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The Formation Mechanism Of Mudflat Soil Aggregates Driven By Exogenous Organic Matters

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Mudflats are valuable land resources located in the interaction zone between land and sea and are found in many parts of the world. The newly reclaimed mudflats are high in salinity and low in fertility as indicated by poor soil structure, extremely low organic matter content, low nutrient level and lack of microbial diversity, which is not suitable for cultivation. The keys to mudflat reclamation to arable lands are (1) to reduce salinity and (2) to increase the soil organic matter content and thus soil fertility. The former determines whether the reclaimed mudflat can be used for crop production and the latter determines whether the crop production is sustainable. On the basis of salt reduction measures, adding exogenous organic matter to drive the formation of soil aggregates in mudflat saline-alkali soil is a prerequisite for inhibiting the return of salt, improving fertility and promoting the transformation of mudflat reclaimed soil into arable soil. Research on the formation of clustered soil aggregates during the evolution of mudflat soil into arable soil should focus on the regulatory, formation, and stability mechanism of different exogenous organic matter. In addition, exploration of the effects of the special properties of mudflat soil, e.g., high salinity, high pH, and low microbial diversity, on the formation and stability of soil aggregates is necessary. The regularity and regulation of soil structure and fertility evolution of the mudflat driven by exogenous organic matter were clarified. Research on soil aggregate formation not only enrich the basic theory of soil quality evolution of mudflat, but also have practical guiding significance for the maturation of mudflat soil.