



Maruca pheromone trap

I. Background:

<p>1. Name of innovation: Maruca pheromone trap, an IPM information technology for cowpea pest control</p> <p>2. Country - Region: Benin, Ghana, Burkina Faso, Nigeria,</p> <p>3. Organization: International Institute of tropical Agriculture (IITA), National Agricultural Research Institute of Benin (INRAN), and British Natural Resource Institute (NRI)</p> <p>4. Who is the innovator? -ITTA & national agricultural research and extension systems (NARES)</p>	<p>5. Actors involved: NRI and IITA at Cotonou, Benin Ghana, Burkina Faso and Kano, Nigeria together with research, extension and NGO organizations (OBEPAB; INRAB; CRI; SARI; GOAN; INERA) working with IITA in the Africa Cowpea Project ("PRONAF)</p> <p>6. Implementation date: - 2000 to present</p> <p>7. Type of innovation: (Technological, institutional, policy or knowledge sharing) - Technological</p>
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II. Key Issues:

8. Summary:

Maruca vitrata, the legume pod borer, is a key pest of cowpea and other subsistence legume crops. In West Africa yield losses in cowpea due to *Maruca* may rise to 80%. Pheromone traps inform farmers in the control of *M. vitrata* by acting as predictors of infestations, enabling optimal timing of application of control measures. Pheromone lure and traps were developed for use by and with farmers in different sites, together with a recommended mode of use. Catches of adult *Maruca* indicate the presence of the pest in cowpea fields and thus the best time for control operations against larval infestations. Traps are constructed from locally available 5-litre white, plastic jerry-cans 26 cm height x 17 x 13 cm, although slight variations in dimensions may occur. The trap has four windows, one cut out of each side. It is filled with water to a depth of approximately 5 cm, which kills trapped moths by drowning. The trap is mounted 120 cm above ground on a stick or pole driven into the ground at an angle so that the trap, suspended by cord or wire, hangs freely. The traps are baited with polyethylene vial lures containing 0.1 mg of a blend of three pheromone components. The lures are suspended within the trap by means of a paper-clip or small length of string.

9. What issue does the innovation address?

- Farmer knowledge of *Maruca vitrata* damage;
- Knowledge of adults and larvae of *Maruca vitrata* ;
- The optimal use of pheromone traps for monitoring and optimal spray timing;
- Monitoring and data collecting to take the decision to treat against *Maruca vitrata* in the fields;
- Minimization of the using of chemical pesticides.

10. Key success factors for replication:

- Participatory approach;
- Significant reduction in pesticide use by farmers;
- Information on the behavior and activity of pests in the field;
- Knowledge on migration patterns and off-season occurrence.

11. Accessibility: (Poor, gender, youth, migrants...)

- Rural women and their groups;
- Resource-poor farmers.

12. Difficulties encountered:

- Access to trap materials mainly lure by farmers;
- Poor information exchange (communication) between farmers;
- Lack of incentives (price premium) for botanical insecticides.

13. Financial aspects:

Co-financing of PRONAF and NRI (UK).

III. Technical Summary:

Experiments were carried out in cowpea fields where traps are placed no later than four weeks after planting, and certainly before flowering. Each experiment consisted of between four and six treatments and was carried out to a randomised complete-block design with 5-fold replication and the randomisation was achieved using random number tables. Traps within a replicate block were set out in lines or rectangular formations; within blocks individual traps were positioned 20 m apart. The blocks were at least 50 m apart and were usually situated in separate fields. Trap optimisation experiments included a trap height comparison carried out using commercial green, plastic funnel traps and DDVP insecticide strips within the funnel traps killed trapped moths in order to facilitate counting. Socio-economic survey was conducted to establish a baseline against which to judge the future impact of trap and of botanically derived pesticides.

IV. Follow up:

15. Key contacts:

Information given in the previous sections

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16. Useful web link:

- <http://www.agfax.net> and <http://radio.oneworld.net/article/frontpage/251/4907>;
- www.iita.org : les sections concernant : les céréales et systèmes légumineux, l'agro-biodiversité et l'agriculture et santé ;
- www.ifad.org : activités du FIDA en Afrique Sub-Saharienne

17. Key documents: (Name of the document + Link or Contact or Co ordinates) -

1. -Development of pheromone trapping for monitoring and control of the legume podborer, *Maruca vitrata* (syn. *testulalis*) by small-holder farmers in West Africa. Technical report 2005.
2. Downham, M.C.A., M. Tamò, D.R. Hall, B. Datinon, S. Adetonah and D.I. Farman (2004). Developing pheromone traps and lures for *Maruca vitrata* in Benin, West Africa. *Entomologia Experimentalis et Applicata* 110, 151-158.