

Agricultural pest management program efficiency challenged by information diffusion barriers among farmers

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While international pest management programs have long relied on farmer cooperation to spread pest control information at larger scales, a study by French researchers published in the open-access journal *PLoS Computational Biology* on Thursday 13th October 2011 reveals that slow information diffusion within farmer communities gives rise to significant lags in implementation of pest management procedures.

Food security of millions of people in the developing world has faced a growing number of challenges in recent years, including risks associated with emergent [agricultural pests](#). While pest management programs have a larger place than ever on the international policy agenda, the debate concerning their efficiency at large scales has remained unresolved. Pest management practices that rely on farmer cooperation to share pest control information have been favoured, but the efficiency of such methodologies has been questioned due to incomplete knowledge of variation in farmers' practices, and their complex interactions with pest dynamics. A modeling framework, integrating both social and ecological perspectives, was therefore needed to better predict the efficiency of pest management programs.

The modeling framework developed by the authors was comprised of an agent-based model combining social (information diffusion theory) and biological ([pest population](#) dynamics) models to study the roles played by cooperation and sharing of pest management information among

small-scale farmers in controlling an invasive pest. The model was implemented with field data from large-scale surveys of approximately 300 farmer households in the Ecuadorian Andes, and was undertaken within a regional pest management program funded by the French Institute for Research and Development (IRD) and the McKnight Foundation.

Though the slow learning process places restrictions on the knowledge that can be generated using cooperative [pest management](#) practices, the authors conclude that if individuals learn from others about the benefits of early prevention of pests, then a temporary educational effort may have a sustainable long-run impact on pest control.

More information: Rebaudo F, Dangles O (2011) Coupled Information Diffusion–Pest Dynamics Models Predict Delayed Benefits of Farmer Cooperation in Pest Management Programs. PLoS Comput Biol 7(10): e1002222. [doi:10.1371/journal.pcbi.1002222](https://doi.org/10.1371/journal.pcbi.1002222)

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