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# FACTORS AFFECTING SEAWEED CULTIVATION PRODUCTION IN PEKALONGAN DISTRICT, CENTRAL JAVA PROVINCE

## Faktor-Faktor Yang Mempengaruhi Produksi Budidaya Rumput Laut di Kabupaten Pekalongan Provinsi Jawa Tengah

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**ABSTRACT**

Seaweed is a fishery product that is widely used in various industries, including food, cosmetics, feed and others. Seaweed production does not always increase according to the target but there are several declines, such as in Pekalongan Regency in 2018, there was a quite drastic decline compared to the previous year. The aim of this research is to analyze the factors that are thought to have caused a decline in seaweed production in Central Java Province, especially in Pekalongan Regency. The research method used in the research is secondary data obtained from the Pekalongan Regency Central Statistics Agency. The results of the analysis that have been carried out show that there are several factors that have caused the decline, including tidal waves that occurred in 2017-2018, a decrease in the number of ponds owned by the community, and an erosion rate that is estimated to occur at 0.5 m per year. Decline in seaweed production in Pekalongan Regency is caused by several factors including abrasion, tidal waves, and a decrease in the number of ponds owned by the community in the Pekalongan Regency.

Key words: Pekalongan district, production, seaweed

**ABSTRAK**

Rumput laut merupakan salah satu hasil perikanan yang banyak sekali dimanfaatkan dalam berbagai idnustri baik pangan, kosmetik, pakan, dan lainnya. Produksi rumput laut tidak selalu meingkat sesuai target tetapi terdapat beberapa penurunan seperti di Kabupaten Pekalongan pada tahun 2018, terjadi penurunan yang cukup drastis disbanding tahun sebelumnya. Tujuan penelitian ini yaitu mengalisis faktor-faktor yang diduga menyebabkan terjadi penurunan produksi rumput laut di Provinsi Jawa Tengah khususnya di Kabupaten Pekalongan. Metode penelitian yang digunakan dalam penelitian yaitu menggunakan metode kualitatif dari data sekunder yang didapatkan dari Badan Pusat Statistik Kabupaten Pekalongan. Hasil temuan yang telah dilakukan menunjukkan bahwa terdapat beberapa faktor yang menyebabkan terjadinya penuruan antara lain rob yang terjadi pada tahun 2017-2023, penurunan jumlah

tambak yang dimiliki masyarakat, dan laju abrasi yang diperkiarakan terjadi sebesar 0,5 m per tahun. Penurunan produksi rumput laut di Kab. Pekalongan disebabkan oleh beberapa faktor diantaranya abrasi, rob, dan penurunan jumlah tambak yang dimiliki oleh masyarakat di Kab. Pekalongan.

Kata Kunci: produksi, rumput laut, kabupaten pekalongan

## INTRODUCTION

Indonesia is a maritime country that has great potential in cultivation activities, especially in marine waters. As many as two-thirds of Indonesia's territory is dominated by sea waters. The area of Indonesian sea waters is estimated to reach 2.7 million km2. One commodity that has the potential to be developed in cultivation activities is seaweed (Amor & Andriana 2023). Seaweed is a type of macroalgae that is similar to plants that live in the sea (Putri et al., 2023). According to Amor & Andriana (2023), the potential area of sea waters for seaweed cultivation is 1,380,931 hectares. The potential ocean areas for seaweed cultivation are almost all waters in Sumatra, Java, Bali, Nusa Tenggara, Kalimantan, Sulawesi, Maluku and Papua.

Seaweed contains nutrients that are good for the body and are quite complete. The nutrient content of seaweed includes protein, carbohydrates, enzymes, vitamins, fiber and macro minerals (Fatonny et al., 2023). This makes seaweed potential for cultivation because it can be used as a mixture in various industrial activities. In general, derivative products from seaweed commodities can be grouped into feed, food, fertilizer, pharmaceuticals and cosmetics. The high utilization of seaweed causes seaweed to have great potential not only to meet the domestic market but also foreign markets (Fatonny *et al.,* 2023).

