

15th Triennial Symposium of the International Society for Tropical Root Crops

Summary of Conclusions and Recommendations from Oral Presentations

Session VII

Management of biotic stresses for sustainable intensification of root and tuber crops

Thursday 5 and Friday 6 November 2009

Moderators: J. Kroschel and M. Andrade

A total of 18 presentations including one lead lecture were made; additionally 19 posters were presented. Below is the summary of conclusions and recommendations from presentations.

In his lead lecture **A.C. Belotti** used cassava as a model crop to explain crop-insect interactions as influenced by changes in production practices, crop management and climate change and discussed findings in the context of an integrated pest management program.

J. Alcazar demonstrated the use of plastic barriers to control Andean potato weevils as a new innovation with which farmers get better returns compared to the use of insecticides. Plastic barriers are easy to install and the assessment of farmers' opinion indicates that this technology could be widely adopted by Andean farmers.

V. Canedo investigated the effect of farmers' practices of using insecticides on the functional groups phytophagous (pests), predators and parasitoids in the Central highlands of Peru. Insecticides did not always control effectively Andean potato weevils and without insecticides other pests (e.g. flea beetles) may increase populations and crop damage. The regular use of insecticides over decades may have caused long-term negative effects on insect populations, especially of parasitoids.

D.A. Fontem demonstrated promising results of using leaf extracts of different plants (e.g., *Crotalaria falcata*, *Brassica integrifolia* and *Cissus aralioides*) to reduce bacterial wilt infection in potato.

A. Oswald showed that PGPR have a great potential to promote potato growth. However, they were always more effective in controlled and semi-controlled conditions compared to field investigations. The best strains need to be selected and management options developed to use them best in potato-based systems.

R. Maharjan reported of a survey in Nepal which assessed farmers' pesticide use practices and awareness. It was concluded that farmers and technicians need more training in all pesticide issues and that alternative plant protection methods need to be developed.

W. Perez demonstrated that phosphonate treatments can give sufficient late blight control in Peruvian highlands and that they have economically advantages over other chemical treatments.

M.S. Kadian found that two early maturing CIP clones with medium resistant to late blight and standard tuber characteristics fit well in cereal based systems of the Indo-Gangetic Plains enhancing overall system productivity.

P. Demo showed that CIP potato population B3 clones outperformed local varieties in Malawi with regard to late blight resistance and tuber yields.

M. Andrade investigated drought adaptation of orange-fleshed sweetpotato and concluded that breeding for drought adaptation needs independent breeding programs but fast screening methods for drought resistance can be implemented easily in breeding programs. Vine survival is a good trait for drought adaptation.

S. Attaluri reported from a preliminary study on the performance of orange-fleshed sweetpotato genotypes in different agro-ecological zones of India. Especially two CIP clones had a wider adaptability with reasonable yields and higher quantities of carotenoids.

A. Bechoff demonstrated considerable losses of provitamin A in orange-fleshed sweetpotato after drying and storage. Optimum storage and processing conditions needs to be considered to maintain provitamin A contents at high biological level.

W. J. Cuellar demonstrated that transformation of an SPFMV-resistant sweetpotato variety with SPCSV-encoded RSP proteins (RNase3 and p22) broke down resistance to SPFMV, leading to high accumulation of SPFMV and severe disease symptoms similar to SPVD. Results of the study suggest a new targeting for engineering virus resistance in sweetpotato.

R.A. Labarta performed an ex-ante analysis of the introduction of OFSP and concludes that adoption of OFSP in Mozambique depends on farm size. Farms less than one hectare are less favorable for adoption compared to medium farm sizes of 3 to 5 hectares.

P.C. Stevenson found quantifiable and manageable resistance in the sweetpotato variety New Kawogo against African sweetpotato weevils.

E. Cosio proposed two analytical methods for potential bioactive compounds in maca which could be used in a reliable and simple way for export quality control.

P. Gonzales quantified plant volatiles emitted by mashua and concluded that in addition to isothiocyanates and nitriles also benzaldehyde and benzyl alcohol emissions could give protective activity against pests.