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PLANTING OF RHIZOPORA TYPES IN MANGROVE FORESTS PERCUT SEI TUAN NORTH SUMATERA

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Abstract

Mangrove forest is a tropical beach vegetation community dominated by several tree species that can grow and develop in tidal and muddy beaches. Some mangrove areas recently have been damaged due to illegal activities carried out by various parties, one of which is the East Coast of Sumatra in the Sub District Percut Sei Tuan, Deli Serdang District, Province of North Sumatra. The purpose of the activities is to focus on replanting mangrove lands that have been damaged by local species. The growned in Tanjung Rejo Village Percut Sei Tuan buds are like Rhizopora stylosa, Rhizopora apiculata and Avicennia marina type. Percentage of growing plants were R. stylosa (92.37%), R. apiculata (90%), mixed propagules of R. stylosa and R. apiculata (90%) and A. marina (56%) respectively. Overall the rehabilitation of mangrove forest is categorized as successful, but only one species of the smallest growing with percentage is A. marina (56%) this is because the location of planting is adjacent to the sea where the plants can not stand the tidal currents.

Keywords: planting, *R. stylosa, R. mucronata, A. marina*

1. INTRODUCTION

Mangrove forest is a tropical beach vegetation community dominated by several tree species that can grow and develop in tidal and muddy beaches. Mangrove forests are found in beaches, shallow bays, estuaries, delta and sheltered coastal areas. The mangrove ecosystem in Indonesia has the highest biodiversity in the world with a total of approximately 89 species consisting of 35 plant species, 9 species of shrubs, 9 liana species, 29 epiphytic species and 2 species of parasites (Nontji, 1987). The mangrove function is very large to life on land, such as withstand tidal waves, abrasion, and sea water intrusion (Hogarth, 1999 in Poedjirahajoe 2015). The importance of function is often not realize with the people who lived around the coast proved by way of utilization of mangrove which is less attention to conservation aspects. Excessive exploitation leads to damages that are fatal to the sustainability of the ecosystem in the future. Some mangrove areas recently have been damaged due to illegal activities carried out by various parties, one of which is the East Coast of Sumatra in the Percut Sei Tuan District, Deli Serdang Regency, Province of North Sumatra. This area is important for rehabilitating with mangrove plant species to maintain local ecological conditions. The purpose of the activities is to focus on replanting mangrove lands that have been damaged by local species. The growned in Tanjung Rejo Village, Percut Sei Tuan buds are like *Rhizopora stylosa, Rhizopora apicula* and *Avicennia marina type.*

A. Location and Time

Community service with the scheme of young lecturers is executed from July to November 2017. At the location of partners of Mandiri Group and Bakti Nyata Group in Tanjung Rejo Village, Percut Sei Tuan

B. Tools and Materials

The plant species are *Rhizophora stylosa, Rhizophora mucronata, A. marina*. Research equipment are digital caliper, meter, camera to document activities and research objects, field books and stationery.

C. Research Methods

Percent Measurement Calculation of plant life percent is done by using the following formula
Where:

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Pi = Percent grow crop
ni = Number of live plants in census field
n = Number of plants that should exist (according to spacing)

2. METHODS

Subdistrict, Deli Serdang District, Province of North Sumatra. Mandiri Group and Bakti Nyata Group is basically a self-help group of people engaged in the rehabilitation of mangrove land and most of the work is fishermen and fish farmers. Based on these calculations Shofiyah (2005) divide 3 classifications percent of plant life are :

1. Percent of basic crop life <55% = failed
2. Percentage of basic crops 55 -76% = quite successful
3. Percentage of live crops> 76% -100% = successful

3. RESULTS AND DISCUSSION

Rehabilitation of mangroves in Tanjung Rejo Village with 4 tree species ie *R. stylosa, R. apiculata, A. Marina* and propagul *R. stylosa* and *R. apiculata*. The growing percentage of each tree can be seen in detail in Table 1.

Table 1. Percentage of plant growth of each planted mangrove tree

No	Species	Planted	That Grows	The dead	percent of growth	Indicator
1	*R. stylosa*	800	739	41	92,37 %	Successful
2	*R. apiculata*	800	720	80	90 %	Successful
3	*A. Marina*	800	450	350	56 %	quite successful
4	Propagul	1000	900	100	90 %	Successful

