SSRG International Journal of Agriculture and Environmental Science
ISSN: 2394 – 2568 /doi:10.14445/23942568/IJAES-V8I1P108

Volume 8 Issue 1, 49-52, Jan-Feb 2021

Analysis of Sea Grass Cultivation (Eucheuma Sp) In Bontang City, East Kalimantan

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Abstract: *The purpose of this research is to analyze the profit (profit), Revenue Cost Ratio (R / C) of seaweed cultivation in Tihik-Tihik Village and Malahing Village, Bontang City, East Kalimantan. Furthermore, analyzing the pattern of seaweed marketing channels in Tihik-Tihik Village and Malahing Village, Bontang City, East Kalimantan. Sampling using the census method, as many as 38 people in Tihik-Tihik Village and as many as 34 people in Malahing Village, Bontang City. Data were analyzed using Profit analysis, R / C analysis. As well as a description of analyzing the marketing channel patterns. The results showed that the seaweed cultivation in Tihik-Tihik Village earned a profit of Rp. 6,939,769.70, - per year, based on the R / C analysis, the value was 1.41. Seaweed cultivation in Malahing Village earns a profit of IDR 4,470,969.90 per year; based on the R / C analysis, the value is 1.20. In Tihik Tihik Village, there are three patterns of seaweed marketing channels, namely; Zero-level channel (Producer-Consumer), single-level channel (Producer-Collector-Processing Industry), and two-level channel (Producer-Collector - Wholesaler-Inter-Island Processing Industry). In Malahing Village, there is one seaweed marketing channel pattern, namely the one-level channel (producer-consumer).*

Keywords: *Seaweed, Profit, R / C, Marketing Channel Pattern*

INTRODUCTION

The seaweed commodity is one of the commodities included in the fisheries revitalization program. Two important reasons for the choice of seaweed; First, the market for derivative products in the form of food-grade and nonfood grade varies widely, and the world market demand for these products is quite high (Anggadiredja, 2007). Second, cultivators' mastery of cultivation technology (raft system or long line) is easily adopted (Sukadi, 2007). In Indonesia, seaweed is produced from natural and cultivated preparations. (Kadi, A, 2004). In the early 1980s, the demand for seaweed in the world increased along with the increasing use of seaweed for various purposes, including industry, food, textiles, paper, paint, cosmetics, and pharmaceuticals (medicines). According to Suhendar (2006), the prospect of seaweed agribusiness is still very promising for both farmers who cultivate and the seaweed processing industry.

Along with the increasing seaweed utilization level, the market demand for seaweed both at home and abroad is also getting higher. Referring to FAO data (2019), he continued, Indonesia is the world's number one producer, especially for the type of eucheuma cotton, and controls more than 80% of the supply share, mainly for export China. However, currently, almost 80% of Indonesia's seaweed exports to China are still dominated by raw materials. Referring to data from the International Trade Center (ITC, 2019), in 2018, the export volume of our seaweed reached 213,422 tons with a value of USD294,509.

The area of Bontang City is dominated by the ocean. Seaweed cultivation is an environmentally friendly activity because it is an effort to reduce damage caused by potash and bombs (WWF, 2006). The market opportunities for seaweed for export and meeting domestic needs are still open, thus providing the potential for the development and increase of seaweed production in East Kalimantan (Syafril et al., 2008). According to Atmadja et al. (1996) in Suparmi and Achmad Sahri (2009). Bontang City has a land area of 147.8 km2 (29.3%) and a sea area of 349.77 km2 (70.3%), while the total area is 497.57 km2. (Bontang in Numbers, 2018). A total of 397 fishery households cultivating seaweed in Bontang City in 2015 resulted from seaweed production was 1461.6 tons (BPS, 2015). The Tihik-Tihik and Malahing Villages are floating villages in the waters of Bontang, East Kalimantan, which develop seaweed cultivation. Kampung Tihik-Tihik is supported by waters suitable for cultivating seaweed, and almost all people depend on their livelihood by cultivating seaweed and then marketed both locally and outside the region. (Fahrizal, 2008).

The low level of welfare in the seaweed farming community can be seen in the low income and weak "bargaining position" in almost every transaction of their economic life, as well as the high risk that must be borne because the nature of wet fish causes small fishermen only to receive low sales yields and sometimes even suffer losses. An effort made by a seaweed farmer must produce sustainable profits. Therefore, it is necessary to do a business analysis. Business analysis is a way to determine the feasibility level of a type of business. The purpose of business analysis is to determine the level of profit, return on investment, and the business's break-even point. In addition, to anticipate improving and increasing the profits of a business. (Oktariza. 2006). Thus, business analysis on seaweed farming is very necessary considering the business's uncertainty, especially seaweed cultivation, which is strongly influenced by water quality, pests and diseases, and seasonal conditions.

