

Title Warning farmers when the risk of infestation by *Prostephanus truncatus* is high.
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Abstract

P. truncatus is a serious beetle pest of the maize and cassava stored by smallholder farmers. Pheromone-trapping studies have shown that the abundance of flying beetles varies greatly both between and within years. This has led to an initiative to develop a risk-assessment system for the pest so that farmers can be warned in advance by extension services when they are at particular risk. Tests using experimental barns in Ghana and Tanzania and direct observations of farm stores in Ghana have shown that the incidence of infestation in stores is related to the numbers of beetles in the process of dispersal by flight. It has been possible to define curves relating the probability of infestation in stores to the cumulative catch of flying *P. truncatus* over the course of a storage season, although other factors such as previous infestation of stores can also be significant. In these experimental studies, dispersal by flight has been estimated using pheromone traps. However, the use of pheromone traps on a large scale to gather dispersal data is expensive and time-consuming and in the long term is unlikely to be sustainable. As a cheaper alternative, a rule-based model was developed to predict flight activity from climate data. The role of the risk warning system as an essential decision making tool for the integrated pest management of *P. truncatus* is discussed.