

Improving genetical controlled crop nitrogen use efficiency

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Abstract

Each step of nitrogen (N) uptake, translocation, assimilation, and remobilization in crops is governed by multiple interacting genetic and environmental factors, therefore, crop nitrogen use efficiency (NUE) is inherently complex and shows natural large variations among the germplasms or cultivars. In the presentation, I will introduce the NUE evaluation of core-collection germplasms and landrace cultivars of rice plants grown in paddy field supplied with different levels of N fertilizers at both subtropical and tropical areas. Meanwhile, I will also present the preliminary regulatory mechanisms for enhancing crop NUE. Our results demonstrate that the back and forth between field and lab is essential for breeding future high NUE cultivars to reduce N fertilizer demand.

Keywords: Nitrogen use efficiency, Natural variation, germplasms, cultivars

Guohua Xu, a senior professor in plant nutrition and fertilization. Prof. Xu has published more than 160 research and review articles in peer-reviewed international journals and has been recognized as one of the world's most influential researchers (highly cited researcher 2019) for field of plant and animal science. Prof. Xu chaired the 4th international symposium on nitrogen nutrition of plants in 2019 in Nanjing, China.

Prof. Xu is a National Distinguished Scientist for Agricultural Research in China. Currently, Prof. Xu works in Nanjing Agricultural University, one of the best universities in the field of agriculture in the world (ranking #9 by US News). Prof. Xu is a director of Key Laboratory of Plant Nutrition and Fertilization in Lower-Middle Reaches of the Yangtze River, China Ministry of Agriculture.