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Rubber Farmers' Strategies to Face Unstable Market Trends (Case Study of Smallholder Rubber Farmers in North Sumatra)

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Abstrak

Perkebunan karet rakyat menghadapi pasar yang tidak stabil dan merugikan petani sehingga berdampak buruk dalam keberlanjutan perkebunan masyarakat penghasil karet di Sumatera Utara. Penelitian bertujuan memahami strategi petani menghadapi permasalahan lapangan yang tidak menguntungkan tersebut. Penelitian menggunakan metode deskriftif kuantitatif, untuk memahami permasalahan perkebunan karet rakyat. Analisis yang dilakukan dengan menggunakan metode SWOT terhadap berbagai pengelolaan kebun karet rakyat, serta berbagai variabel ekonomi dan pendapatan. Hasil menunjukkan input mengelola on-farm rendah, namun berorientasi kepada hasil. Tanaman karet berusia rata-rata diatas 20 tahun dengan produktivitas rendah. Luas lahan rata-rata 1,11 ha dengan pendapatan rata-rata 21,3 juta perhektar pertahun. Total skor IFAS 2.66, EFAS 2.38 berarti perkebunan karet rakyat di Sumatera Utara berada pada level menengah dan masih dapat tumbuh dengan mengandalkan sumberdaya lokal. Untuk mendukung perkebunan karet rakyat berkelanjutan dibutuhkan insentif kebijakan yang menjamin ketersediaan sarana dan prasarana produksi, dan kestabilan harga sehingga dapat meningkatkan kuantitas dan kualitas produksi.

Kata kunci: Berkelanjutan, Kebijakan, Kelembagaan, Perkebunan Karet Rakyat, SWOT

Abstract

Smallholder rubber plantations in North Sumatra confront an unstable market that threatens their sustainability. The research seeks to identify the strategies used by farmers to address these challenging field issues. The research employed a quantitative descriptive method to gain insight into the challenges faced by smallholder rubber plantations. To investigate rubber plantation management strategies, we used the SWOT method. The findings indicate that low input management is result-oriented. Rubber plants are over 20 years old and have low productivity. The average land area is 1.11 ha, with an average income of 21.3 million per hectare per year. The total IFAS score of 2.66 and the EFAS score of 2.38 indicate that smallholder rubber plantations are at an intermediate level, but they can still grow by relying on local resources. Policy incentives that ensure the availability of production facilities, infrastructure, and price stability are necessary to support sustainable smallholder rubber plantations.

Keywords: *Institutional, Policy, Sustainable, Smallholder Rubber Plantation, SWOT*

INTRODUCTION

National rubber plantations in 2023 are estimated to cover an area of 3.55 million hectares, with a total area of smallholder rubber plantations reaching 3.017 million hectares or reaching 85 percent of the entire national rubber plantation area [1]. Rubber plantations in North Sumatra in 2023 are estimated to cover an area of 371.1 thousand hectares, which is dominated by smallholder plantations covering an area of 242.5 or 65.78 percent. The productivity of smallholder plantations is 0.76 tons per hectare, still below the productivity of rubber from large plantations which is above one ton per hectare[1].

Some of the problems that are widely found in the field are the dominance of old rubber, low production, inefficient marketing, and the procurement of superior seeds and other saprodi [2]. In addition, the existence of a local institutional system in the order of local customary arrangements has received less attention so that the local institutional function in resource management can not be implemented [3]. The approach in solving this problem is to develop an approach that is able to make smallholder rubber plantations a sustainable source of income [4].

Ecologically, sustainability means that there is no degradation of the soil and the environment or is ecologically stable. The quality of natural resources and agroecosystems can be maintained as a whole. The combination of local knowledge of farmers in determining planting practices (conservation) that are suitable for local problems is an important factor so that the system can be sustainable [5]. The socio-cultural aspect emphasizes community values where the farming pattern is appropriate and suitable for community conditions. The goal of increasing production and income becomes unimportant for farmers if it is not an answer to the problems of farmers themselves [6][7].

