

## Surveys of Viral Diseases on Groundnut and Maize in Africa

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### SUMMARY

LPRC (Phytovirology Laboratory for Warm Countries) CIRAD/ORSTOM is dedicated to the study of virus diseases of tropical crops. CIRAD/IRHO and CIRAD/IRAT are two departments of CIRAD involved in the development of the cultivation of groundnut and maize in Africa. In collaboration with ORSTOM Research Center of Dakar, the National Center of Dakar (Senegal) and the National Center for Agronomic Research of Bambey (Senegal) intensive surveys of groundnut virus diseases were undertaken in 1986. From these surveys it was evident that Peanut Clump disease, which was thought to be confined to the region of Bambey, was in fact distributed all over Senegal extending from the Senegal River to the frontier with Gambia. Furthermore we could identify a great deal of variability in symptomatology induced by peanut clump virus (PCV) in groundnuts. This observation prompted us to initiate a research programme to study the variability of PCV.

Other virus symptoms observed on groundnut were:

- (i) Graft transmissible symptoms described in the literature as typical of tomato spotted wilt virus disease, however, they were not mechanically transmissible.
- (ii) Symptoms of unknown origin not mechanically transmissible.
- (iii) A virus closely related (serologically) to CMV and PSV was identified.
- (iv) Symptoms of groundnut rosette (GRV) disease were rarely observed.

In Cote d'Ivoire several surveys were undertaken using the ORSTOM Virology Laboratory of Adiopodoume as a base during 1975 and 1980. Apart from GRV and PCV, two new viruses were identified namely: groundnut eyespot virus and groundnut crinkle Virus. An isolate of peanut mottle virus was also recently isolated.

In 1989 and 1991, LPRC, ICRISAT Sahelian Center and local institutions for agronomic research participated in common surveys in Niger, Burkina Faso and Mali. PCV disease was found to be the most important disease on groundnut followed by green rosette disease. GEV and a possible new Potyvirus were also identified in Burkina Faso.

Surveys on maize virus diseases were carried out in Senegal, Mali and Burkina Faso with the ORSTOM Research Center at Dakar, CIRAD/IRAT Mali, and INERA. In those countries, maize mosaic virus (MMV) with line pattern symptoms similar to those described in East Africa, maize stripe (MStpV), and Maize Streak viruses were observed. Peanut clump

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virus which induced eyespots and hyphens and sugarcane mosaic virus were found in Senegal and Mali, maize bushy stunt virus also occurred in Mali.

Samples collected during these surveys are often brought back carefully to the LPRC Laboratory in Montpellier, France, where studies of host-range, graft transmission – when mechanical transmission is not possible, electron microscopy (ultrastructural studies including negative staining and ultramicrotomy), and serology (ELISA) are regularly carried out. Innovative methods are being used to develop techniques directly applicable in the fields. A test kit which would enable the detection of three important viruses affecting maize (MMV, MSV, MStpV) employing immunodot-blot technique on nitrocellulose membranes is currently being developed in collaboration with CIMMYT (Harare, Zimbabwe).

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**PROGRAMME - ABSTRACTS  
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