

West African Regional Consortium for IPM Excellence

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Institutional Collaboration:

- DPV- Senegal
- INSAH- W. Africa
- ISRA- Senegal
- IER- Mali
- ANCAR - Senegal
- ETQCL - Mali
- CERES-Locustox-Senegal
- OHVN-Mali
- CRI-Ghana

Summary

The first year activities of the West Africa Regional Consortium for IPM Excellence project focused on research planning and organizing the US-based and host country scientists for development of three vegetable IPM packages in three West African countries. These packages include: 1) tomato in Ghana, Mali and Senegal, 2) potato in Mali and Senegal, and 3) cabbage in Mali and Senegal. A two-day planning workshop was held in Bamako, Mali, May 26 and 27 to develop a

work plan and research protocols for the project. Protocols for the project included plans for establishing locations for the IPM projects, conducting farmer surveys, identifying farmer participants and development of strategies for institutional capacity building and long-term training. Efforts were then focused on implementation of the research plan. We have identified research sites, conducted farmer surveys, identified farmer participants and initiated IPM research activities at sites within the participating three West African countries.

Identification of research sites for implementation of tomato IPM programs

Ghana

Bob Gilbertson/UC-Davis, Michael Osei/CSIR-CRI

Three regions in Ghana were chosen for this project. These included the Ashanti, Brong Ahafo, and the Upper East regions. Two locations were established or selected in Ashanti and Brong Ahafo regions with three locations also selected in Upper East region. In the Ashanti region, Agogo and Akomadan were selected. Likewise, Tanoso and Tuobodom were selected for the Brong Ahafo region. Veve (Bongo district near Bolgatanga), Tono near Narvrongo and T.N.D, Pawlugu were also sites chosen for the project at Upper East regions. At each location selected, the Ministry of Food and Agriculture's (MOFA) Director was contacted for Agriculture Extension Agents (AEAs) who already have contact with tomato growers in that locality. They were briefed with the project objectives, activities and expectations.

Mali

Bob Gilbertson, Moussa Noussourou

Four regions were chosen for this project. These included Segou, Sikasso, Mopti and Koulikoro with 20 villages and 200 farmers.

Surveys for tomato production practices, yields and disease and pest problems

Ghana

Bob Gilbertson, Michael Osei

Questionnaires were designed to elicit information from Farmers at the locations selected. Questionnaires have so far been administered in the Ashanti (Agogo and Akomadan) and Brong Ahafo (Tanoso and Tuobodom) regions only. At each location, 20 farmers were called or invited for the survey. The questions were most often translated to farmers in their local languages.

Mali

Bob Gilbertson, Moussa Noussourou

Surveys were conducted on tomato in Segou with 50 farmers in five villages (Garo Nalogo, Konobougou, Cinzana Village, and Dona). The results of these surveys indicated that on tomato diseases like leaf curl, viral infection and death of tomato plants (wilting) are most frequent. They are followed by insect damage caused by caterpillars that bore into the fruits of tomato.

Other constraints that were found included a scarcity of varieties adapted to the rainy season which prevents the cultivation of the tomato during the rainy season. Faced with these problems, farmers have no way to control the major pest problems because the chemicals they use are not effective.

In the region of Sikasso, surveys on tomato pests were conducted in the villages of Noumorilakôdé, Kaboïla, and Natchien

Diomantènin with 50 farmers. Major pest problems that were identified in the order of priority: 1) bacterial wilt, 2) virus and 3) insects - caterpillars that bore fruit (*Helicoverpa*) and grasshopper (*Zonocerus variegates*). For control methods, the farmers indicate they use chemicals and wood ash sometimes without much success.

In the Mopti region, surveys were conducted in 8 villages with 50 farmers. The surveys indicated that the main pests on tomato in order of importance are fruit boring caterpillars, tomato virus, wilting and termites. Farmers use neem leaf extracts and wood ash for controlling tomato pests. In the region of Koulikoro, results of surveys conducted in the villages of Diago, Kati, Komits and Koro indicated that the main pests in tomato production are wilting and viral infection.

Sampling and Identification of Sweet Potato Whitefly biotypes

Mali

Carlyle Brewster, Moussa Noussourou

Spatiotemporal sampling of whitefly populations was conducted during the reporting period at two cropping areas (Baguienda and Kati) in Mali. This data, when combined with sampling data collected during the previous phase of the IPM CRSP project, gives us almost three years of data on whitefly population dynamics at the two cropping areas. Preliminary analyses of the complete data set show a consistent annual pattern of whitefly dynamics at both areas. Whitefly populations at the Baguienda site were always higher than at the Kati site. In addition, whitefly densities tended to be relatively low at both areas during mid-April to November, a period that corresponds to the time during which the host-free period is implemented at Baguienda.

Senegal

Carlyle Brewster, Kemo Badji

Spatiotemporal sampling of whitefly populations was conducted on 12 occasions during the reporting period at three cropping areas (Gorom, Mboro, and Kolda) in Senegal. Preliminary analyses of the complete data set show several things. Among these are that whiteflies are present (>3 immatures/ sq. cm of leaf) throughout the year on crops at all three sites, and the seasonal patterns of their dynamics vary unpredictably within or among the cropping areas.

