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A Review on introducing phosphorus releasing bacteria affecting organic phosphorus compounds in warm water fishponds sediments

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Abstract

The production of warm water fishes in the country accounts for half of the aquaculture products and is one of the most important factors in the development of this industry in the country. Nutrition and growth of these fish are directly and indirectly dependent on the primary production of the ponds. Phosphorus is one of the most important factors affecting primary production in warm water fish ponds but is also one of the major limiting factors of production due to the lack of access by primary producers to this critical element. Because of the type of management conditions governing these ponds, such as organic fertilization, feeding, entry of various organic matter through inlet water and lack of annual dredging, the organic load of sediments is very high and insoluble organic phosphorus forms a large part of total phosphorus in this ecosystems. Today, one of the most important approaches to increase the amount of water-soluble phosphorus using insoluble organic phosphorus sources in sediments is the use of phosphorus-releasing bacteria (PRB). These bacteria dissolve various insoluble organic phosphorus compounds in sediments by various mechanisms, such as secretion of enzymes. The purpose of this study was to introduce and investigate the challenges facing the selection and use of phosphorus-releasing bacteria affecting insoluble organic phosphorus compounds in sediments. Because choosing the right type of insoluble phosphorus source used in the isolation process of these bacteria can be an effective step to improve the performance of introduced bacteria (as biological fertilizers) for use in warm water fish ponds.

Keywords: Biofertilizer, Insoluble organic phosphorus Compounds, Phosphorus releasing bacteria, Sediment of Warm-water fishponds

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