

# The billion dollar game of strategy: The effect of farmers' decisions on pest control

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Researchers say that the actions of individual farmers should be considered when studying and modelling strategies of pest control.

Research published in *PLOS Computational Biology* presents a model to understand the actions of humans and the dynamics of pest populations. The authors demonstrate this by using the example of the European corn borer, a moth whose larval phase is a major pest of maize.

Using game theory the researchers found that the farmers' perceptions of profit and loss, alongside communication networks between individuals, affects pest populations. A farmer's decision on whether to [control](#) a pest is usually based on the perceived threat of the pest and the guidance of commercial advisors.

Therefore, farmers in a region are often influenced by similar circumstances, which can create a coordinated response to a pest. This coordinated response, although not intentional, can affect ecological systems at the landscape scale.

Dr Alice Milne, Rothamsted Research scientist who led the study commented: "By understanding the dynamics of farmer decisions we can determine how to manage better the system, through improved communication, subsidy or taxation, to achieve robust and cost effective area-wide control, while minimizing the risk of the evolution of resistance to control strategies".

Dr Milne continued, "In our study we used concepts of [game theory](#) to build a model framework for understanding the feedback mechanisms between the actions of humans and the dynamics of pest populations. We demonstrate this framework with an example about the European corn borer".

**More information:** Milne AE, Bell JR, Hutchison WD, van den Bosch F, Mitchell PD, Crowder D, et al. (2015) The Effect of Farmers' Decisions on Pest Control with Bt Crops: A Billion Dollar Game of Strategy. *PLoS Comput Biol* 11(12): e1004483. [DOI: 10.1371/journal.pcbi.1004483](#)

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