

# Discussion Cultivate the Nutrients in The Sea

Yangyang Liu

Institute of Land Engineering and Technology, Shaanxi Provincial Land Engineering Construction Group Co., Ltd. Shaanxi Provincial Land Engineering Construction Group Co., Ltd. Shaanxi Provincial Land Consolidation Engineering Technology Research Center, Shaanxi, China

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**Abstract:** As an important reserve land resource, beachfront mudflats have been extensively reclaimed over the past few decades. In recent years, more and more research has begun to close Note the improvement of the overall environmental quality of the soil, including soil biological properties, in the process of beach land utilization. Among them, soil enzymes are soil biological activities The activity level of the product is a good biological indicator of soil environmental quality, which can be used to evaluate the effectiveness and sustainability of soil salinity and management measures Sex. Based on this, the mudflat soil is comprehensively described from four aspects: different utilization methods, different vegetation cover, different utilization years and the input of exogenous pollutants The changes of loam enzyme species, distribution and enzyme activity summarize the correlation between soil enzyme activity and other substances in tidal flats, and start from the existing problems and hot spots Propose the next research priorities.

**Keywords:** Mudflats, Soil enzymes, Soil enzyme activity.

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## 1. Introduction

With the rapid economic development of coastal areas, the demand for land resources Seeking to grow stronger [1]. China's coastal saline-alkali land has been affected by typhoons and floods for a long time The impact of natural disasters such as waterlogging and drought has kept its land resources unobtained Better use [2]. Coastal saline-alkali tidal flats as an important reserve land resource, It has been heavily reclaimed over the past few decades. Mudflat reclamation activities were revised. The ecosystem of the soil is changed, and the plant growth and soil physicochemical properties are produced This in turn affects soil enzyme activity [3].

Soil enzymes are one of the most active organic components of the soil ecosystem, Soil enzymes are involved in almost all biochemical processes in soil [4], and soil enzyme activity can sensitively indicate changes in soil habitat, which can be used as an important characterization for evaluating changes in soil quality and soil fertility after reclamation [5-6]. The following is a comprehensive description of the types, distribution and enzyme activities of soil enzymes in tidal flats from four aspects: different utilization methods, different vegetation cover, different utilization years and input of exogenous pollutants, and the correlation between soil enzyme activities and other substances in tidal flats is summarized Sex.

## 2. Effects of Different Utilization Methods On Soil Enzyme Activity in Tidal Flats

In recent years, people have paid more and more attention to the use of tidal flats for agricultural production, and some scholars have used cotton, rice, vegetables, and woodland to enclose the mudflats and study the influence of different agricultural and forestry utilization methods on the nutrient characteristics of the reclamation sea. The results showed that cotton and rice fields had higher organic matter, alkali electrolytes, catalase and protease activities than vegetable and forest fields. In contrast, rice cultivation is more beneficial to improve soil fertility levels and maintain soil

quality. In Chongming, other scholars selected experimental sample areas with different agricultural utilization patterns in the embankment and different types of wetlands outside the embankment to understand the soil biological activities and ecological environment effects of different types of tidal flats wetlands, as well as the effects of different agricultural utilization patterns on soil fertility and biological activities of reclamation tidal flats. The results showed that the organic matter content was the lowest in the reed wetland, but the microbial mass and enzymes related to carbon metabolism such as catalase and invertase had the highest activity. The soil organic matter content of alterniflora and reed salt marshes was high, but the microbial weight was low, and the enzyme activity related to nitrogen and phosphorus conversion was higher. Some scholars collected soil samples in salt marsh vegetation and farmland in Yancheng coastal wetland, measured the activities of four soil enzymes (urease, invertase, catalase and alkaline phosphatase), and analyzed the effects of salt marsh vegetation, crops and soil physicochemical factors on soil enzyme activities. [7] The results showed that the soil enzyme activity of various types of farmland formed by the reclamation of coastal wetland tidal flats was higher, which was higher than that of wetland salt marsh vegetation. The activities of soil enzymes in the four soil enzymes under wetland salt marsh vegetation were higher than those in the light beach without vegetation, and the soil enzyme activities were significantly different between different types of vegetation. At the same time, some anthropogenic activities such as grazing also have an impact on soil enzyme activity in tidal flats.

