

## Botryosphaeriaceae fungi as a potential mycoherbicide for prickly acacia

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Prickly acacia (*Acacia nilotica* ssp. *indica*) is one of the Weeds of National Significance (WONS) in Australia. Recently, dieback symptoms ranging from stem lesions, partial crown death through to widespread death of plant populations were observed in many locations across north Queensland. Fungi were isolated from stem tissues of symptomatic plants and identified by sequencing of the ITS region. This revealed the consistent presence of *Botryosphaeria mamane* from every site. Several other species of Botryosphaeriaceae and various mitosporic fungi were also recovered. All the isolates were screened for pathogenicity under laboratory conditions using a seedling bioassay. A sub-set of aggressive isolates across the range of species found were used to challenge juvenile plants by stem inoculation under glasshouse conditions to determine the potential use of these fungi as mycoherbicides. Based on preliminary glasshouse trials, three highly pathogenic isolates identified as *Botryosphaeria mamane*, *Botryosphaeria* sp. and *Lasiodiplodia pseudotheobromae* (all Botryosphaeriaceae) were selected for further testing. Of these, *Lasiodiplodia pseudotheobromae* (sourced from dieback-affected parkinsonia) was shown to be highly pathogenic to prickly acacia in preliminary trials. These three isolates were then tested singly and in all combinations in both glasshouse and field trials. Fungi were applied in field trials using a gelatine capsule delivery system. In the glasshouse trial, *Lasiodiplodia pseudotheobromae* alone and in combination with *Botryosphaeria mamane* and a *Botryosphaeria* sp. developed significant externally and internally visible stem lesions. Field trials were first assessed six months after inoculation. Stem lesions and stem bleeding (similar to that observed in the glasshouse trial) were observed at one location. Symptoms such as defoliation, stem and branch cankers and crown distortion were not observed but observations are ongoing. Findings from the glasshouse trial and preliminary field observations suggest that *Lasiodiplodia pseudotheobromae* shows promise as a mycoherbicide for prickly acacia.

## Profiles of *Fusarium* species and mycotoxin on white corn varieties in the Philippines

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In the Philippines, the last five years has seen the rise in atmospheric temperatures and consequent increase in *Fusarium* ear rot incidence. *Fusarium* from corn produces a carcinogenic class of mycotoxins called Fumonisin that have been implicated in esophageal cancer in corn-eating communities and also causes detrimental animal disorders. To determine the *Fusarium* species and the isolates that produce Fumonisin, *Fusarium*-infected corn ear samples were collected from major corn growing areas of the country. Isolation into pure culture and identification were done following the standard protocol. Of the two hundred ten (210) *Fusarium* isolates collected, 184 were *Fusarium verticillioides* based on morphological and cultural characteristics. This was confirmed by PCR using species-specific primers. The ability to produce Fumonisin was also assessed using Fumonisin-specific primer and by ELISA. A total of 175 *Fusarium verticillioides* isolates produced Fumonisin. Isolates that were positive to Fumonisin but were not *F. verticillioides* were tested for other *Fusarium* species such as *F. proliferatum* and *F. graminearum* using species-specific primers. However, only *F. proliferatum* was detected in 10 out of 15 Fumonisin-producing isolates. Further investigation will be conducted to verify the identity of other 5 isolates. During the regional collection of *Fusarium*-infected ears in corn-eating communities in the province of Cebu, it was observed that some localities were still planting the traditional variety Tiniguib, a very low-yielding and short cob white corn. *Fusarium* ear rot was seldom observed in Tiniguib. Infected Tiniguib showed very mild symptom of pinkish discoloration of kernels and was negative to Fumonisin although microscopic observation indicated that the isolates were *Fusarium* species based on conidial morphology. Severe symptoms of whitish pink to lavender fungal growth were observed in IPB Var 6, a newly introduced high-yielding white corn variety. *Fusarium* isolates from IPB Var 6 were Fumonisin-producing *F. verticillioides*. Further evaluation with artificial inoculation of virulent *F. verticillioides* isolate will be conducted in these two varieties to confirm resistance.