Implementation of Tomato IPM Package: No host recommendations

Ghana

Bob Gilbertson, Michael Osei

Open pollinated and hybrid tomato seeds were received from the USA, Mali and AVRDC for varietal trials in Ghana. This was to select for tolerance or resistant lines to numerous tomato diseases such as TMV, TYLCV and nematodes among the rest for use in the main IPM package. Varietal trials were established during the rainy season at Afari near Kumasi and at Northern Ghana. This would be repeated in the dry season to select the best variety(ies) for the IPM Package.

Mali

Bob Gilbertson, Moussa Noussourou

The tomato IPM package development included coverage of the nursery stocks with the sailing screen and cleaning plots one month before transplanting. One month after transplanting, yellow traps were installed and weekly treatments with neem oil began. Fertilization was done with the compost "Profeba," and the soil was treated with lime.

In the Sikasso region, tests were carried out in the Kaboïla, Natchien, Kampiasso and Niena villages. The varieties tested included:

Formosa, Estrella, C20-5, and Icrixina, SF83-61 (varieties adapted to the rainy season). In each village, the trial was conducted with 3 farmers. Nurseries were installed in Kaboïla, Natchien and Kampiasso and the seedlings were transplanted. Bacterial wilt was not very prevalent. Viral infection was observed in the varieties Formosa, C20-5 and was less on Icrixina. No cases of viral disease were detected in Kaboïla. Farmers preferred the variety Icrixina because of its earliness and its productivity.

In the Koulikoro region, tests on the IPM package for control of pests of tomato were initiated in four villages (Sonityeni, Diago, and Komitan Toniba). Nurseries were planted in early July 2010 and tomato plants transplanted in late July-early August 2010. The varieties used were: SF 83-61, Estrella, Formosa, Icrixina, C20-5 and Roma VF. Bacterial wilt was present in all villages but was much more pronounced in Toniba and Diago. Viral disease was more pronounced in Toniba. The local variety of tomato has been totally damaged by viral disease, more than most of the varieties tested. Varieties SF83-61 and C20-5 were preferred because of their early maturity and productivity.

At Sotuba, the varieties tested were: Roma VF, Estrella, Shasta, Nemadoro, Mamou, F1 Thorgal, Formosa, C20-5, Icrixina, SF83-61, H88-04 and Beef Heart. It was found that the Shasta Thorgal F1 and Roma VF suffered from bacterial wilt in areas where there was stagnant water. The variety Formosa was affected less by the viral disease than Estrella. From the point of view early maturity, varieties Estrella and SF 83-61 were the best, and for yield varieties Formosa, Icrixina, Shasta, Thorgal F1, C20-25 and SF 83-61 were most productive.

Survey of weeds

Ghana

Jim Westwood, Carlyle Brewster, Michael Osei

Initial weed surveys were done at Ashanti and Brong Ahafo regions. The following weed species were observed: *Ageratum conyzoides*, *Fleurya aestuans*, *Cyperus* spp., *Bidens pilosa*, *Sida acuta*, *Eluesine indica*, *Celosia* spp., *Spigelia anthelmia*, *Imperata cylindrical*, *Centrocema pubescens*, *Solanum torvum*, *Panicum maximum*, *Commelina* spp., *Talinum triangulaire*, *Rottboellia cochinchinensis*, *Euphorbia heterophylla*, *Tridax procumbens*, *Setaria* spp., and *Euphorbia hirta*.

Selection of sites for implementation of potato IPM package

Mali

Sally Miller, Bob Gilbertson, Seriba Katile

The survey was conducted in three regions (Sikasso, Mopti and Koulikoro) with 15 villages and 150 farmers.

Surveys of potato production practices, yields and Pests

Mali

Sally Miller, Bob Gilbertson, George Mbata, Seriba Katile

In the Sikasso region, surveys on potato production were conducted in the villages of Noumorilakôdé, Kaboïla, and Natchien Diomantènin with 50 farmers. The results of the surveys indicated the major pests in order of priority were: rotting of potato tubers during storage, the blackening of the meat, and potato

blight. The farmers indicated that they have no solutions to control these problems.

In the Koulikoro region (Diago, Komita and Koro), phytosanitary constraints on potato production identified from the surveys were bacterial wilt, tuber worm, mildew and rotting of tubers during storage. Farmers indicated that they sometimes apply chemical to control the pest problems, but have little effect.

In the Mopti region, surveys were conducted in 14 villages in 50 farmers including 18 women. In this region, phytosanitary problems associated with potato production are: priority larvae that attack the tubers, locusts that attack foliage, mildew and bacterial wilt. Farmers use neem extracts and wood ash to control some of the pests.

Surveys for potato production practices and pests

Mali

Doug Pfeiffer, Kadidiatou Gamby, Issoufou Kollo

In the Sikasso region, surveys on cabbage production conducted in Noumorilakôdé, Kaboïla, and Natchien Diomantènin villages included 50 farmers. The survey information obtained indicated that the main pests were bugs, diamondback moth and cabbage webworm of cabbage plants. For control of caterpillars, farmers apply pyrethroid insecticides.

In the Koulikoro region (Diago, Komitas and Koro), pest problems were caterpillars, aphids and diseases that cause root rot. The farmers surveyed indicate that they apply chemicals 5 to 6 times per season.