From this description, it is very important to conduct a study of the Profit analysis, R / C (Revenue Cost Ratio), and the pattern of seaweed marketing channels in Tihik-

Tihik Village, Malahing Village, Bontang City, East Kalimantan.

METHOD

The unit of analysis in this research is seaweed fishermen and sampling using the census method, namely fishermen in Tihik-Tihik Village who try to cultivate seaweed as many as 38 people and fishermen in Malahing Village who try to cultivate seaweed as many as 34 people. The data taken is primary data, namely data obtained from respondents or based on field observations, namely making observations or direct visits to the field to see cultivation activities. The analysis used in this research is business analysis, which is a short-term analysis or analysis conducted to determine the amount of profit obtained from business activity within one year. The business analysis method consists of Cost, Revenue and Revenue Analysis, and revenue cost ratio (R / C) analysis.

Cost, Revenue and Income Analysis

The total cost component consists of variable costs (variable costs) and fixed costs. Variable costs are costs that change in total proportionally to changes in inactivity. In other words, variable costs are costs whose magnitude is influenced by the number of products produced, but variable costs per unit are constant. While costs are always fixed as a whole without being affected by the level of activity (Garrison and Noreen 2001). This analysis is done by doing

calculation:

a. Total Cost TC = VC + FC

TC = total cost / total cost VC = variable cost / variable cost FC = fixed cost

b. Total receipts TR = P. Q

TR = total revenue / total revenue P = selling price per unit (kg) Q = number of products sold (kg)

c. Total Income = TR – TC

Revenue Cost Ratio (R / C) analysis.

To measure the level of business efficiency, the Return Cost Ratio (R / C Ratio) analysis is used.

Namely, the ratio or ratio between revenue and costs. Mathematically it can

written as follows:

R/C Ratio = $\frac{TC}{TR}$

the following test criteria:

If the R / C Ratio> 1, then the seaweed business is efficient and profitable.

If R / C Ratio = 1, then the seaweed business is not profitable and does not lose (break-even).

If the R / C Ratio <1, then the seaweed business is inefficient and not profitable.

RESULT

Research Location Overview

The city of Bontang is relatively strategic, on the axis of the Trans-Kalimantan road and through the Makassar Strait shipping route. Astronomically, Bontang City is in the position of 1170 23 '- 1170 38' East Longitude, and 00 01 '- 00 14' North Latitude. The administrative boundaries of the city are as follows: North: With the district. Sangatta - East Kutai Regency, Eastside: By Makassar Strait, Southside: By Kec. Marangkayu - Kutai Kertanegara Regency, Westside: By Kec. Sangatta - East Kutai Regency. Administratively, Bontang City is divided into 3 districts, North Bontang, South Bontang, and West Bontang. Overall, the area of Bontang City reaches 497.57 km2, where most of it is water area, while the land area is only about 29%. The largest land area is in South Bontang District, around 70.6% of the land area of Bontang City (Bontang in Figures 2007). With the vast water area in Bontang City, it is no wonder that Bontang City has abundant water resources. This also makes Bontang City have several islands and small villages in the middle of the waters, one of which is Malahing Village.

Malahing Village is one of the villages located above the coastal waters of Bontang City. Administratively, this village is included in the area of Tanjung Laut Indah Village, South Bontang District. Geographically, Kelurahan Tanjung Laut Indah has territorial boundaries as follows: In the north, it is bordered by Kelurahan Bontang Kuala and Kelurahan Api-api, in the south by Kelurahan Berbas Pantai, in the west bordering Kelurahan Tanjung Laut and in the east bordering the Makassar Strait

Kampung Tihik-Tihik is also a fishing village located above sea waters. Kampung Tihik-Tihik is included in the area of Bontang Lestari Village, South Bontang District. This sub-district has an area of 8,192 ha, with the distance between the Kelurahan and the Central Bontang Selatan District Government, which is ± 15 km² or ± 20 km² from the Central Government of Bontang City. Bontang Lestari Village has 18 Neighborhood Associations (RT), one of which is RT 17, which is the Tihik-Tihik Village. Geographically, Kampung Tihik-Tihik has boundaries as follows: North: Kedindingan Island, South: Ladder Hamlet, West: Panjang Island, and Next to TimuR: Beras Basah Island.

Kampung Tihik-Tihik is led by an RT leader named Muslimin. The population of Kampung Tihik-Tihik is around 177 people consisting of 102 men and 75 women. The population comes from 47 families spread across the village. The composition of the population based on the age group in Kampung Tihik-Tihik also consists of 3 groups, namely the unproductive age group (0-14 years) totaling 63 people (35.59%), the productive age group (15-64 years) totaling 108 people (61, 02%) and the unproductive age group (65 years and over) amounted to 6 people (3.39%) of the total population.

