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Abstracts

Volatile organic compounds to identify root and butt rot pathogen *Armillaria* spp.

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PTRMS-TOF analysis of *Armillaria* volatomic profile was used as molecolar tools for the taxonomic identification of six European species of genus *Armillaria*: *A. borealis* , *A. cepistipes, A. gallica, A. mellea, A. ostoyae* and *A. tabescens*. This mycete is known as honey mushroom and it is one of the main opportunistic pathogenic fungus found in many forest and ornamental trees where it causes white root rot. It is also a saprotroph who allows the wood degradation and the easy transfer, by wood trade, the other more than 40 esotic species present in the other continents. Volatile Organic Compounds (VOC) pattern was analyzed for 77 strains of *Armillaria* by PTR- MS-TOF technique in order to discriminate the species. *Armillaria* strain were previously identified by DNA amplification by PCR. Samples were analyzed after 30 days of incubation to allow the mycelial growth on MEA substrate added with silver fir sawdust. Data analysis was performed using univariate and multivariate statistical tools. The analysis of variance (ANOVA) discriminated *A. borealis* by using acetylene concentration and *A. cepistipes* by using hexanal concentration. The distribution of specific masses concentration, as a function of species by boxplots, allows to discriminate *A. tabescens, A. borealis,A. cepistipes* and *A. mellea*. Principal component analysis allows discriminate the *A. borealis* and *A. tabescens* clusters. The future improvement of this approach is to identify some VOC which can discriminate invasive *Armillaria* species to develop a rapid and accurate identification diagnostic method based on gas chromatographic separation of these VOCs.

A wide host range and high levels of genetic diversity characterise Cryphonectriaceae stem canker pathogens on Myrtales in Southern China

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Plantation-grown *Eucalyptus* (Myrtaceae) and other trees residing in the Myrtales have been widely planted in Southern China. These fungal pathogens include fungi of Cryphonectriaceae that are well-known to cause stem and branch canker disease on Myrtales trees. During recent disease surveys in southern China, fruiting structures with typical characteristics of the Cryphonectriaceae were observed on the surfaces of cankers on stems and branches of Myrtales trees. In this study, a total of 206 Cryphonectriaceae isolates were identified based on comparisons of DNA sequence of the partial LSU gene, ITS region of the nuclear ribosomal DNA gene, two regions of the *β-tubulin* (*BT2/BT1*) gene and the translation elongation factor 1-alpha (*TEF-1a*) gene region, as well as their morphological characteristics. The results showed that eight species reside in four genera of Cryphonectriaceae occurring on five genera of Myrtales. These included *Celoporthe cerciana* from a Eucalyptus *grandis* hybrid clone, *C. eucalypti* from *Syzygium jambos* (Myrtaceae), *C. guangdongensis* from *S. jambos*, *C. syzygii* from *E. grandis* hybrid clones, *Psidium guajava* (Myrtaceae), *S. hancei*, *S. jambos* and *S. samarangense*. The notorious pathogen *Chrysoporthe deuterocubensis* was identified from *E. grandis* hybrid clones, *Melastoma candidum* (Melastomataceae), *M. sanguineum*, *P. guajava*, *S. jambos* and *S. samarangense*. A novel species of *Aurifilum* was isolated from *Terminalia neotaliala* (Combretaeeae) and an undescribed genus including two species of Cryphonectriaceae were identified from *E. grandis* hybrid clones. This study revealed an unexpected and surprising level of Cryphonectriaceae diversity on a wide-range of Myrtales hosts in southern China.

Designing chemical control measures against fungus gnats in log yards

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For the production of wood panels, it is important to keep the continuous supply of logs to the plant. Therefore, the factories usually maintain log yards (Pinus *elliiottii* and *P. taeda*) where these logs are arranged in piles. The environmental conditions provided by these piles predispose the boom of large populations of fungus gnats (Sciaridae) (as *Bradysia matogrossensis, Euricrium varians* and *E. edwardsi*). These insects cause discomfort to the workers, disturbing the operation of the plant and impacting the surrounding urban areas. Based on the observation of the chemical treatments adopted by the companies and a small scale experiment, we present here a strategy for the control. We recommend the use of Carbamate (80%) and Pyrethroid (40%) in alternate applications (in order to manage the effects of biological resistance). Alpha-cypermethrin (12%) and Fipronil (18%) may also be an alternatives tools to reach individuals that may acquire resistance due to chemical selection. The chemicals may be applied with a manual knapsack sprayer, nonetheless, mist blower or agricultural cannon sprayer will perform better. These chemicals can also be applied at a cargo disinfection arch, treating the load on the trucks at the entrance to the yard. This would minimize the colonization of the piles and increase the treated surface area. We advise against the use of organophosphates since there is cross-resistance with the pyrethroid and also due to its greater toxicity to vertebrates.

Threats and mitigation to macrofungi (Mushroom) conservation in the Mount Cameroon Region, Central Africa

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Mount Cameroon is found in the South West Region of Cameroon and is diverse with macrofungi species which have socio-economic functions as food and medicine, and also play essential roles in ecosystem functioning such as in decomposition and forming mycorrhizae association. Inhabitants of this region depend on the forest for their livelihood. This study was carried out for 2 years to assess the threats to macrofungi conservation in the mount Cameroon Region and provide solutions to the communities for mitigation. Interviews, questionnaires and focus group discussions were carried out in ten communities living around the Mount Cameroon forest reserves. The major reasons accounted for threats to macrofungi were habitat degradation due to landslides and volcanic eruptions, climate change, over harvesting of some edible and medicinal mushrooms, deforestation for farmlands by the locals and oil palm cultivation by multinational companies, settlement expansion due to urbanization and fire outbreaks by the local communities around Mount Cameroon region. It was found that, though there are laws and policies on biodiversity conservation in Cameroon, these laws are not being implemented with regards to fungi conservation and this can expose fungi to the risk of extinction. Solutions proposed and carried out for mitigation were implementation of in situ conservation methods, cultivation of the over harvested species on local substrates with the communities and planting of fast growing leguminous trees for multipurpose usage to limit deforestation. The government was encouraged to enact and implement laws regarding the conservation of fungi.