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Soka Crab Cultivation Development Strategy in Brebes

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Abstract. Mangrove Sari Tourism Village results from the community's enthusiasm in fighting abrasion, so for 10 years, more than 210 hectares of mangrove forest have been planted to prevent abrasion. This study aimed to determine the internal and external factors that influence the development of Mangrove Crab cultivation in Kaliwlingi Village and to analyze the development pattern of Soka Crab cultivation in Kaliwlingi Village.Crab cultivation is one of the most profitable aquaculture activities. The advantage of this mangrove crab cultivation business can be obtained maximally if the cultivated crabs achieve normal growth and maximum results. The demand for crabs is currently very large in domestic and international markets. Determination of alternative patterns in aquaculture development using SWOT analysis, which in SWOT analysis can be identified using internal factors, namely strengths and weaknesses and external factors, namely opportunities and threats, were carried out to assess the strengths and weaknesses of mud crab cultivation in Kaliwlingi Village. The socio-economic characteristics are age, education,number of dependents, length of farming, pond area, and mud crab cultivation income with production costs. The results of this study are expected to be useful as information material for Crab Cultivators in Mangroves in Kaliwlingi Village in particular and mud crab cultivators in Indonesia in general and also as input and consideration for the government in formulating policies related to the development of mangrove crab cultivation in the area around mangroveforests.

Keywords: Mangrove, Crab cultivation, Kaliwlingi Village, SWOT Analysis

1. Introduction

Kaliwlingi Village is located in the northern part of the village, directly adjacent to Java's north sea. Kaliwlingi Village is one of the coastal areas in BrebesRegency, so in this case, most of the livelihoods or the majority of the people work in the field of fisheries, Soka crab cultivation, making boiled salt, and mangrove batik [1]. Mangrove forest is an ecosystem that has high productivity due to litter decomposition. Mangrove forests contribute to organic residue, which is important for the biota living in the surrounding waters [2]. The mangrove forest ecosystem is a habitat for mangrove crabs commonly found in mangrove areas,so in Indonesia, they are better known as mangrove crabs (Mangrove Crabs) [3].

The Sari Mangrove Tourism Village results from the community's enthusiasm in fighting abrasion, so for 10 years, more than 210 hectares of mangrove forest have been planted to prevent abrasion. The results of planting and rehabilitating mangroves and mangrove crab cultivation emerged, withvarious systems, namely fattening, bamboo cage techniques, and box system techniques, all of which mangrove crab cultivation systems still rely on catches from mangrove forests. So that a problem arisesif the demand for mangrove crabs increases; it will impact taking crabs from mangrove forests; this will threaten the balance of ecosystems and sustainability due to overexploitation [4]. From these problems, it is necessary to regulate its management both in mangrove forest areas and in Cultivation activities. The purpose of this research is to the pattern of developing mud crab cultivation in Kaliwlingi Village, Brebes Regency. So that the expected results will be able to provide recommendations to the local government of Brebes Regency, the Soka crab cultivator group, Pokdarwis Dewi Mangrove, to be wise in taking seeds from the mangrove area so that

mangrove crab species can be preserved.

2. Research Material and Method

2.1. Determination of Research Area

The research area is determined purposively (deliberately), meaning that the research area is selected based on the research objectives. The research area is Kaliwlingi Wetan Village, Brebes District, Brebes Regency, where in this village, there is a cultivation of mangrove crab, which is one of the commodities that has increased production.

Figure 1. Map of sampling in Kaliwlingi village

2.2. Determination of Research Sample

The census method is used in determining the sample, i.e., the entire population is the subject of this study.The population in this study were all cultivators of mud crabs as well as in the mangrove forest area in Kaliwlingi Village, Brebes District, Brebes Regency.

2.3. Data collection

The data to be taken in this study consists of primary data and secondary data. Primary data were obtained from direct observation, direct interviews with shrimp pond farmers using a list of questions (questionnaires) prepared in advance. Secondary data related to the research were obtainedfrom the Department of Marine Affairs and Fisheries of Brebes Regency and the Statistics Agency of Brebes Regency, related agencies and institutions in the research area.

2.4. SWOT analysis

The strategy uses SWOT analysis to identify various factors systematically aimed at formulating alternative strategies. The procedures carried out in the SWOT analysis are as follows [5]:

1. Collecting data from the questionnaire and clarifying it into external and internal factors
2. The data is then compiled into a matrix of internal strategy factors (IFAS) and external strategicfactors (EFAS)
3. Weighting with the SWOT analysis:
    a. Determine the factors - weaknesses and strengths, as well as opportunities and threatsfactors
    b. Giving weight to each of these factors on a scale ranging from 1.00 (most important) to 0.00 (not important) based on the influence of factors on strategic position. The sum of the Weights cannot be more than a total score of 1.00.
    c. Give a branch for each factor using a scale ranging from 4 (very good) to 1 (below

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average)

d. Multiply weights and branches to determine the score for each factor
e. Add up the weighted scores to get the total weighting, please check this Figure 2.

