Heterodera avenae, *H. filipjevi* and *H. latipons* are considered of major economic significance in cereals. Precise identification and quantification of these nematodes are necessary to develop effective integrated pest control. We report the results of a qPCR assay that we developed for the quick detection and quantification of the three species. Three qPCR primer sets comprising two primers and a probe, were designed and optimized. All developed assays were able to detect a single second-stage juvenile (J2). Their specificity was confirmed by the lack of amplification of 13 other *Heterodera* species. A qPCR using DNA extracted from 106, 114 and 114 J2 + eggs of *H. avenae*, *H. filipjevi* and *H. latipons* resulted in steady Ct-values (Ct = 22.33 ± 0.1, Ct = 21.83 ± 0.05 and Ct= 18.6 ± 0.12, respectively). Dilution series of DNA extracted from known numbers of J2 + eggs of the three species were made. The assays resulted in a standard curve showing a highly significant linearity between the Ct-values and the dilution rates (R^2 = 0.99; slope = -3.05, R^2 = 0.99; slope = -3.4 and R^2 = 0.99; slope = -3.5 for *H. avenae*, *H. filipjevi* and *H. latipons* respectively). The three qPCR assays provide a sensitive and valid tool for the rapid detection and quantification of the three species whether they occur alone or in mixtures with other species. Unfortunately, the assay for the detection and quantification of *H. filipjevi* was not successful for all *H. filipjevi* populations, which could be contributed to DNA polymorphism.

DEVELOPMENT OF REAL-TIME PCR PRIMERS FOR MAJOR PLANT PARASITIC NEMATODES IN RICE FIELDS IN MYANMAR. **Toyota[1], K. and Y.Y. Min[2].** [1]Tokyo University of Agriculture and Technology, Japan; [2]Yezin Agricultural University, Japan.

Myanmar has 100% self-sufficiency rate of cereals and is the seventh largest rice producing country. Rice yield increased from 1997 to 2007 in major rice producing countries, while decreasing in Myanmar, suggesting the presence of obstacles against rice production. The objectives of this study were to identify major plant-parasitic nematodes in rice fields in Myanmar and to estimate possible damage to yield. Soil was collected from 26 paddy fields in different regions in Myanmar and nematodes were extracted with the Baermann-funnel method. The D2/D3 regions of 28S rDNA was amplified from individual plant-parasitic nematodes and sequenced. The rice root nematode *Hirschmanniella oryzae* and the root-knot nematode *Meloidogyne graminicola* were identified. In addition, the rice stem nematode (ufra) *Ditylenchus angustus* was also detected in some fields. Then, real-time PCR primers were designed to quantify the species in soil. *H. oryzae* and *M. graminocola* were detected in 23 and 3 fields, respectively. Nematicide was applied into two paddy fields infested with *H. oryzae* and *D. angustus* to estimate potential damage by nematodes. The results showed 20% to 70% increase in the grain yields by nematicide application. This study enabled the quantification of the major plant parasitic nematodes in Myanmar, and suggested that nematodes cause a significant reduction in rice yields in certain regions of Myanmar.

TRANSGENIC NEMATODE RESISTANCE FOR AFRICAN FOOD SECURITY: NEMATODE RESISTANT BANANAS AS A CASE STUDY. **Tripathi[1], L., H. Roderick[2], A. Babirye[1] and H.J. Atkinson[2].** [1]International Institute of Tropical Agriculture, PO Box 7878, Kampala, Uganda; [2]Centre for Plant Sciences, University of Leeds, Leeds LS2 9JT, UK.

Transgenic crops can support future food security when they overcome agronomic challenges refractory to other approaches. Examples include nematode resistant plantains and cooking bananas for Africa that prevent current losses of up to 70%. The crop's sterility enhances both the biosafety of this biotechnological intervention and its rate of progress relative to that of classical plant breeding. Our efficient genetic transformation system for plantain produced over 200 transgenic lines expressing a maize cystatin that limits nematode feeding success and/or a synthetic peptide that suppresses root invasion. Nematode challenge of plantlets in the glasshouse identified lines with promising levels of resistance. Twelve of these lines were grown for an authorised, contained field trial in Uganda. Nematodes from infected banana roots were added to the pot soil of selected lines before transplanting to the field in a randomised block design. Subsequent plant growth was measured non-destructively using digital hemispherical photography to calculate the leaf area index (LAI). *Radopholus similis* dominated the nematode population at 7 months post-planting and caused severe necrosis to control plant roots. Several transgenic lines had significantly larger LAI values and less root necrosis than the control non-transgenic plants. A significant reduction in recovered nematodes for three lines corresponded to 89-98% resistance. The experiment is continuing for a further 2-3 harvests. Plantains and cooking bananas are a vital food for about 100 million Africans. The future challenges for this not-for-profit public research are to ensure biosafe uptake for plantain and then application to other subsistence crops that suffer appreciable nematode damage.

INTEGRATED MANAGEMENT OF ROOT-KNOT NEMATODES ON TOMATO WITH ARBUSCULAR MYCORRHIZAL FUNGI, *PAECILOMYCES LILACINUS* AND *MUCUNA* SPP. SOIL AMENDMENTS. **Udo[1], I.A., M.I. Uguru[2] and R.O. Ogbuji[2].** [1]Department of Crop Science, University of Calabar, PMB 1115, Calabar, Nigeria; [2]Department of Crop Science, University of Nigeria, Nsukka, Enugu State, Nigeria.

A greenhouse trial was conducted to evaluate the efficacy of five arbuscular mycorrhizal fungi (AMF), five *Mucuna* spp. soil amendments and bioformulated *Paecilomyces lilacinus* singly and combined in the management of *Meloidogyne incognita* race 1 on tomato. The treatments involved the combination of five AMF (*Glomus etunicatum*, *Glomus mosseae, Glomus clarum, Glomus deserticola and Gigaspora gigantea*), five *Mucuna spp* (*Mucuna pruriens utilis, Mucuna ghana,*