Xiaorong Fan

Professor of molecular biology of crop nitrogen nutrition

Address: A708 Resources and environment Building
Phone Number: 025-84396238
Email: xiaorongfan@njau.edu.cn

Education:

- B.S.; Nanjing Agricultural University; 1996
- M.S.; Nanjing Agricultural University; 2003
- PhD.; Nanjing Agricultural University; 2005

Research interests and expertise:

My research mainly focuses on physiology and molecular biology of rice nitrogen nutrient and breeding of nitrogen efficient rice. My work revealed an important pathway of nitrate promotes the efficient absorption and utilization of nitrogen in rice, and clarified the mechanism of nitrogen uptake transport of rice nitrate transport protein OsNRT2 family gene and its interaction protein factor OsNAR2.1 from the molecular level. My research was first discovered that OsNRT2.3b responds to cell pH and regulates cell pH homeostasis. High expression of this gene can significantly increase rice yield and nitrogen use efficiency to about 40%. We also cultivated 12 nitrogen-efficient rice lines by EMS mutagenesis or transgenic.

Current projects:

- National Key Research and Development Program, 2016FYD0100700, the genetic and molecular basis for the formation of high-efficiency utilization traits of major crop nutrients, 2016/07-2020/12, 78 million
- Jiangsu Outstanding Youth Fund, BK20160030, Molecular Mechanism of Rice Nitrogen Utilization, 2016/07-2019/06, 1 million
- Ministry of Agriculture Transgenic special project, 2016ZX08001003-008, Nitrogen and phosphorus efficient use of genetically modified rice new varieties, 2016/01-2020/12, 1.8 million

Current teaching:

- Plant nutrition molecular biology, Graduate courses 2017, autumn term
- Plant nutrition molecular biology, Graduate courses 2016, autumn term
- Plant Nutrition and Molecular Biology Foundation, Undergraduate course 2017, spring and autumn term
- Plant Nutrition and Molecular Biology Foundation, Undergraduate course 2016, spring term

Selected publications:

- Overexpression of a pH-sensitive nitrate transporter in rice increases crop yields. Fan Xiaorong, Tang Zhong, Tan Yawen, Zhang Yong, Luo Bingbing, Yang Meng, Lian Xingming, Shen Qirong, Anthony John Miller, Xu Guohua. Proceeddings of the National Academy of Sciences of the United States of America 28 113(26):7118-23. 2016.
- pOsNAR2.1:OsNAR2.1 expression enhances nitrogen uptake efficiency and grain yield in transgenic rice plants. Chen Jingguang, Fan Xiaoru, Qian Kaiyun, Zhang Yong, Song Miaoquan, Liu Yu, Xu, Guohua, Fan Xiaorong* . Plant Biotechnology Journal 15(10): 1273~1283. 2017.
- Agronomic nitrogen-use efficiency of rice can be increased by driving OsNRT2.1 expression with the

OsNAR2.1 promoter. Chen Jingguang, Zhang Yong, Tan Yawen, Zhang Min Zhu Longlong, Xu Guohua, Fan Xiaorong*. Plant Biotechnology Journal 14(8):1705-1715. 2016.

- Plant nitrate transporters: from gene function to application. Fan Xiaorong, Naz Misbah, Fan Xiaoru, Xuan Wei, Miller Anthony J, Xu Guohua *,Journal of Experimental Botany, 68(10): 2463~2475 2017.
- Overexpression of a High-Affinity Nitrate Transporter OsNRT2.1 Increases Yield and Manganese Accumulation in Rice Under Alternating Wet and Dry Condition. Luo Bingbing, Chen Jingguang, Zhu longlong, Liu Shuhua, Li Bin, Lu Hong, Ye Guoyou, Xu Guohua, Fan Xiaorong*. Front Plant Sci. 9:1192 2018

Prizes, awards, honors:

- 2014 China Industry-University-Research Cooperation Innovation and Promotion Award
- 2015 Jiangsu Science and Technology Award, First Prize
- 2016 Jiangsu Outstanding Youth Fund