The farmer factor is the most important actor in sustainable agriculture. For this reason, they must have a positive mentality and sufficient knowledge, and be supported by other parties to support sustainable agricultural practices [8]. Few farmers lead to sustainable practices in resource management when there is less incentive for them.

Various approaches to sustainable agriculture place a lot of emphasis on the physical aspects of farming in its management. In fact, sustainability as mentioned above cannot be separated from socio-economic activities (Knutson et al., 2011). Moreover, it is related to various socio-economic problems, especially income which is the main goal of people's rubber plantations. Various problems of people's rubber such as low production dominated by old rubber portions, inefficient marketing, affecting farmers' income directly are partial and unsustainable management impacts.

The threat of non-compliance requires the right strategy for smallholder rubber farmers to maintain their rubber plantations as a source of family income. This is not only a matter of cultivation but more about the economic, institutional and policy interests that apply in the local community so that farmers are able to survive with unfavorable environmental pressures.

RESEARCH METHOD

The research uses a quantitative descriptive method that is oriented in developing the concept of sustainability to the problem of smallholder rubber plantations. The research aims to understand the various approach strategies that farmers need to deal with unfavorable environmental conditions, such as market price instability. The research was conducted in the period from April 2022 to April 2023. Of the 32 districts in North

Sumatra, 4 research locations were determined, namely Mandailing Natal, South Tapanuli, Central Tapanuli and Langkat. The location is determined by the criteria that there is a dominant people's rubber plantation. Respondents were determined purposively, namely rubber plantation farming communities, indigenous community leaders, and government agencies in the research area.

The data collected in this study are as follows: 1) Primary data to describe the on-farm management profile of smallholder rubber plantations. 2) Secondary data, namely: the physical condition of the research area, and the demographics of the area regarding the structure of the community. The methods and instruments of data collection are: Observation, Questionnaire, Interview and Document study are carried out as secondary data to complement the primary data. Quantitative descriptive analysis to describe physical variables and inputs of land and garden management efficiency. A SWOT analysis was also carried out here aimed at determining the best strategies that can be taken and used by the community in order to survive in conditions facing economic and environmental pressures. SWOT method used to monitor and evaluate the environment, both external and internal environment for the purpose of agricultural development.

RESULTS AND DISCUSSIONS

Characteristics of On-Farm Management

Based on the characteristics of farmers, the following things can be described, namely the average farmer is over 40 years old. This illustrates that the average farmer is quite old, but still productive in carrying out various activities in their respective rubber plantations. Farmers have a fairly high number of dependents in their households, which is almost 4 people in each farmer's household. This illustrates that the burden of families in households is quite high in North Sumatra. Data on the management of smallholder rubber plantations is shown in Table 1.

Table 1. Characteristics of farmers and management of rubber plantations at the research site

Criteria	N Valid	Mean	Std. Error of Mean	Std. Deviation	Variance	Minimum	Maximum
Age	72	43.76	1.068	9.061	82.098	24	67
Number of Dependents	72	3.25	0.201	1.71	2.923	0	9
Education	72	2.13	0.13	1.1	1.21	0	5
Land size	72	11080.5	689.633	5851.728	34242715	1500	35000
Land status	72	1.33	0.074	0.628	0.394	1	3
Rubber age	72	18.1	0.901	7.646	58.455	4	50
Seedling source	72	1.92	0.051	0.436	0.19	1	3
Seedling quality	72	1.49	0.095	0.805	0.648	1	3
Planters	72	1.43	0.09	0.766	0.587	1	3
Fertilizer	72	1.22	0.049	0.419	0.175	1	2

The average land area is in the range of 0.5-1.5 ha, reaching 79.1 percent. The

majority of land is self-owned reaching 75 percent, only 16.7 percent are rented and 8.3 percent are jointly owned. Accompanied by the average age of rubber ranging from 11-20 years to 58.3 percent, and rubber aged 21 to 25 years is still high reaching 15.3 percent. This illustrates that the people's rubber plantation is old with production starting to decline.

