

研究报告

## 氮、磷、钾对豫麦50旗叶蔗糖和籽粒淀粉积累的影响

李友军<sup>1,2</sup>,熊瑛<sup>1,3</sup>,陈明灿<sup>1</sup>,骆炳山<sup>2</sup>

<sup>1</sup>河南科技大学农学院, 洛阳 471003; <sup>2</sup>华中农业大学植物科学技术学院, 武汉430070; <sup>3</sup>河南农业大学国家小麦工程研究中心, 郑州 450002

收稿日期 2005-7-20 修回日期 2006-5-8 网络版发布日期 接受日期

**摘要** 以豫麦50为对象,探讨了氮、磷、钾对小麦旗叶中蔗糖的积累及相关酶活性以及籽粒中淀粉含量和组分的影响.结果表明,施氮可以增加灌浆前期旗叶中的糖含量,施钾则提高了灌浆后期旗叶中的糖含量,而施磷则对旗叶中的糖含量影响不大.施氮、磷、钾均能增加蔗糖合成酶活性,但它们的作用时间不同:施氮活性增加在籽粒灌浆中期,施磷在灌浆前期,而施钾在灌浆前、中期.但氮亦可增加花后24 d的磷酸蔗糖合成酶活性,施磷增加了灌浆前、中期磷酸蔗糖合成酶活性,施钾则增加了灌浆后期旗叶磷酸蔗糖酶活性.施氮、磷、钾都提高了籽粒中总糖含量,增加籽粒中淀粉含量,其中施钾效果最为明显.施磷提高籽粒中直链淀粉的积累,而施钾则显著提高了籽粒中支链淀粉的含量.

**关键词** [糖](#) [淀粉](#) [酶活性](#) [弱筋小麦](#) [氮](#) [磷](#) [钾](#)

分类号

## Effects of nitrogen, phosphorus and potassium fertilization on sucrose accumulation in flag leaf and starch accumulation in kernel of weak gluten whea

LI Youjun<sup>1,2</sup>, XIONG Ying<sup>1,3</sup>, CHEN Mingcan<sup>1</sup>, LUO Bingshan<sup>2</sup>

<sup>1</sup>College of Agronomy, Henan University of Science and Technology, Luoyang 471003, China; <sup>2</sup>College of Plant Science and Technology, Huazhong Agricultural University, Wuhan 430070, China; <sup>3</sup>National Engineering Research Center for Wheat, Henan Agricultural University, Zhengzhou 450002, China

### Abstract

With weak gluten wheat Yumai 50 as test material, this paper studied the sucrose accumulation in flag leaf and starch accumulation in kernel under effects of nitrogen, phosphorus and potassium fertilization. The results showed that nitrogen and potassium fertilization increased the sugar content in flag leaf at early and late filling stage, respectively, while phosphorous fertilization had little effect. Nitrogen, phosphorous, and potassium fertilization increased the sucrose synthase activity in flag leaf, but the effect differed with time, *i.e.*, at mid filling stage for nitrogen fertilization, early filling stage for phosphorous fertilization, and early and mid stage for potassium fertilization. As for the sucrose phosphate-synthase activity in flag leaf, it was increased by nitrogen fertilization in 24 days after anthesis, by potassium fertilization at early and mid filling stage, and by phosphorus fertilization at late filling stage. Nitrogen, phosphorus and potassium fertilization increased the sugar and starch contents in kernel, and the effect of potassium fertilization was most significant. Phosphorus fertilization increased the accumulation of amylose, while potassium fertilization improved that of amylopectin in kernel.

**Key words** [Sugar](#) [Starch](#) [Enzyme activity](#) [Weak gluten wheat](#) [Nitrogen](#) [Phosphorus](#) [Potassium](#)

DOI:

### 扩展功能

#### 本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(456KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

#### 服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

#### 相关信息

- ▶ [本刊中 包含“糖”的 相关文章](#)
- ▶ 本文作者相关文章

- [李友军](#)
- [熊瑛](#)
- [陈明灿](#)
- [骆炳山](#)

