rice farmer groups also needs to be improved so that the products can be competitive. With the training in farming management and marketing, it is expected to increase sales of organic rice.

The marketing strategy can be done by promoting through social media and participating in regional superior product exhibitions. Farmers and traders can sell their organic rice through social media and marketplaces. With the advancement of technology as it is today, farmers and traders can reach consumers in various regions with this. By participating in several exhibitions of regional superior products, organic rice in Imogiri District can reach consumers who do not know about organic rice. one of the exhibitions that can be followed is an exhibition held at the Bantul Regency Agriculture Office.

The priority strategy applied in organic rice farming in Pandak District uses the QSP matrix (Table 4). The main strategy for organic rice farming in Pandak District based on table 6 is the use of natural resources potential in controlling plant pest organisms of organic rice. The use of natural resources in controlling organic rice pests is very necessary in organic rice farming. Farmers can control pests by utilizing the availability of superior seeds, organic fertilizers & pesticides, labor, motivation, and mastery of agricultural technology to identify and overcome threats posed by climatic conditions and to overcome pests and diseases in organic rice farming so that harvest failure does not occur.

Table 4. QSP matrix of organic rice farming in Pandak District, Bantul Regency

Alternative Strategy	Linkages	STAS
1. Increase the quantity and quality of products from organic rice farming in order to continue to meet consumer demand	S1, S3, S4, S5, O1 and O2	1.565
2. Improve knowledge and skills of organic rice farmers with farming management training	S2, S6, S7, S8, O2, O3, S9 and O4	2.242
3. Increase the marketing of organic rice	W2, W3, O2, O4 and O5	1.331
4. Government support in the determination of organic land	W1, W4, O1, O3 and O6	1.226
5. Use of potential natural resources in pest control	S1, S2, S3, S4, S6, S8, T1 and T3	2.259
6. Increasing competitive organic rice products	S5, S7, T2, T4, and T5	1.144
7. Improving the quality of human resources in overcoming pests	W4, T1 and T3	0.856
8. Establishing special land for organic rice	W1 and T2	0.362
9. Expanding organic rice marketing network	W3, W1, T4 and T5	0.794

In developing organic rice farming in Bantul Regency, both in Imogiri District and Pandak District, it is necessary to have support from the community and the government. Cooperation between parties is also very necessary in the development of organic rice farming. Farmers without assistance from the government and the wider community cannot develop optimally. The government can assist farmers in mentoring and training in the development of organic rice farming.

4 Conclusion

The internal factor that becomes the main strength in Imogiri District is the availability of organic fertilizers and pesticides, while the main weakness is the ability and financial management of simple organic rice farmers. External factors that become the main

opportunities are supportive government programs for organic farming and the main threat to climate change. The internal factor that is the main strength in Pandak District is the availability of rice seeds for organic rice and the main weakness is the availability of land which is mostly rented land. The external factor that becomes the main opportunity is the increasing market demand for organic rice and the main threats are pests and plant diseases.

Based on as an alternative strategy, the strategy that becomes a priority for the development of organic rice farming in Imogiri District is skills training for organic rice farmers in farming management and marketing. The priority strategy for Pandak District is the use of natural resources potential in controlling plant pest organisms of organic rice.

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