Basically, traditional farmers strive to increase their production and income through fertilization efforts. Fertilization is more aimed at rational choices to get increased production. The goal of getting better profits from farming is an important reason for sustainable agriculture [10]. Of the total sample farmers, 77.8 percent of farmers fertilized, 22.2 did not fertilize.

The average income of smallholder rubber farmers per year is 3 million to 33 million, reaching more than 79 percent, but the most farmers' average between 13 and 23 million per year. With an average land area of 1.11 ha, it means that the income of farmers per hectare per year is an average of 21.3 million or around 1.8 million per month. Low production can also be suspected to be caused by limited land use rights. The rubber plantation lands that are cultivated even reach 50 percent are leases or profit sharing. The management of rubber plantations with the status of profit sharing or rent causes farmers to provide minimal input to the land [11] [12][13][14]. Therefore, the status of land ownership or land use is the basis for sustainable rubber management [15][16][17][18].

SWOT Analysis of Smallholder Rubber Plantations

SWOT analysis was carried out to understand the strategy of farmers to survive in unfavorable conditions. To ensure the sustainability of smallholder rubber plantations, various sustainable supporting variables can be implemented in the overall management of smallholder rubber plantations. This is related to the three main sustainable variables, namely physical variables and economic variables. As well as socio-cultural variables, including institutions and government policies towards smallholder rubber plantations [3] [19][20].

The prerequisites for smallholder rubber plantations in North Sumatra to achieve sustainable development: 1) Farmers can produce good rubber production in quality and quantity. 2) Farmers can receive income in accordance with their business level so that they can meet their living needs [21][22]. 3) Local farmer institutions such as farmer groups can support the fulfillment of management and guarantee income [19][23]. 4) Farmers can manage rubber plantations in a sustainable manner. Farmers' understanding can be through various approaches to farmer education or agricultural extension [24][25], and 5) Farmers are supported by various government policies to ensure the continuity of their production and income [26][27][28].

Identification of various parties involved in smallholder rubber plantations in North Sumatra as follows: Farmers and families as farming units, Local institutions that support smallholder rubber farming activities, Collecting agents and large recipients of smallholder rubber products, Government that supports smallholder rubber farming, Industries that receive smallholder rubber products. The key factors that affect the achievement of the goals are as follows: 1) Availability of production facilities, such as quality bibibit, fertilizers and medicines; 2) Availability of farmer knowledge related to efficient and sustainable management; 3) Sufficient land availability; 4) Availability of Farmer Capital; 5) Availability of manpower; 6) Availability of marketing networks (markets); 7) Availability of appropriate market prices. The condition of rubber prices at the time of the study was in the range of

7-8 thousand rupiah per kg of rubber sap. This is considered very low by farmers in getting appropriate income from rubber sales; 8) Institutional availability of farmers; 9) Availability of a system of institutional rules for farmers; 10) Availability of supportive government policies. It has not been regulated at the policy level related to the interests of the rubber farming community to get rubber management and marketing support; and 11) Availability of rubber receiving industries. Industries that receive people's rubber sap are not located around the community's location.

Identify Internal and External Factors

Identify internal strengths and weaknesses, as well as external opportunities and threats. The weighting of these factors is based on IFAS (Internal Strategic Factors Analysis Summary) and EFAS (External Strategic Factors Analysis Summary).

The weight is determined based on the consideration of the impact of these factors on the strategic factors of people's rubber farming. The score is located between 1.0 and 0.0. A score of 1.0 is given based on the most important score, and a score of 0.0 for factors that are considered not important at all. The rating of the opportunity is positive, where the greater the opportunity is rated 4, if the small opportunity is rated 1. In contrast to the weakness rating where the weakness is very large compared to the average business unit rated 1 and the weakness is less (slightly), or below the average business unit is rated 4. By giving ratings as shown in Table 2 and Table 3.