The word Malahing comes from the language of the Mamuju tribe, which means I come and go home, back and forth to that location (malai means to go home). Malahing Village is inhabited by only 50 families. The houses in this village are made high (houses on stilts) so that water does not enter the house even at the highest tide. The road in Malahing Village is only made of ironwood. The only way to get to Kampung Malahing is by boat, which can be taken about 15-30 minutes from Tanjung Laut port, depending on the tides and the type of boat used.

Kampung Malahing has inadequate public facilities. The lack of facilities in Malahing Village has

forced some schoolchildren to cross ashore in order to pursue higher levels of education. The facilities and infrastructure in Malahing Village consist of a place of worship, a school, a meeting hall, a Bontang Pupuk Kaltim (PKT) aid toilet, and a place for drying seaweed. Meanwhile, for health facilities, it is only a routine check once a month, which is held by a group of doctors in the Bontang area.

Seaweed Production

Seaweed cultivators in Kampung Tihik-Tihik and Kampung Malahing generally plant using the long-line method. This method is very suitable for waters in locations that have the characteristics of a sandy bottom substrate derived from coral fragments. The longline cultivation method is very popular with the people of Kampung Tihik-Tihik and Kampung Malahing because the construction preparation is relatively easy, and the costs are not too expensive. The location is free from pollution, not a shipping lane and fish catching area.

Production cost

Based on the results of research conducted at the two research locations, it is known that the costs incurred consist of investment costs and operational costs. The details of these costs are:

Investment Costs

The investment cost incurred by seaweed cultivators in Tihik-Tihik Village is IDR 8,243,542 / respondent with an average number of lines of 10 and a length of 90 meters per route, and the technical service life of the equipment is 1 to 5 years.

Operational and Maintenance Costs

According to Ibrahim (2003), operational costs are all costs incurred during the production process. These costs are routinely incurred, such as the purchase of raw materials, fuel, working capital, and various other costs according to the cost requirements of each project. In the seaweed cultivation business in Tihik-Tihik Village, the fixed costs come from equipment depreciation costs, engine and boat maintenance costs, and the cost of routine engine oil changes. Fixed costs in Kampung Tihik-Tihik are IDR 844,546,066

Kampung Tihik-Tihik, variable costs include the cost of gasoline, consumption, and cigarette costs, as well as the cost of raffia rope. The variable cost of Kampung Tihik-Tihik is IDR 2,095,000. Meanwhile, the total operational and maintenance costs incurred by cultivators in Tihik-Tihik Village were IDR 17,060,230.30 / year. Investment costs are not incurred annually because the equipment used is not purchased every year. The types of investment equipment required in this business include cultivation construction using the long line method (10 mm and 6 mm diameter nylon ropes, 6 iron rods, ice-wax plastic ropes, floats from plastic drink bottles), boats, knives/machetes, and seeds. The total investment cost in the seaweed business in Malahing Village is Rp. 9,936,770.14 / respondent.

Operational and Maintenance Costs

Fixed costs are costs that are fixed in number, do not increase or decrease even though the number of products produced changes. In seaweed farming in Malahing Village, fixed costs come from equipment depreciation costs, engine and boat maintenance costs, and the cost of routine engine oil changes. The fixed costs in Kampung Malahing are an average of Rp. 4,116,933.74 / year.

Variable costs are costs that are not fixed and can change according to the number of products produced. In Malahing Village, variable costs include the cost of gasoline, consumption, seeds, and the cost of using plastic popsicles (binders). Malahing Village's variable fee is Rp. 18,635,630.37 / year. Meanwhile, the total cost consisting of operational and maintenance costs incurred by the cultivators in Malahing Village was Rp. 22,752,564.10 / year.

Price and Production

The selling price of dried seaweed per kg in Kampung Tihik-Tihik is an average selling price of IDR 8,000 / kg. The end result of a production process is a product (output). Production means to use; with this understanding, it can be understood that production activities are the combination of various inputs to produce output (Soekartawi, 2003). The cultivator has 10 lines and an average line length of 90 meters (9 x 3m x 90m = 0.243 ha), with an average production per cultivator of 600 kg, 3,000 kg/year of seaweed. The total production total in the seaweed cultivation business in Malahing Village is an average of 2,600 kg/year. The selling price of seaweed is relatively constant regardless of the amount of production achieved; in Malahing Village, the selling price is Rp. 10,470.59 / kg.