Figure 2. SWOT analysis chart

Table 1. SWOT Matrix

IFAS **EFAS**	***(Strengths)***	***(Weakness)***
(Opportunities)	S-O Strategy Create strategies that use strengths to take advantage of opportunities.	W-O Strategy Create strategies that minimize weaknesses to take advantage of opportunities.
(Threats)	S-T Strategy Create strategies that use strength to overcome threats.	W-T Strategy Create strategies that minimize weaknesses and avoid threats.

Results and Discussion

The Kaliwlingi Mangrove Tourism Village is the spirit of the community's hard work against abrasion and coastal damage on the north coast, with data from 1963 -2017 erosion and abrasion of 2,115.39 hectares and accretion/sedimentation of 2,905.29 by planting mangroves for more than 10 years and has planted more than 10 years—310 Ha of mangrove forest for abrasion prevention. From the results of planting and rehabilitating mangroves, there is potential for developing mangrove tourism and a mangrove nursery. Culinary and typical coastal crafts are also the main attraction of the menu typical of Kaliwlingi Village, the surrounding community makes food from the results of mangrove biota, namely soka crabs [6].

The potential and prospects for fisheries development, especially mangrove crabs, are currently increasing in demand. The mangrove crab is one of the prima donna of brackish water cultivation [7]. The increasing demand for mangrove crab cultivation is closely

related to many market demands for seafood fans in restaurants and traditional markets. Kaliwlingi Village is a tourist destination with mangrove forest icons, selfies, fish and crab seafood stalls, and other street food. But unfortunately, the need for market demand is not accompanied by the level of productivity from aquaculture, supplying the needs of most of the results from the catch; this will cause.

However, it needs to be studied in depth so that the preservation of the mangrove crab population in the Kaliwlingi mangrove forest area can be maintained and its habitat can be maintained so that the population does not decrease [9].
Community empowerment aims to develop a superior commodity business in the form of mangrove crabs based on land/water suitability and socio-economic conditions of Kaliwlingi Village. Community empowerment is not only directed at efforts to increase the production and productivity of mangrove crabs but the systems that support it, namely the mangrove forest area as a conservation area, preservation of mangrove crab habitat and Site Plan for the Crab Cultivation area.

3.1. Crab Cultivation Pattern with Development Plan

Decision-making strategies are always related to the background, potential and existing problems internally in the form of strengths and weaknesses and externally in the form of opportunities and threats [10]—the development pattern of mangrove crab cultivation in Kaliwlingi Village, Brebes. In preparing the plan, it is necessary to study internal and external factors obtained from the analysis of operational activities and the results of aquaculture production. The methodology for determining weights and ratings in assessing internal and external strategic factors can be seen in the matrix of internal strategic factors in the form of strengths and weaknesses for developing mud crab cultivation, presented in **Table 2.**

Table 2. Matrix of Internal Strategic Factor Analysis (IFAS- Internal Strategic Factor Analysis Summary) Patterns of development of mud crab cultivation in Kaliwlingi Village

Internal Strategy Factors		**Weight**	**Rating**	**Weight X Rating**	**Comment**
STRENGTHS					
1	It has forest potential for extensive mangroves, 410 ha, to support the development of mud crab cultivation.	0,09	4,00	0,36	Available habitat Natural with an Abundance of Mangrove Crab
2	Kaliwlingi Village has productive pond land	0,09	5,00	0,45	Pond can be used for the cultivation of mangrove crabs
3	Ecotourism Area mangroves have the opportunity for superior culinary products	0,06	4,00	0,24	The tourist village of Dwi Mangrove Sari has visitors for the mangrove crab culinary market
4	There is a group of cultivators to develop mud crab cultivation	0,09	4,00	0,36	Resource enough humans to cultivate mud crabs