## 3. Effects of Different Vegetation Cover On Soil Enzyme Activity in Tidal Flats

Some scholars selected four uncultivated wetland environments on the south bank of Hangzhou Bay, namely reed, alterniflora sativa, sea plantain and light beach, as the research objects, and believed that the activities of soil phosphatase, urease,  $\beta$ -glucosidase and sucrase were increased to varying degrees after short-term simulated

warming. Bo Schker studied the horizontal distribution of extracellular enzyme activity in sediments in the coastal zone of Lake Gooimeer in the Netherlands, where there was a gradient in organic matter content from the reed bank to the reed belt sediments. [8] Some scholars sampled the soil of the habitat of *Alterniflora alterniflora* along the beach, analyzed the type of microorganisms, soil enzyme activities, and compared it with desalinated paddy soil, it was believed that the higher the organic matter content, the higher the nutrient content, the higher the number of microorganisms, and the higher the number of microorganisms, the higher the number of fibrodegrading bacteria. If the soil nitrogen content is high, the urease activity is high, and the number of nitrogen-fixing bacteria is large; The higher the available phosphorus content in the soil, the higher the phosphatase activity. The use of salinity-tolerant vegetation to construct coastal shelter forests improved soil fertility and soil enzyme activity, improved the ability to conserve water and soil, and improved soil structure and soil microbial community composition. Some scholars have studied the physicochemical properties and enzyme activity characteristics of coastal shelter forests (Zhongshan fir, metasequoia, privet, white ash) and mudflats along the beach. The results showed that the soil enzyme activities of different soil layers were significantly different, and the alkaline phosphatase activities of forest land and tidal flats were significantly different. Some scholars believe that the distribution of nutrient indexes and several major soil enzyme activities in the understory soil of the six shelter forest belts and several major soil enzyme activities except catalase are relatively similar in the soil layer, and the soil enzyme activities in woodland are better than those in tidal flats, indicating that coastal shelter forests can effectively improve soil enzyme activities and thus improve soil fertility.

#### **4. Effects of Different Years On Soil Enzyme Activity in Tidal Flats**

Some scholars took different years of reclamation (7 years, 32 years, 40 years, 63 years) as research objects, and unreclaimed beach flats as a comparison. The results showed that the soil enzyme activities were significantly different with different years of reclamation, among which amylase, dehydrogenase and acid phosphatase showed a trend of first increasing and then decreasing with the increase of reclamation years.

#### **5. Correlation of Soil Enzyme Activity with Other Substances in Tidal Flats**

Some scholars have shown that the activities of alkaline phosphatase and catalase in the surface sediments of Chongming Dongtan Beach increase along the elevation gradient, which is significantly positively correlated with the content of organic matter, total nitrogen and total phosphorus, and negatively correlated with the average particle size of dissolved inorganic phosphorus and sediment. [9] The level of protease activity is determined by the amount of protein in organic matter, and has nothing to do with the total amount of

organic matter. Japanese scientists collected sediment samples from the Banzu tidal flats in the estuarine area and found a positive correlation between cellulase (CEL) and acetylglucosamine (AGA), and a positive correlation with organic matter content and silica content. Where crustacean biomass is high, AGA activity is relatively high. These results indicate that enzyme activity appears to have changed quantitatively and qualitatively, and that the debris and sludge-containing material supplied by organisms can affect enzyme stability. Due to the influence of enzyme activity, the decomposition function is high in tidal flats with high organic matter and silica clay content.

#### **6. Conclusion**

Due to the long-term erosion of seawater, the salt content is high and the utilization value is not high, so scholars have studied the trend of catalase urease activity with soil layer in severe, moderate and mild saline-alkali soil. In addition, it is of great significance to study the types and activities of soil enzymes in the high-salt environment of tidal flats for exploring soil improvement and utilization.

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