

## **Effects of poly- $\gamma$ -glutamic acid biopreparation (PGAB) on nitrogen conservation in the coastal saline soil**

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Water leaching is the major method to decrease soil salinity of the coastal saline soil. Conservation of soil nutrition in the soil ameliorating process is helpful to maintain soil fertility and prevent environment pollution. In the experiment, glutamic acid and poly- $\gamma$ -glutamic acid (PGA) producing bacteria were isolated for manufacturing the PGA biopreparation (PGAB), and the effect of PGAB on the soil nitrogen (N) conservation was assayed. The glutamic acid and PGA producing bacteria were identified as *Brevibacterium flavum* and *Bacillus amyloliquefaciens*. After soil leached with water for 90 days, compared to control treatment, salt concentration of 0-30cm soil with PGAB treatment was lowered by 39.93%, however the total N loss was decreased by 65.37%. Compared to control, the microbial biomass N increased by 1.19 times at 0-30 cm soil with PGAB treatment. The populations of soil total bacteria, fungi, actinomyces, nitrogen fixing bacteria, ammonifying bacteria, nitrifying bacteria and denitrifying bacteria and biomass of soil algae were significantly increased in PGAB treatment, while anaerobic bacteria decreased ( $P < 0.05$ ). In addition, the percentage of soil aggregates with diameter  $> 0.25$  mm and  $0.02$  mm  $<$  diameter  $< 0.25$  mm were increased by 2.93 times and 26.79% respectively in PGAB treatment. The soil erosion-resistance coefficient of PGAB treatment increased by 50%. All these suggested that the PGAB conserved the soil nitrogen effectively in the process of soil water leaching and improved the coastal saline soil quality.