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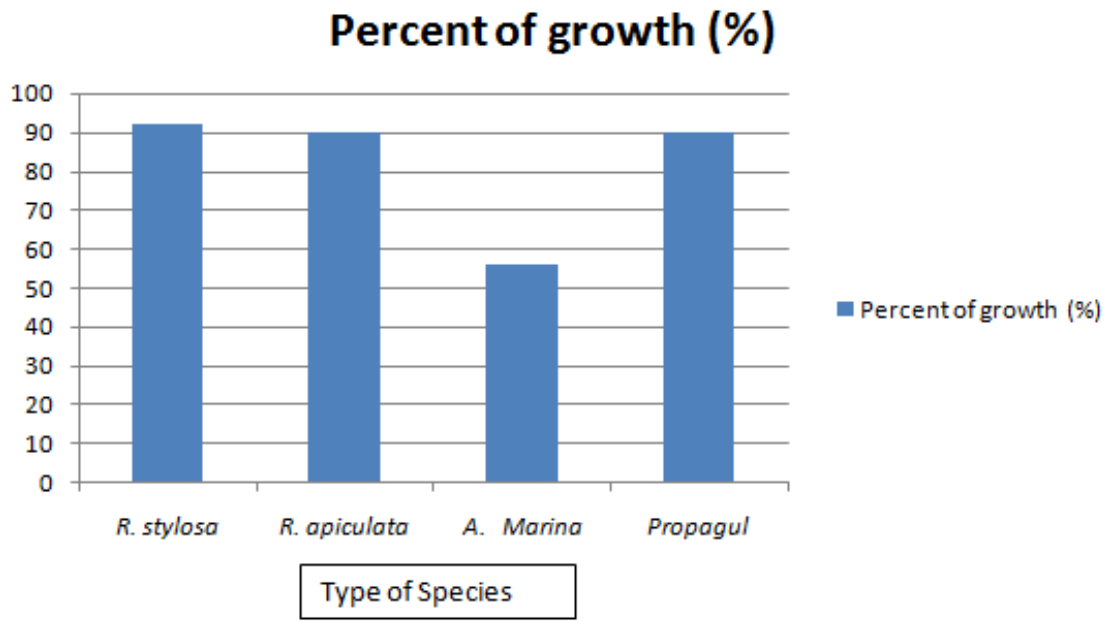

Figure1. Percentage growth of species Rhizopora at Paluh Getah Tanjung Rejo Village

A. Planting of *Rhizapora apiculata* seedlings

Planting of *Rhizapora apiculata* seedlings along of Paluh Merbau River Tanjung Rejo Village Percut Sei Tuan were
the height is about 70 cm to 100 cm. Planting seeds done in the morning before the tide. The total of *Rhizapora apiculata* seeds in this river stream is 800 sedlings. Planting is done by Mangrove Rehabilitation Group of Tanjung Rejo Village Kec. Sei Tuan. The spacing is about 1.5 meters x 1.5 meters. Then every week was treated. Percentage grows of *R. apiculata* plants is about 90% of this is stated successful planting.

Figure 2. Planting of *R. apiculata* along the Paluh Getah of Tanjung Rejo Village

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B. Planting of *Rhizapora stylosa* seedlings

Planting seedlings *R. stylosa* done on pond land as the people of Paluh Getah use. The total of seedlings planted as many as 800 seedlings. High seedlings range from 60 cm to 90 cm with a spacing of 1.5 meters x 1.5 meters. where maintenance is done every week and planting is done by Mangrove Rehabilitation Group Tanjung Rejo. The planted tree is expected to grow well so it can restore the function of Mangrove ecosystem. The roots of *Rhizapora stylosa* usually bound the existing around the mud. So, sea water abrasion can be reduced. The presence of the Rhizapora tree will be decomposed by the decomposer in the form of Mikrofauna and microfauna. this condition also invited by itself a stable ecosystem. As ecosystem characterized by the emergence of various types of crabs and fish. If the ecosystem is good then the ecological and economic functions of the Mangrove area will increase.

Figure 3. *R. stylosa* planting in Tambak land, Paluh Getah , Tanjung Rejo Village

Percentage of crops reached 92.37% (739 stems) and this was declared successful. Of the total seedlings planted only about 17.63 (41) stems that experienced death. Death of the plant is caused by the rapid tidal factor of sea water so that some plants can not survive.

C. Planting of *Avicennia marina*

A. marina planting is done at the seaside of the Sei Tuan. The located is also use as Mangrove tour. The total of seedlings planted by 800 stems based on interviews with the local community. last time the location of avicenia habitat but due to damage to coastal ecosystems are reduced because of the re-planting avicenia back in the same habitat is expected later ecosystems recovered, planting done by enriching methods. Spacing is not specified, planting is done in rarely place with crops. A. marina is naturally a vegetation located in the zone closest to the sea and planting should be based on zoning so that the success of rehabiliation can be increased.

Figure 4. Planting *A. marina* at seaside of the Percut Sei Tuan

The percentage growing smallest were founded in *A. marina* only 56% (450 seedlings). The highest number of deaths occurred in Avicennia marina by 44% (350 seedlings). This is because *A. marina* is unable to reside with the rapid tidal water. Therefore needed a technology for rehabilitation of mangrove land which adjacent to the sea. So, that plant growth percentage can be improved.

D. Planting of *Rhizapora stylosa* Propagules

The planting is done on the groove of the Percut Sei Tuan by planting on vacant lands. The addition of the total and types of plants around the river channel giving the function as watershed and enrichment of this species can improve the functioning of ecosystem, so that the various types of vegetation will invite the upcoming migratory bird species in the habitat. The total of propagules planted are about 1000 stems. The planting of propagules is used to keep the tidal propagules in the ground. Usefulness of the arc to withstand propagules from water shocks. The percentage of propagules growned by *R. apiculata* and *R. stylosa* is about 90% (900

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propagules). The percentage of death of propagules is only 10% (100 propagules).

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