Can farm-management practices reduce the impact of house mouse Populations on crops in an irrigated farming system?

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Abstract

The impacts of a range of farm-management practices on house mouse (*Mus domesticus*) populations were tested in a large replicated field study in a complex irrigated farming system in southern New South Wales, Australia. An advisory panel, made up of farmers, extension officers, industry representatives and scientists developed a series of best-practice farm-management actions to minimise the impact of mice. Twelve experimental sites were split into six treated sites, where farmers were encouraged to conduct the recommended practices, and six untreated sites, where farmers conducted their normal farming practices. Mouse abundance was generally low to moderate for the 4-year project (5-60% adjusted trap success). We found significant reductions in population abundance of mice on treated sites when densities were moderate, but no differences when densities were low. Biomass of weeds and grasses around the perimeter of crops were significantly lower on treated sites because of applications of herbicide sprays and grazing by sheep. We could not detect any significant difference in mouse damage to crops between treated and untreated sites; however, levels of damage were low (<5%). Yields of winter cereals and rice crops were significantly higher on treated sites by up to 40%. An analysis of benefits and costs of conducting farming practices on treated sites compared with untreated sites showed a 2:1 benefit to cost ratio for winter cereals, 9:1 for rice and 4:1 for soybeans.

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