ISBN 978-85-66836-16-5

LIPDOMIC ANALYSIS ENABLES PREDICTION OF RESISTENCE MECHANISM IN *Eucalyptus* spp. AGAINST *Austropuccinia psidii*[1]/ ANÁLISE DE LIPIDÔMICA POSSIBILITA A PREDIÇÃO DE MECANISMOS DE DEFESA DE *Eucalyptus* spp. CONTRA *Austropuccinia psidii*.

I. B. SANTOS[1]; M. S. LOPES[1]; A. P. BINI[1]; E. F. FIGUEREDO[1]; B. A. W. VERSSANI[1]; T. R. CATALDI[1]; L. D. SILVA[1]; J. P. R. MARQUES[1]; C. A. LABATE[1]; M. C. Q. VERDI[1]. [1] University of São Paulo/ College of Agriculture "Luiz de Queiroz" (USP/ESALQ), 13418-900, Piracicaba, São Paulo, Brazil. E-mail: izanely@gmail.com

Austropuccinia psidii Winter is a biotrophic basidiomycete, originated from South America, causal agent of Myrtaceae rust. The aim of this research was characterize different species of *Eucalyptus* regarding susceptibility to *A. psidii*. The disease incidence study was carried out, through susceptibility scale, to 24 myrtle species (21: *Eucalyptus* and 3: *Corymbia*), located in the Experimental Station of Forestry Sciences of Anhembi. Six *Eucalyptus* species were selected to *i)* pathogen monitoring in control conditions by qPCR analysis, *ii)* composition of cuticular wax with GC-MS and *iii)* rate germination of *A. psidii* urediniospores (*in vitro*) in the cuticular extracts was as well as in detached eucalyptus leaves. From the analyzed species in field conditions, four species showed high level resistance to pathogen (*C. citriodora, C. maculata, E. resinifera* and *E. toreliodora* – S0), in other words, all individuals were classified as S0 (index diseases – ID = 0); four species exhibited susceptibility to *A. psidii*, i.e, more than 50% of individuals were categorized in the S1, S2 and S3 scale (*E. botryoides, E. deglupta, E. grandis* and *E. phaeotricha*) with ID between 32.79 and 46.30%; the other species demonstrate low level resistance because at least in 50% of individuals were asymptomatic to the disease (ID: 0.48 – 14.47%). The validation of field data was obtained in controlled conditions; it showed hypersensitive response in *E. camaldulensis* and *E. robusta,* disease resistance in *E. urophylla* and *E. urograndis* and susceptibility in *E. grandis* and *E. phaeotricha*. However, at molecular level the pathogen was detected in all species until 72 h.a.i by qPCR. More than 26 compounds including lipids, fatty acids and alcanos were detected in cuticule. The cuticular component hexadecanoic acid may be related to the susceptibility of the species to the pathogen, being found only in *E. grandis* and *E. phaeotricha*. In germination tests of *A. psidii* urediniospores was observed an increase of germination rate in the cuticular extracts of *E. grandis* (30,7%) and *E. urograndis* (26,15%). Similar result was observed by MEV analysis, when detached leaves were inoculated with the pathogen urediniospores. Our study reveals the considerable inter/intraspecific variation in *Eucalyptus* with respect to the susceptibility to *A. psidii* and the importance of cuticular wax as preformed defense mechanism which can be explored as molecular marker in the eucalyptus breeding.

Key words: Biotrophic; susceptibility; rust; GC-MS; cuticular wax.