

植物保护—研究报告

条纹病毒RSV在灰飞虱与稻株之间传递速率的研究

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摘要:

为进一步深入研究RSV (rice stripe virus) 在灰飞虱和稻株之间的传递情况, 此研究选用水稻条纹叶枯病易感品种 ‘武育粳7号’, 让带毒灰飞虱在健康稻株上取食1.5 h和3 h后, 于1.5 h、3 h、6 h、12 h、1天、2天和4天采样, 采用RT-PCR技术检测稻株被RSV侵染情况。结果表明, 当带毒灰飞虱在健株上取食3 h后, 可在其体内检测出RSV, 说明已将病毒有效地传入到稻株内, 且带毒灰飞虱取食时间越长, 稻株的获毒概率越大; 采用斑点免疫吸附法 (dot immunobinding assay, DIBA法) 检测非带毒灰飞虱在携带RSV稻株上取食0.25 h、0.5 h、1 h、2 h、4 h和8 h后虫体带毒情况。结果表明, 当无毒灰飞虱在携毒稻株上取食0.5 h后就能顺利获毒, 而且随着取食时间的延长, 灰飞虱获毒的比率越大。此研究首次从分子水平上对带毒灰飞虱传递RSV到稻株体内的情况进行了检测, 同时结合灰飞虱获毒速率的研究结果, 可为水稻条纹叶枯病的预测预报提供一种新的途径。

关键词: 传递速率

Transmission Rate of Rice Stripe Virus between Small Brown Planthoppers and Rice Plants

Abstract:

For further study of RSV (rice stripe virus) on transmission rate of between planthoppers and rice plants, in the present study we used the susceptible varieties of rice stripe virus, ‘Wuyujing 7’, and the planthoppers were fed with the healthy rice plants for 1.5 h, 3.0 h, 6.0 h, 12.0 h, 1.0 day, 2.0 days and 4.0 days respectively, and RT-PCR was employed to detect the virus in rice at the different times after feeding. The results showed that the vector planthoppers could transmit the virus successfully to rice plants at 3.0 h after feeding, and the probability that rice plants were infected increased as the feeding time extended. We also used a dot immunobinding assay (DIBA) to detect acquisition of RSV in planthoppers after the virus-free planthoppers fed on RSV-infected rice plants for 0.25 h, 0.5 h, 1.0 h, 2.0 h, 4.0 h and 8.0 h respectively. The data revealed that the planthoppers could acquire the virus 0.5 h after feeding, and the long feeding time increased the probability of the planthoppers infection. This was the first at the molecular level that the RSV content of the rice plants fed on the vector planthoppers was detected, and at the same time, the rate that planthoppers obtained RSV from RSV-infected rice plants was combined with, which provided a new way for rice stripe disease forecasting.

Keywords: transmission rate

收稿日期 2010-10-11 修回日期 2010-12-30 网络版发布日期 2011-03-25

DOI:

基金项目:

国家自然科学基金

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