Table 2. Matrix of internal factors (IFAS) on smallholder rubber plantations in North Sumatra

Internal (IFAS)	Weight	Rating	Weight x rating	Comment
STRENGTHS				
1. Daily labor available	0,12	3	0,36	Labor from within the family
2. Continuity of work can be carried out	0,08	3	0,24	Long experience of rubber cultivation
3. Location close to the settlement	0,1	3	0,3	Easy access
4. Land is generally owned	0,12	4	0,48	Flexibility in managing the rubber plantation
5. Strong relationship between farmers	0,1	3	0,3	Kinship relations within the community
WEAKNESSES				
1. Difficulty in obtaining quality seeds	0,12	2	0,24	Many seeds are of unclear source
2. Low knowledge of sustainability	0,1	3	0,3	Cultivation is still traditional
3. Narrow average land availability	0,1	2	0,2	Limited land ownership
4. Low availability of working capital	0,08	1	0,08	Dependence on rubber farming
5. Internal labor from within the family	0,08	2	0,16	Labor with limited skills
	1,0		2,66	

Description:

Strengths	Weaknesses
4 Very Good (Outstanding	1 Ugly (Poor)
1 Very Weak	4 Not Weak

Table 3. External factors matrix (EFAS) on smallholder rubber plantations in North Sumatra

EXTERNAL (EFAS)	Weight	Rating	Weight x rating	Comment
OPPORTUNITIES				
1. Local organic fertilizer material resources available	0,15	4	0,6	Compost and manure
2. close distance to the market	0,09	3	0,27	Easy transportation
3. Alternative substitution of other products	0,09	2	0,18	Lack of other uses
4. Ease of transportation	0,1	3	0,3	Market access
5. Ease of information system	0,09	3	0,27	Ease of market information
THREATS				
1. Marketing only in the local market	0,09	2	0,18	Limited rubber latex market
2. Low market price	0,12	1	0,12	Low price resulting in low income
3. Farmer institutions are not available	0,08	2	0,16	Existing institutions (adat) are not profit-oriented
4. No policies that support rubber farmers	0,08	1	0,08	Price policy and product downstreaming do not exist
5. No sap management industry	0,06	2	0,12	Sales of rubber latex only
6. Other promising product alternatives	0,05	2	0,1	Other crop products such as oil palm are considered more promising
	1,0		2,38	

Description:

Opportunity	Threat
4 Very Good (Outstanding	1 Very Threatening
1 Poor	4 Not Threatening

Table 4. SWOT Strategy (from IFAS and EFAS matrices)

IFAS EFAS	STRENGTHS 1. Daily labor available 2. Continuity of work can be carried out 3. Location close to the settlement 4. Land is generally owned 5. Strong relationship between farmers	WEAKNESS 1. Difficulty in obtaining quality seedlings 2. Low knowledge of sustainability 3. Narrow average land availability 4. Low availability of working capital 5. Internal labor from within the family
OPPORTUNITY 1. Local organic fertilizer resources available 2. close distance to the market 3. Alternative substitution of other products 4. Ease of transportation	Strategy SO: 1. Optimize local resources, including human resources and natural resources. 2. Improve/utilize available infrastructure and own property. 3. Utilize community institutions to strengthen production unity, markets and bargaining power.	Strategy WO: 1. Improving production patterns (cultivation) so that they are efficient, 2. Education to open a wider marketing network, 3. Establish cooperation with third parties to support the availability of inputs and business efficiency.