Lacut grass production tends to increase every year, especially on the island of Java. Seaweed production on the island of Java in 2017, 2018, 2019, 2020, 2021, and 2022 respectively is 717,545.26 tons, 867,849.72 tons, 919,857.31 tons, 937,640.76 tons, 909,161.00 tons, and 917,314.17 tons (KKP 2023). When referring to seaweed production data throughout Java, seaweed production tends to increase from year to year. Meanwhile, if you look at Central Java Province, especially Pekalongan Regency, there was a fairly drastic decline in production from 2017 to 2018. According to Mapparimeng et al., (2019) the decline in seaweed production in Sinjai Regency is caused by complex factors including interactions between bio-physical factors in an ecosystem. Therefore, as initial research, the aim of this research is to analyze the factors that are thought to have caused a decline in seaweed production in Central Java Province, especially in Pekalongan Regency.

## METHODS

This research uses secondary data regarding the amount of seaweed production in Kab. Pekalongan from 2017-2023 obtained from the District Statistics Agency. Pekalongan (BPS Pekalongan Regency, 2023) and from Statistical Data from the Ministry of Maritime Affairs and Fisheries (KKP, 2023) in the form of data on the amount of seaweed production in Central Java. According to Triono & Sangaji (2023) research using secondary data is carried out by emphasizing the phenomena that occur using a qualitative descriptive approach.

## RESULT

The following is secondary data regarding the amount of seaweed commodity production in Central Java Province which can be seen in the image below:

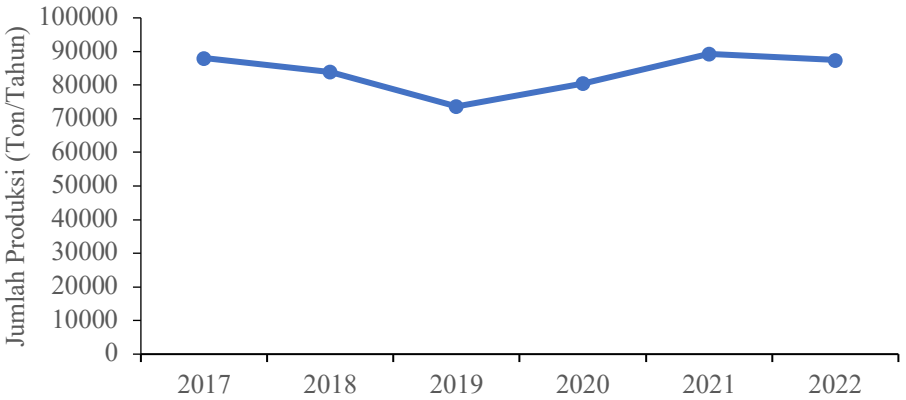


Fig 1. Total seaweed production in Central Java

Based on data from Figure 1, it can be seen that there was a decline in seaweed production in Central Java Province from 2018 to 2019. In 2018 it experienced a decline from 2017 from 87,977.87 tonnes to 83,927.87 tonnes. Then there was a decline again in 2019 to 73,658.97 tons. An increase in the amount of seaweed production occurred in 2020.

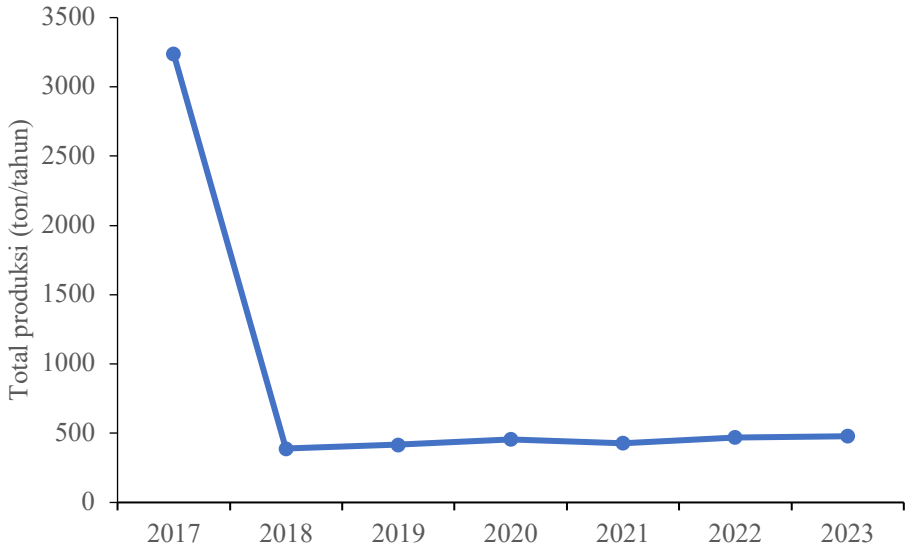


Fig 2. Total seaweed production in Pekalongan Regency

Based on Figure 2, it can be seen that the amount of production decreased very drastically from 2017 to 2018, namely from total production of 3,238.3 tons to 389.5 tons. Furthermore, in 2018 the amount of seaweed production in Kab. Pekalongan is in stable condition and only has very small fluctuations.

