附件一：论文中英文摘要范例

**特别说明：英文摘要一定要在英文作者名及单位后括号上相应中文。**

**A transgenic strategy for controlling plant bugs (*Adelphocoris suturalis*) through expression of double-stranded RNA homologous to fatty acyl-coenzyme A reductase in cotton**

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Plant bugs (Miridae species), which are sap-sucking insects, have emerged as major pests of cotton in China. Most Miridae species are not sensitive to commercial *Bacillus thuringiensis* (Bt) cotton, resulting in significant economic losses and an increased application of insecticide, which eventually may compromise the future of Bt cotton. We demonstrate that *FATTY ACYL-COA REDUCTASE* (*AsFAR*) plays an essential role in the reproduction of the bug *Adelphocoris suturalis*. Down-regulation of *AsFAR* expression by injection of double-stranded RNA suppresses ovarian development and female fertility, resulting in females producing few viable offspring. To determine the viability of an RNA interference approach to limit *FAR* expression and reproductive ability in *A. suturalis*, a dsRNA targeting the *AsFAR* gene (*dsAsFAR*) of *A. suturalis* was expressed in transgenic cotton plants. *AsFAR* transcription levels were significantly downregulated in *A. suturalis* feeding on the transgenic plants. In contained field trials, the transgenic cotton lines significantly suppressed the development of *A. suturalis* populations and were resistant to damage caused by plant bug infestation. These results suggest a new strategy for the management of plant bug pests of cotton.

**Key words**: double-stranded RNA, fattyacyl-coenzyme A reductase (FAR), pest control, plant bugs (*Adelphocoris suturalis*), RNA interference, transgenic cotton.

**水稻根系表型性状自动无损测量技术**

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水稻根系在水稻植株生长中具有重要作用，水稻根系不仅是水稻植株吸收水分和营养的器官，而且是多种激素和氨基酸的合成场所，另外水稻根系统通过分泌植物激素、有机酸等物质影响着植株根际土壤微生物的生态环境，因此研究水稻根系表型性状具有重要的理论和实践意义。但是水稻根系相比于水稻植株地上部分的器官，很难做到无损的可视化分析研究，而且目前水稻根系的研究几乎绝大部分是通过人工来对水稻根系的性状参数进行有损的测量。为了提高效率，降低人工成本，我们提出了一种高通量自动化无损测量水稻根系性状参数的方法。为了控制水稻的生长环境，我们将水稻种植在规格统一的根室中，根室规格大小为60cm\*2cm\*100cm，根室是由三面黑色的铁板和一面透明的钢化玻璃组成，并且使根室带有透明钢化玻璃面向下倾斜30度。为了尽可能多的获取水稻生长过程中根系参数，从幼苗到成熟各个时期对水稻根系在移动成像暗室中进行可见光成像，然后通过图像处理软件分析计算水稻根系统的各个性状参数，例如根长、分支数量、分支角度、根系面积、不同深度根系面积和密度、根系平均半径、质心位置、最大扎根区域等。

**关键词**：水稻根系，表型性状，无损测量，成像，成像暗室