THREAT 1. Marketing only in the local market 2. Low market price 3. Farmer institutions are not available 4. No policies that support rubber farmers 5. No sap management industry 6. Other promising product alternatives	Strategy ST: 1. Expanding the market by region and industry, 2. Maintaining and improving the quality of rubber latex, 3. Educate on product improvement and derivative products, 4. Cooperation with the government and third parties to strengthen the selling value of products	Strategy WT: 1. Efforts to obtain assistance or access to sources of quality seedlings, 2. Land utilization efficiency and product quality improvement, 3. Educate internal human resources and build local institutions that are oriented towards meeting the needs of smallholder rubber farming

Policy Strategy for the Development of Smallholder Rubber Plantations

In the smallholder rubber plantation, the total score of IFAS is 2.66, EFAS is 2.38. This figure illustrates that people's rubber plantations in North Sumatra are at an intermediate level for external and internal factors. This is according to Rangkuti, (2018), that farming can still grow by relying on natural resources and human resources locally. The utilization of excess local resources is believed to make a business able to survive in facing various problems in its management [30][31][32][33].

The defensive strategy is shown when the price of rubber in the market is low. Farmers are trying to maintain their rubber plantations, even though they are considered inefficient in their management. Income from rubber products solely depends on maintaining family resilience as a source of income. In conditions where there is an inefficiency between the cost and income of rubber farming, farmers reduce expenses in operations or thrift strategies.

Refers to Rangkuti, (2018) The strategy carried out by farmers to maintain the people's rubber plantations is to try to achieve profit stability, even though there is a critical external problem, namely low rubber prices. This stability can be achieved by integrating various resources held horizontally. This has an impact on people's rubber plantations that are able to survive the rubber price crisis in the market. However, this requires government policy support so that farmers are able to get more benefits from their rubber plantation area.

The policy in question is an effort to overcome various internal problems [34] [35] For example, farmers' understanding of a more productive sustainable system has not been fully implemented in crop cultivation. Support to obtain sources of quality seeds, saprodi, and financial support makes farmers more resilient in facing the price crisis. However, the fact is that policy facilitation and incentives related to smallholder rubber plantations have not been formulated in local policies. A comprehensive policy should be built in a roadmap so that the people's rubber plantations in North Sumatra can be sustainable [36][37][38].

Based on the SWOT analysis, several strategies can be carried out to encourage a sustainable system, namely (Table 4): SO Strategy: 1) Utilizing various local resources to the maximum as input to rubber plantation land. 2) Collaborate with various local community institutions to encourage the institutional format to be more profit-oriented [39][40][26] [8][41].

WO Strategy: 1) The WO strategy can mainly be done by opening up a wider marketing network supported by local institutions and the government. 2) Establish cooperation with third parties to support the availability of sapro, business efficiency, and marketing of rubber sap [42][43]. Cooperation opportunities can be initiated by the government or related institutions. The limited knowledge of farmers is an obstacle that needs to be overcome for the purpose of expanding the marketing of products to other marketing networks or encouraging derivative products from people's rubber.

ST strategy: 1) can be started by utilizing the strength of farmers, namely the existence of land near the location, the strength of the group and the availability of local resources to improve the profile of farming so as to be able to increase the quantity and quality of production [8]. This will increase the bargaining position of farmers in the market and the people's rubber sap processing industry. 2) Education is needed to the farming community to improve cultivation patterns so that they become more efficient and increase the competitiveness of products at the regional level as local commodities.

WT Strategy: 1) Assistance to farmers to facilitate access or obtain quality seeds and rubber plantation production facilities. The assistance can be in the form of working capital which has been a barrier for farmers. 2) Policy incentives related to the price and marketing of people's rubber [44][45][46][47]. Product and market diversification strategies are important to provide opportunities for smallholder rubber farmers, so as to encourage farmers to manage rubber plantations better and more sustainable.

CONCLUSION

On-farm management with low input, where farmers are more results-oriented. Low productivity due to the quality of unguaranteed seedlings and the average age of old rubber is above 20 years. The SWOT analysis shows that the strategy to build sustainable smallholder rubber plantations is to encourage the use of local natural resources to increase sufficiency inputs. In addition, policies are needed to ensure income stability related to the provision of production and marketing facilities for rubber rubber products, as well as public education to improve the efficiency of plantation management to achieve the fulfillment of sustainable variables. More policy interventions are needed that are direct to the community to maintain the continuity of on-farm management.

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