R / C Analysis (Revenue Cost Ratio Analysis)

Analysis of R / C (Revenue Cost Ratio Analysis) seaweed business in Malahing Village as follows:

R / C = TR / TC

$$R/C = \frac{TR}{TC}$$

$$R/C = \frac{27.223.534\ /YEAR}{22.752.564{,}10\ /YEAR} = 1{,}20$$

R / C = (27,223,534 / year) / (22,752,564.10 / year) = 1.20

Based on the analysis of R / C > 1, it can be interpreted that the seaweed business in Malahing Village is profitable. From the analysis, it is obtained a value of 1.20 which indicates that for every one rupiah spent, the cultivator will generate an income of Rp. 1,20

Analysis of R / C (Revenue Cost Ratio Analysis) seaweed business in Tihik-Tihik Village as follows:

$$R/C = \frac{TR}{TC}$$

$$R/C = \frac{24.000.000\ /YEAR}{17.060.230{,}30\ /YEAR} = 1{,}41$$

R / C = TR / TC

R / C = (24,000,000 / year) / (17,060,230.30 / year) = 1.41

17,060,230.30

Based on the R / C analysis, the value is 1.41> 1, meaning that the seaweed cultivation in Tihik-Tihik Village is profitable; it also shows that every one rupiah spent, the cultivator will generate an income of Rp. 1,41

Profit Analysis

The results of the profit analysis show that the seaweed business in Malahing Village is able to provide an

average income of Rp. 4,470,969.90 / respondent / year. The main goal in a business is to make a profit. The more benefits that are obtained, the more the business will develop with Tutupary (2013) in Safni and Arief (2018). This revenue can be obtained from the calculation of the total revenue obtained from the sale of the resulting seaweed less than the total costs incurred during the production period. In detail, it can be seen as follows:

л = TR - TC

= IDR 27,223,534 / year - IDR 22,752,564.10 / year

= Rp. 4,470,969.90 / year

The large profits from the seaweed cultivation in Tihik-Tihik Village are obtained based on the difference between sales revenue per year and total operational costs per year. Based on the analysis, the profit (Profit) obtained is Rp. 6,939,769.70 / respondent/year. In detail, it can be seen as follows:

л = TR - TC

= IDR 24,000,000 / year - IDR 17,060,230.30 / year

= IDR 6,939,769.70 / year

Marketing

Marketing is generally considered as the process of the flow of goods. There are 3 patterns of seaweed marketing by farmers in Kampung Tihik-Tihik, namely; Zero level pattern (Producer-Consumer), one level pattern (Producer - Collector - Processing Industry), and two-tier pattern (Producer - Collector - Wholesaler - Inter-island Industry). There are also collectors who directly market seaweed to the seaweed processing industry around Bontang and Samarinda, but this industry is still on a home industry scale. Some are collected by local collectors, then sold to large traders. Then from wholesalers of seaweed products are resold to the seaweed processing industry in Surabaya. The bargaining position of seaweed farmers is low as a result of their strong ties with collector traders who are their regular customers, in this case in the form of capital loans and daily living expenses, so that seaweed farmers tend to be price recipients. (Hamid, SK, 2012).

Marketing is generally considered as the process of the flow of goods. The marketing channel for seaweed by cultivators in Malahing Village. Pattern. The seaweed marketing channel in Malahing Village forms a one-level channel pattern for coverage around Bontang City, Collecting Traders, Bontang City. The dried seaweed produced by the Malahing community is directly sold to collectors in Malahing Village.

Furthermore, these collecting traders will sell to collectors in Bontang City. The marketing of the seaweed business in Malahing Village is still heavily influenced by local collectors, especially in terms of selling prices, because of the strong ties between seaweed farmers and local collectors in terms of business capital loans. Research shows that collector traders do the main trade or in large quantities, not to consumers but rather to wholesalers who are outside the city.

CONCLUSION

Based on the results of the analysis. It can be concluded that the seaweed cultivation in the Tihik-Tihik Village has a profit of Rp. 6,939,769.70 per year, based on the R / C analysis, the value is 1.41. Seaweed cultivation in the Malahing Village earns a profit of IDR 4,470,969.90 per year, based on the R / C analysis, the value is 1.20. Furthermore, there are 3 patterns of seaweed marketing channels in Tihik-Tihik Village, namely; Zero level pattern (Producer-Consumer), one level pattern (Producer - Collector - Processing Industry), and two-tier pattern (Producer - Collector - Wholesaler - Inter-island Industry). The pattern of the seaweed marketing channel in Malahing Village forms a one-level channel pattern for coverage up to around Bontang City, Collector Traders, Bontang City.

In order for the seaweed cultivation business to obtain better and more profitable results, it is necessary to have business capital assistance from the local government, particularly assistance from the Bontang City Marine and Fisheries Service. Then it is still necessary to expand the drying floor so that when the harvest time is not hampered because it has to take turns using the drying floor, and there is a need for an Institutional Seaweed Cultivation Business Group in order for the business results to be managed together.

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