Exploration of Eucheuma striatum Cultivation Using Off-Bottom Method in Marine Area of Kaung Island, Buer Sub-district, Sumbawa Regency

by Aluh Nikmatullah

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Exploration of *Eucheuma striatum* Cultivation Using Off-Bottom Method in Marine Area of Kaung Island, Buer Sub-district, Sumbawa Regency

Nunik Cokrowati [1], Aluh Nikmatullah[2], Sunarpi[3], Zaenal Abidin[1]

1 Aquaculture Study Program, Mataram University
2 Faculty of Agriculture, Mataram University
3 Faculty of Science, Mataram University
Jl. Majapahit No. 62 Tel. (0370) 633007 83125 Mataram
Email: n_cokrowati@icloud.com

Abstract

The objective of this study is to address the suitability of *Eucheuma striatum* cultivation using off-bottom method in marine area of Kaung Island, Buer Sub-district, Sumbawa Regency. This study was conducted from August to September 2014 in marine area of Kaung Island, Buer Sub-district, Sumbawa Regency. The method used for the research was experimental research by creating a demonstration plot of *Eucheuma striatum* cultivation using off-bottom method with a size of 10 m x 10 m. Planting distance between the ropes was set to 1 m, whereas planting distance between *Eucheuma striatum* clumps on a rope was 20 cm. The cultivation took place until *Eucheuma striatum* reached its harvest age which was 36 days. The result of this study shows an increase in *Eucheuma striatum* weight which is 10.77 gr in seven days or from the first day to the seventh day of cultivation. However, from the next day until the day of harvest or the 36th day, there is a decrease in weight caused by falling out thallus. This falling out thallus was caused by large movement of water and water depth that was more than 2 m when water receded. From this result, it can be concluded that off-bottom method cannot be applied in marine area of Kaung Island because of the inappropriateness of water physical condition.

Keywords: *off-bottom, weight, falling out thallus, cultivated, exploration*

1. Introduction

Development of seaweed-based economy has faced a problem regarding quality and quantity of production continuity. This is caused by the lack of seaweed farmers (especially in Sumbawa Island), limited potential area used (56%), cultivation technical problem, cultivation which depends on environmental and climate conditions, and the lack of seaweed seed availability. Cultivation technology applied currently by seaweed farmers is vulnerable to extreme weather conditions such as strong wind, strong current and wave, and increasing temperature (Nurhayati, 2009). Strong wind and La Nina on 2010 and 2011 have become one of causes of the

low seaweed production in Sumbawa Island (Pemda NTB, 2011). This is because the strong wind and strong current cause the loss of seaweed that decreases seaweed productivity, even causes crop failure, and the damage of and runoff of cultivation facilities (Sunarpi et al., 2009, 2010). Therefore, the extension of seaweed cultivation supported by production facility (including seed), and mastery of cultivation technology suitable for location and growing season, together with appropriate understanding about the water environmental condition, are strategic steps to increase the economy of seaweed-based community in NTB. This technology belongs to Universitas Mataram and has been being applied in some locations in NTB including Pengantap, Ekas Bay, Kertasari (Sunarpi et al., 2009, 2010; Nikmatullah, 2012).

The extension of seaweed cultivation can also be done by optimizing marine area for seaweed cultivation. Intertidal zone has not been being utilized for aquaculture activity even though this kind of area can be used for seaweed cultivation using off-bottom method. This also happens in intertidal zone in marine area of Kaung Island, Sumbawa. The objective of this study is to address the suitability of *Eucheuma striatum* cultivation using off-bottom method in marine area of Kaung Island, Buer Sub-district, Sumbawa Regency.

2. Methodology

This study was conducted from August to September 2014 in marine area of Kaung Island, Buer Sub-district, Sumbawa Regency. Method used for this study was experimental research by creating a demonstration plot for *Eucheuma striatum* cultivation using off-bottom method with a size of 10 m x 10 m. Planting distance between the ropes was set to 1 m, whereas planting distance between *Eucheuma striatum* clumps on a rope was 20 cm. The cultivation took place until *Eucheuma striatum* reached its harvest age which was 36 days.

The increase of weight of *Eucheuma striatum* was measured every 7 days. Twelve *Eucheuma striatum* clumps from each rope were taken to be weighed. Each clump was weighed and its weight was recorded. Total sample weight taken from one rope was then averaged. *Eucheuma striatum* that had been weighed was then marked and replanted, and this replanted *Eucheuma striatum* was then reweighed.

The data of *Eucheuma striatum* weight increase were calculated using the following formula:

Increase of weight = weight on t (time) – initial weight

3. Result and Discussion

The result of this study shows an increase in *Eucheuma striatum* weight which is 10.77 gram in seven days or from the first day to the seventh day of cultivation. However, since the fourteenth day of cultivation, the weight starts to decrease that is 10.63 gr due to falling out thallus. From the next day until the day of harvest or the 36th day, there is a dramatic decrease in weight that is 93.26 gram as shown in table 1. The falling out thallus was caused by large movement of water and water depth that was more than 2 m when water receded.

Table 1. : Growth of *Eucheuma striatum* from August to September Cultivated using Off-bottom Method for 36 Days in Marine area of Kaung Island

Parameter	Day					
	0	7	14	21	28	36
Weight (g)	100±0	110±2.12	89±3,23	54±3.81	37±3,89	7±2,36
Increase of weight starting from day 0 (g)	0	10.77	-10.63	-45.872	-63.047	-93.256

Eucheuma striatum cultivated using off-bottom method still has an increase in weight. This is shown by thallus candidate that has nodules on the surface of the thallus. However, falling out thallus caused by relatively large water movement leads to decreasing weight of *Eucheuma striatum*. In fact, the intertidal zone in marine area of Kaung Island is still 2 meters underwater during the ebb. This condition is actually good for the growth of *Eucheuma striatum*, but it will be a problem for the construction of off-bottom and its maintenance. Therefore, the cultivation of *Eucheuma striatum* will not be economic if its maintenance still uses a boat. It is expected that the application of off-bottom method can reduce production cost

because there is no need to use boat and fuel for the boat. The location of seaweed cultivation on off-bottom is expected to be reached by foot.

4. Conclusions and Implications

According to the result of this study, it can be concluded that off-bottom method cannot be applied in marine area of Kaung Island because of the inappropriateness of water physical condition.

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References

Nurhayati. (2009) Rising sea temperature, bad news for seaweed farmers. The Jakarta Post.

Nikmatullah A., Ghazali M., Kurnianingsih R., Sunarpi. (2012) Species improvement towards improved adaptation of *Eucheuma*/*Kappaphycus* spp/ tp mitigate climate changes. Climate Change Adaptation Project, CSIRO, Mataram.

Pemda NTB.(2011). Evaluasi dan Pencapaian Program Pijar NTB.

Sunarpi, Mursal Ghazali, Rina Kurnianingsih, Aluh Nikmatullah. (2012) Diversity and 80
Distribution of *Eucheuma*/*Kappaphycus* in West Nusa Tenggara. 2nd South China Sea Conference, Kuala Lumpur, Malaysia.

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