



PHI WP3-OP4: Inclusive and affordable IPDM packages against prioritized plant health threats validated through Innovation Platforms

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Activity: Participatory learning and action research on the identification and destruction of alternative host plants (rice ratoons, volunteers, and wild rice) for stem borer control in farmers' fields.

Category: Capacity sharing for development.

Objective: To increase the knowledge and understanding of farmers to identify and destroy alternative host plants and crop residues that harbour stem borer infestation in and around farmers' fields.

Output: The identification and destruction of alternative host plants and crop residues for stem borer control in and around farmers' fields promoted.

Expected results: At least 16 Extension Agents and 16 farmers trained on the identification and destruction of alternative host plants for stem borer control at Edozhigi, Gbako Local Government Area of Niger State, Nigeria.

Challenge

Stem borers pose a significant threat to rainfed lowland and upland rice, leading to yield losses ranging between 10 to 50% in outbreak areas in West Africa. Stem borer species such as African rice gall midge (AfRGM), *Diopsis* species, *Sesamia calamistis*, *Maliarpha* sp. and *Chilo zacconius* are major pests of rainfed lowland and upland rice in Nigeria. Stem borer larvae (e.g. *Maliarpha* sp.) diapause in rice stubble. During the off-season, African rice gall midge maintained its population in *Orza sativa* ratoons and wild rice (*Oryza longistaminata*). Thus, identification and destruction of alternative host plants in different rice habitats and crop residues after harvest will help to reduce the incidence of early stem borer infestation in the next season.

Methodology

The cultural practice of identifying and removal of rice ratoons, volunteers, and wild rice (*Oryza longistaminata*) and crop residues from rice fields was conducted at Edozhigi, Gbako Local Government Area of Niger State, North-Central Nigeria. Sixteen Extension Agents and 16 farmers were trained through “learning by doing” on the identification and removal of prevalent alternative host plants and crop residues of AfRGM and rice stem borers in the following habitats: (i) lowland rice crops, (ii) lowland rice fields left fallow between one wet season and the next, (iii) lowland rice fields used to grow vegetables in the dry season, (iv) permanent bunds & ditches, (v) uncultivated wetland, (vi) neighboring upland, and (vii) rice nurseries by throwing 0.5 sq. m quadrat randomly in 10 different locations of a habitat.



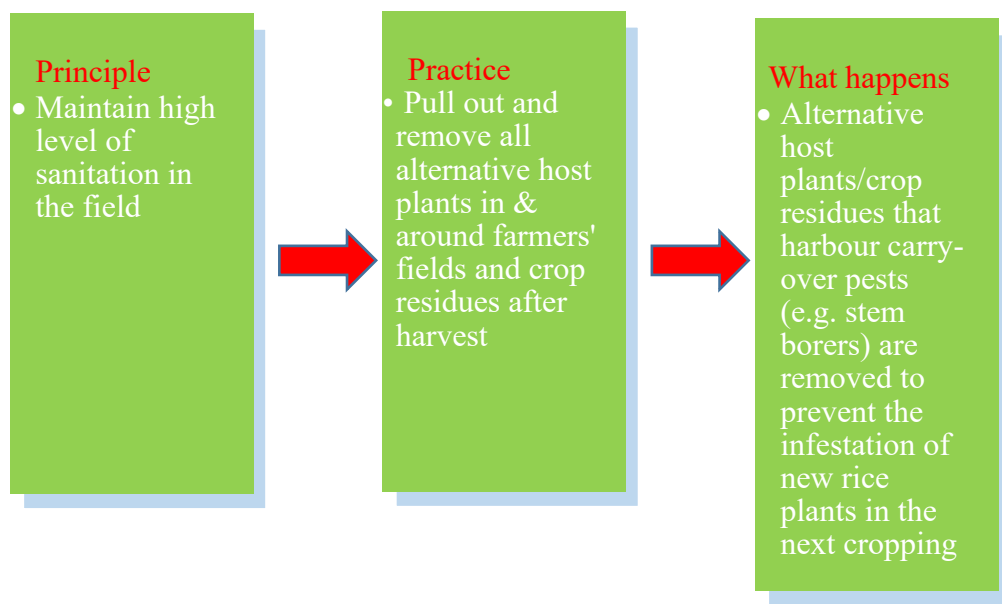
Figure 1. Photograph of the Extension Agents and farmers at the training session

Key Results

The training enhanced the capabilities of extension agents and rice farmers in recognizing and eliminating alternative hosts (*Oryza sativa* volunteers, *O. sativa* ratoons, and *O. longistamina*) in the management of AfRGM and rice stem borers in a rice-growing environment. However, the proportion of alternative host plants varied across different habitats in farmers' fields. Wild rice was highly concentrated in lowland rice fields left fallow between one wet season and the next followed by uncultivated wetlands, lowland rice crops, permanent bunds & ditches, and rice nurseries. Uncultivated wetland and permanent bunds & ditches only have the presence of rice volunteers, with the highest population observed in uncultivated wetland. Rice ratoon was absent in all habitats assessed except for lowland rice fields left fallow between one wet season and the next. The alternative host plants are the sources of stem borer species early in the cropping season. Thus, knowledge and skills improvement are expected to lead to a decrease in early infestations during the next growing season.



Figure 1. Agricultural Development Program (ADP) Extension Agents and rice farmers identifying the alternative host plants (a) and a farmer with wild rice (*Oryza longistamina*) (b) at adopted villages in Gbako Local Government Area of Niger State.



Users/beneficiaries: Smallholder rice farmers, agro-input dealers, NGOs

Important activities: Participatory action research with farmers on identification and removal of rice ratoons, volunteers, and wild rice from farmers' fields for the control of rice stem borers

Publication

- Approved link to the evidence (report) in Cgspace:
Participatory learning on the identification and destruction of alternative host plants (rice ratoons, volunteers, and wild rice) for stem borer control in farmers' fields