

## 植物吸收和转运铁的分子生理机制研究进展

申红芸, 熊宏春, 郭笑彤, 左元梅\*

中国农业大学资源与环境学院植物营养系, 北京 100193

## Progress of molecular mechanism of iron uptake and translocation in plants

SHEN Hongyun, XIONG Hongchun, GUO Xiaotong, ZUO Yuanmei\*\*

Department of Plant Nutrition, College of Resource and Environmental Sciences, China Agricultural University, Beijing 100193, China

[摘要](#)[参考文献](#)[相关文章](#)Download: [PDF \(1437KB\)](#) | [HTML 1KB](#) | Export: [BibTeX](#) or [EndNote \(RIS\)](#) | [Supporting Info](#)

**摘要** 铁是植物正常生命活动过程中的必需微量元素之一。由于土壤中铁的有效性很低, 导致植物极易缺铁, 不仅影响作物的产量和品质, 而且影响人类微量元素健康, 因此如何通过生物强化达到人类铁营养状况改善的目的是目前该研究领域关注的热点。本文就近5年来植物铁吸收、体内转运、子粒中积累等重要生物过程的分子生理机制的研究进展进行了详细阐述, 其中对水稻兼备机理I和机理II铁吸收机制有了新的认识, 而且发现YSL蛋白家族在植物铁吸收、转运和子粒积累过程中的重要性。同时, 讨论了利用上述机制的研究结果通过基因工程和农学措施改善植物铁营养和提高作物子粒铁富集的技术途径。

**关键词:** 铁 植物 吸收与转运 分子生理机制

**Abstract:** Fe is essential for plant growth. However, plants show severe iron deficiency due to low availability of Fe in soils, which affects the yield and quality of crops and ultimately affects human nutrition. Therefore, it is the hot research area to improve human nutritional status through biofortification. This review covers the research progress on the molecular mechanism of Fe uptake and translocation in plants and deposition in seeds in the past five years, and includes new discovery of combination of reduction and chelation strategies of iron uptake in Rice and the importance of YSL family in the three biological processes in plants. Furthermore, the technical ways of iron nutrition improvement and iron enrichment in seeds by genetic engineering and agronomic measures based on the studies on molecular mechanism of iron uptake and translocation in plants are discussed.

**Keywords:** iron plants uptake and translocation physiological and molecular mechanism

Received 2011-02-21; published 2011-10-24

Fund:

国家自然科学基金; 教育部高等学校博士学科点专项科研基金

Corresponding Authors: 申红芸 Email: shenhongyun1983@163.com

引用本文:

申红芸 熊宏春 郭笑彤 左元梅. 植物吸收和转运铁的分子生理机制研究进展[J] 植物营养与肥料学报, 2011, V17(6): 1522-1530

SHEN Hong-yun XIONG Hong-chun GUO Xiao-tong ZUO Yuan-mei. Progress of molecular mechanism of iron uptake and translocation in plants[J] Acta Metallurgica Sinica, 2011, V17(6): 1522-1530

## Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

## 作者相关文章

- ▶ [申红芸](#)
- ▶ [熊宏春](#)
- ▶ [郭笑彤](#)
- ▶ [左元梅](#)