

Nitrogen loss pathways in anaerobic soils and mitigation approaches through inhibitors - a review

ABSTRACT

Nitrogen (N) is the largest yield limiting nutrient in rice cropping. Therefore, efficient N fertilizer management is critical for rice production. Nevertheless, the complex nature of N transformation in soils, has led to low N use efficiency. The lower N use efficiency of fertilizers is a result of multiple loss mechanisms such as volatilization and denitrification and it is a major problem in rice system. Low efficiency of N is not only responsible higher cost of crop production, but also a major threat to environmental quality. The use specially formulated form of fertilizer by supplemented with inhibitors have a great prospect to reduce N losses, improve fertilizer N efficiency and produce positive impact to the environment. This review discusses the N losses pathway in anaerobic rice soil, the effectiveness and mechanism of urease inhibitors as well as nitrification inhibitors to minimize the N loss.

Keyword: Nitrification; Denitrification; Urease; Rice soil