

# Relationship between rodent damage and yield loss in rice in the Mekong Delta, Vietnam

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**Abstract.** The rice-field rat, *Rattus argentiventer*, is an important pre-harvest pest of irrigated rice in the Mekong Delta of Vietnam. This species is difficult to trap and little, therefore, is known about the association between population densities of this rat, damage to tillers, and yield loss. We examined the relationship between rodent damage to rice and yield loss at three different stages: seedling (15–20 days after sowing; DAS), tillering (35–40 DAS) and booting (55–60 DAS). Rats confined in small enclosures (3 × 3 m) within the rice crop, for 2 days or for the entire cropping season, were used to generate damage to the crop. The crop was able to compensate for rat damage at the seedling stage. At both the tillering and booting stages, damage to the crop was strongly associated with rodent density, and yield was highly negatively correlated ( $r > 0.94$ ) with rodent damage. There was no compensation by the rice crop to rodent damage at the tillering or booting stage. The lack of compensation at 35 DAS is early compared with the few previous studies reported elsewhere in Asia and may be because a fast-growing (90 days) variety of rice was used in this study compared to slower-growing varieties (110–120 days) in previous studies. Our results raise the important question: how early during tillering do rice crops lose their capacity to compensate for damage caused by rats? This study examined also the use of sweet potato on small bamboo sticks as a simple index of rodent density. The method provided a good indicator of low population densities of rats up until the rice crop began to ripen (day 70 in a 90-day growing season). After this, the rats strongly preferred rice to sweet potato. However, this simple index was unable to distinguish between the range of rodent densities (one to six rats per 100 m<sup>2</sup>) in this study.