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5	Market demand Will mangrove crab be very tall	0,06	5,00	0,30	Sales opportunities outside the area, the demand is quite high
6	The price of mangrove crab is relatively tall	0,06	4,00	0,24	Relative price stable and profitable
WEAKNESSES					
1	No seeds are available for Soka crabs with adequate cultivation.	0,04	2,00	0,09	partial seeds big relying on catch from nature
2	Crab pests and diseases Cultivated mangroves are still high	0,03	1,00	0,03	Mangrove crab cultivation is still constrained disease
3	Seed mortality rate The cultivation of mangrove crabs is still high	0,03	3,00	0,09	Seeds of produce Cultivation are obtained from BPPAP Jepara. The distance is quite far
4	Most seeds obtained from the catch	0,03	1,00	0,03	Still rely on seeds from the catch
5	Karamba equipment and floating box for cultivation does not last long	0,03	2,00	0,06	Equipment facilities are broken fast
6	Capital is still limited	0,03	2,00	0,06	Not yet financial support from the bank
7	Mangrove crab seed price still high	0,03	2,00	0,06	High-price mud crab seeds
8	Cultivated seeds yet optimal	0,03	2,00	0,06	Death rate Cultivated seeds are still high enough to adjust in the cultivation area.
9	Survival Rate low mud crabs	0,03	2,00	0,06	Life Pass mangrove crab is still low
10	very sensitive to water change	0,03	2,00	0,06	Mangrove crabs require optimal water quality standards so that Sr is high
11	Not yet available mud crab hatchery	0,03	3,00	0,09	Resource: There are still humans for the mangrove crab hatchery in Kaliwlingi Village.
12.	Cultivation assistance Soka crab is not optimal yet	0,03	2,00	0,06	Need accompaniment from related parties for soka crab hatchery, both agencies and the

					Ministry of KKP

While the External Strategy factor matrix (Opportunities and Threats) for the pattern of developingmangrove crab cultivation in Kaliwlingi Village, Brebes

Table 3. Matrix of External Strategic Factors (EFAS-Rksternal Strategic Factor analysis Summary) Thedevelopment pattern of mangrove crab cultivation in Kaliwlingi Village, Brebes District.

	External Strategy Factors	**Weight**	**Rating**	**Weight X Rating**	**Comment**
OPPORTUNITY					
1	Presence of Candy 12/Candy - KP/2020 concerning the management of lobster (Panurillus spp), Crab (Schllya spp), and crab (Portunus spp) in the territory of the Republic of Indonesia	0,16	5	0,79	There are rules The government that regulates crab management so that it remains sustainable
2	Cultivation Development Potential mangrove crab growing	0,11	3	0,32	There is an area of mangrove and a site plan for cultivation
3	Improvement of cultivation technology system with mud crab cultivation	0,16	4	0,63	Industrial facilities indoors that are not affected by natural factors
4	Improvement of cultivation technology area system with mud crab	0,16	4	0,63	make it easy supervision of health and harvesting processes
5	Mangrove Crab Seed Needs Increase	0,11	4	0,42	Market demand increase
	Amount	0,68		2,79	
THREAT					
1	Water quality in the pond area of mangrove crabs needs to be improved. The water quality in the mangrove crab pond area needs to be improved. The water quality in the mangrove crab pond area needs to be improved.	0,05	2,00	0,11	There are activities chicken farming whose waste is dumped into the waters
2	Aquaculture production waste and Chicken livestock waste have the potential to threaten the productivity of mud crab cultivation (disease).	0,05	1,00	0,05	High organic matter contamination

3	Predators are birds and snakes, and more and more torches	0,05	2,00	0,11	Threatening stock the population is natural due to fishing and predatory activities
4	There are ecotourism activities	0,05	3,00	0,16	Need Study management of zoning and site plans and waste management in ecotourism zones
	Amount	1		0,43	

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Table 4. Matrix of Strengths – Weaknesses and Opportunities Threats (SWOT) Strategy Analysis of Development Patterns in Brebes District, District