## DISCUSSION

Seaweed production in Central Java Province experienced a decline in 2019, one of which is suspected to be the presence of diseases and pests in seaweed such as ice-ice, hair moss and algae. One of the most detrimental is hair moss which appears during the rainy season. This is related to the flow of river water entering the pond which can accelerate the growth of hair moss (Sitompul et al., 2022). Sufficient and not excessive rainy season is the right time to start seaweed cultivation activities. When rainfall is sufficient and not excessive, it can help in the pH neutralization process in ponds. Apart from that, water pollution is also

one of the things that causes a decrease in seaweed cultivation production (Halid & Patahiruddin 2020).

The decline in seaweed production can also be caused by the suitability of selecting locations for seaweed cultivation activities. Cultivation activities in ponds that are quite high should be followed by environmental carrying capacity so that environmental degradation does not occur so that it can provide benefits for pond farmers (Kusumaningrum et al., 2016). Continuous use of ponds causes environmental degradation which is characterized by a decrease in water quality. Various environmental problems faced include regional and spatial planning related to the development of cultivation activities which do not fully take into account the carrying capacity of the environment. This causes environmental problems to arise in the long term (Kusumaningrum et al., 2016). Based on this, from 2017 to 2018 there was a decrease in the number of pond owners in the district. Pekalongan. In 2017 there were 1,508 pond owners, but in 2018 there were only 893 people. This is thought to be one of the things that caused the drastic decline from 2017 to 2018 (Figure 1). Number of sub-districts in Kab. Pekalongan had the largest number of ponds in 2018, namely Wonokerto sub-district with 629, Siwalan sub-district with 144, and Tirto sub-district with 120. (Satu Data Indonesia, 2022).

Low productivity can be caused by a decrease in the carrying capacity of the pond environment. Apart from that, the decline in the quality of seaweed seeds can also have an impact because there is no replacement of new seaweed seeds and seaweed cultivation technology has not yet developed (Kustiari et al., 2017). Several efforts have been made to increase production and land use efficiency, namely by carrying out polycultural activities. The polyculture carried out is a combination of milkfish and seaweed (Samidja et al., 2021). The existence of polyculture cultivation methods is one of the importance of education and improving the quality of human resources in implementing efficient cultivation methods (Mardiana et al., 2023). According to Rohman et al., (2018), one of the important factors in cultivation activities is the condition of the cultivation location. The suitability of location characteristics for seaweed cultivation can be seen from the condition of the water substrate, water depth, salinity, and community activities around the cultivation location.

The decline in the number of seaweed cultivation ponds is also caused by environmental changes such as abrasion. According to Sufyan et al., (2020) the annual abrasion rate at Wonokerto Kulon Beach, Central Java is 0.5 m per year. This is thought to be one of the factors in reducing the amount of seaweed production in the district. Pekalongan in 2018. Abrasion can occur due to large wave cycles, abrasion is also the impact of mangrove logging, and human activities on the coast such as changing coastal land into ponds. Abrasion causes problems and losses to both ecosystems and coastal settlements, so preventing it is important (Akbar et al., 2017). Apart from abrasion, tidal waves are also one of the factors causing the reduction in the number of ponds in the district. Pekalongan. Based on existing data, there has been a decrease in the area of land for cultivation activities starting from 2017 covering an area of 6,293,000 m2 to 6,193,000 m2 in 2018 and continuing to decline until 2020 to an area of 3,704,000 m2 (Izzah, 2022). According to Antari & Utama (2019) weather changes are also among the factors that greatly influence seaweed production.

## CONCLUSSION

Decline in seaweed production in Kab. Pekalongan is caused by several factors including abrasion, tidal waves, and a decrease in the number of ponds owned by the community in the district. Pekalongan.

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