Tropentag, September 17-19, 2014, Prague, Czech Republic

"Bridging the gap between increasing knowledge and decreasing resources"

Cocoyam Root Rot Disease Caused by *Pythium myriotylum* in Nigeria

Feyisara Olorunleke[1], Amayana Adiobo[2], Joseph T. Onyeka[3], Monica Höfte[1]

[1] *Ghent University, Dept. of Crop Protection: Phytopathology Laboratory, Belgium*
[2] *Institute for Agricultural Research for Development (IRAD) Ekona, Biotechnology Laboratory, Cameroon*
[3] *National Root Crops Research Institute (NRCRI), Plant Pathology Unit, Nigeria*

Abstract

In Nigeria, Cocoyam (*Xanthosoma sagittifolium*) is an important staple which besides being a food crop, serves as a major source of income for rural households. Yield losses due to cocoyam root rot disease (CRRD) remains a major constraint to increased cocoyam production in Nigeria. Until now, this disease has been attributed to a pathogen complex including *Fusarium solani* and *Rhizoctonia solani*. However, symptoms observed are similar to those caused by the oomycete, *Pythium myriotylum* on diseased cocoyam plants in Cameroon and Costa Rica. The aim of this study was to determine the primary causal pathogen of CRRD disease in Nigeria. In this study, stunted cocoyam plants with premature leaf yellowing were observed in August 2013 at Umudike, Abia State, Nigeria. Uprooted plants showed nearly non-existent roots which were indicative of the CRRD. Isolations were carried out in the area from roots of plants with flagging symptoms. Two Isolates, NGR02 and NGR03 were obtained, sub-cultured on PDA plates and examined 2–3 days later. Morphology characters of the isolate included a typical powdery appearance following which the mycelium became fluffy after four days. PCR amplification of the internal transcribed spacer (ITS) region of rDNA using ITS5-ITS4 primers were sequenced and analysed using BLASTn query. There was 100 % and 99 % identity with several *P. myriotylum* isolates from Cameroon and Costa Rica respectively. To test for pathogenicity of NGR02 and NGR03, three 4mm plugs of a 5-day old plate of *P. myriotylum* were applied per plant by mixing blended mycelia with volcanic soil. Subsequently, 8-week old tissue culture-derived cocoyam plantlets were transplanted into infected soil while control plants were treated with sterile water. Ten plants were used for each treatment and were maintained at 25°C. After 10 days, all inoculated plants showed typical CRRD symptoms whereas control plants remained healthy. *P. myriotylum* was consistently re-isolated from root lesions of both isolates. The experiment was repeated three times. To the best of our knowledge, this is the first report of CRRD caused primarily by *P. myriotylum* in Nigeria. The confirmation of this pathogen is a significant step towards management recommendations for farmers.

Keywords: *Pythium myriotylum*, root rot, *Xanthosoma sagittifolium*

Contact Address: Monica Höfte, Ghent University, Dept. of Crop Protection: Phytopathology Laboratory, Coupure Links 653, 9000 Ghent, Belgium, e-mail: monica.hofte@ugent.be