

DNA based early detection and development of invert emulsion formulation for the management of anthracnose disease in banana

Peeran Mohammed Faisal, Kuppusami Prabakar, Thangamani Prema Ranjitham, Krishnan Nagendran, Gandhi Kathikeyan and Thiruvengadam Raguchander
Tamil Nadu Agricultural University, India

Banana anthracnose incited by *Colletotrichum musae* (Berk & Curt.) Arx. is a serious disease in postharvest marketing stage. For early detection of the pathogen, RAPD-PCR technique was utilized to determine the per cent similarity between the isolates. The genetic similarity coefficient within each group and variation between the groups was observed. OPA-01 generated a RAPD polymorphic profile that distinguished *C. musae* from the other organism. Cloning and sequencing of the specific band yielded 588 bp sequences, to which forward CM-SCAR-FP and reverse CM-SCAR-RP were designed. The SCAR primer pair amplified a single SCAR of 490 bp from each of the 14 isolates of *C. musae*, the same primers can able to detect the pathogen in fruit peel tissue at 30 ng of infected DNA tissues. For the biocontrol evaluation, nineteen isolates of antagonistic bacteria and twelve isolates of yeast were used. They were evaluated both under *in vitro* and *in vivo* conditions. Out of which, *Pseudomonas fluorescens* (FP7) recorded the maximum inhibition of mycelial growth of *C. musae*. Invert emulsion formulation of *P. fluorescens* (FP7) was developed by adding various oils viz., coconut (28.50 per cent), rice bran (28.50 per cent) and castor (28.50 per cent) were added separately. Addition of these oils enhanced and maintained the population level up to 210 days of storage, whereas the control treatment (NA broth) recorded this level only up to 45 days. Biochemical and antibiotic characterization of *P. fluorescens* (FP7) in invert emulsion formulation showed more intensity up to 210 days. Two field trials were conducted to standardize the invert emulsion formulation. The application of invert emulsion formulation significantly increased the yield, nutritional factors and activity of defense related enzymes viz., peroxidase, polyphenol oxidase, phenyl alanine ammonia lyase, β -1, 3 glucanase, chitinase and catalase followed by talc based formulation of (FP7).

faisal.tnau@gmail.com