External Strategy Factors / Internal Strategy Factors		***(OPPORTUNITY)***					***(THREATS)***			
		12 candy /Permen KP2020/about lobster crab management	Potential development of Epiting Cultivation	Improved technology of mud crab cultivation system building	Improved mud crab cultivation system with box	The need for mangrove crabs is increasing	Water quality in the pond area crabs	Aquaculture production waste chicken	The influence of climate on aquaculture production is still quite strong (The dry season has an impact on decrease in quantity	The mortality rate of mangrove crab seedlings imported from outside the region is very high; the stone's length influences this.
		1	2	3	4	5	1	2	3	4
(STRENGTHS)		STRATEGY SO					STRATEGY ST			
Has forest potential 410 ha of mangrove area to support the development of cultivation	1	1. Creation of a mangrove crab cultivation area in the Dewi Mangrovesari forest buffer area that has been determined according to the Site Plan (S1, S2, S3, S5, O1, O2, O4) 2. Installation of barrier signs to enter the core zoning of the mangrove forest to maintain the habitat and population of the mangrove crab broodstock (S1, S4, S6, S8, O1, O2, O4, O5) 3. Installing a sign prohibiting catching/torching in the mangrove forest area (S1, S2, S3, S4, S6, S8,O1, O2, O4, O8) 4. Strengthening cultivator group's capital (S1, S2, S3, S8, O3)					1. Development of hatchery units in Pokdakan Dewi Mangrove sari(S1, S2, S3, S4, S5, S6, S7, S8, T1, T2, T4, T5, T6) 2. Improving the Quality of Environmental Water Quality for Crab Cultivation (S1, S2, S4, S8, T1, T2, T4, T5) 3. The use of phytomalt biogance technology for harvesting molting crabs (crabs soka)(S1, S2, S3, S5, S6, S7, S8, T4, T5) 4. Use of natural herbs for mud crab health (S1,S2,S3,S5 T1,T2,T4) 5. Make village government regulations regarding core zoning areas for mangrove crab preservation (S1, S2, S3, S8, T3, T4, T7) 6. Innovation of predator and drill-repellent devices in the core zoning area (S1, S2, S4, S8, T3, T7) 7. Making aquaculture cages with a floating box system (S2, S4, S7, S8, T1, T2,T5, T6) 8. Procurement of facilities for testing the quality of cultivation results (quality control) (S5, S6, T1) 9. increased promotion and marketing of export-quality mud crab (S3, S8, T1)			
Kaliwlingi Village has productive pond land	2									
Ecotourism Area mangroves have a chance	3									

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for Culinary products superior			
There is a group cultivators to develop mud crab	4		
Market demand Will Mangrove crab is very tall	5		
The price of mud crab is relatively high	6		
Availability of feed Easy scaffolding	7		
Already have a site plant cultivation area around the forest mangrove	8		
(WEAKNESSES)		STRATEGY WO	STRATEGY WT
Not yet available Soka crab seeds from adequate cultivation.	1	1. Production of crab crabs from cultivation in the Dewi Magrove Sari area (W1, W4, W7, W8, W11, W12, O1, O2, O3, O4) 2. Provision of facilities and infrastructure for mud crab hatchery in the cultivation zone (W2, W4, W7, W8, O1, O3, 04)	1. Collaborating with academics to develop mangrove crab hatchery techniques (W1, W3, W9, W11, W12, T6) 2. Cooperate with the task force group to protect the core zoning of the Mangrove Crab Parent Area (W1, W4, W8, W11, W12, T1, T2. 3. Crab Cultivation Certification (W1, W2, W3, W4, W10, W12, T3, T4) 4. Establishment of an information center for mud crab hatchery and rearing(W12, T1, T2, T3, T4)

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Pests and diseases cultivating mud crab still tinggi	2	3. Provision of land for the cultivation of sako crabs in the mangrove area (W1, W5, W6, W8, W11, W12, O2, O3, O4) 4. Technical development of mangrove crab cultivation, containers, and feed for hatchery unit development in Pokdakan Ewi Mangrove Sari (W1, W3, W4, W5, W6, W19, W12, O2, O3, O4) 5. Selection of superior broodstock of Mangrove Crab from the Dewi Mangrove Sari forest area (W1, W4, W8, W11, O1, O2 6. Making additional feed to speed up molting (W6, W12, O2, O3, O4) 7. Protecting the natural habitat of the Dewi Magrove Sari forest (W4, W7, W8, O1, O5) 8. Maintain the core zoning of the Kaliwlingi mangrove forest area for the development of the mangrove crab population (W1, W8, W11, W12, O1, O2, O3, O4) 9. Training of Pokdakan members regarding SOPs for mud crab hatchery and rearing (W1, W2, W3, W4, W5, W6, W9, W11, W12, O2, O3, O4) 10. Development of fishery product processing facilities (W6, W12, O6)	
Death rate Mangrove crab seeds cultivated are still high	3		
Most seeds obtained from the catch	4		
Cage equipment and floating box for Cultivation does not last long	5		
Capital still limited	6		
Crab seed price Mangroves are still high	7		
Cultivated seeds not optimal	8		
Survival Rate (SR) low mud crab	9		
very sensitive to water changes	10		

4. Conclusion

Based on the matrix of internal strategic factors (IFAS) and external (EFAS) patterns of development of mangrove crab cultivation in Kaliwlingi village, Brebes district, Brebes district, it was found that the total value of internal strategy factors (IFAS) was 3.32. EFAS was 3.42, so if included in the matrix, internal and external ponds in Randusanga Wetan Village, Brebes Regency, are in cell (segment) I position, which is in a growing condition.

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