

All Division 7 (Forest Health) Meeting

188 - Managing pests and diseases in commercial plantations

K 2-4 (Konzerthaus Freiburg)

IUFRO17-2304 **Biological control of *Thaumastocoris peregrinus* Carpintero and Dellappé (Heteroptera: Thaumastocoridae): towards the development of a mycoinsecticide**

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Abstract: The bronze bug, *Thaumastocoris peregrinus* (Heteroptera: Thaumastocoridae) is a small sap feeding hemipteran bug that has become a serious pest of *Eucalyptus* plantations worldwide. Affected trees display foliage blight and defoliation, thus reducing photosynthesis and sometimes leading to the death of those highly infested mature trees. The use of entomopathogenic fungi as biological control agents is seen as an environmentally friendly alternative for pest control being chemical control seldom used in commercial forestry because of its environmental and economical disadvantages. In this study, naturally occurring entomopathogenic fungi on *T. peregrinus* were isolated from dead and mycosed insects found in *Eucalyptus* plantations in Uruguay. Fungal species were identified based on spore and reproductive structures, morphology, culture characteristics, and molecular identification by amplification of the ribosomal DNA comprising ITS1, ITS2 and the 5.8S subunit. The identified entomopathogenic species belong to the genera *Beauveria*, *Isaria*, *Lecanicillium*, *Purpureocillium* and *Pochonia*. Bioassays using fifty-eight entomopathogenic fungal isolates from bronze bug and other forestry and agricultural pest insects were performed to determine their pathogenicity and virulence against *T. peregrinus*. A first *in vitro* screening was made by spraying 10^7 conidia/ml suspensions onto adults of *T. peregrinus* reared in mesh cages on detached leaf-bearing twigs of *E. tereticornis*. Isolates were classified into four categories based on the number of days to reach 90% of mortality. Most of the tested strains (80%) were pathogenic to bronze bug showing different degrees of virulence. For a subset of strains, values of LC₅₀ and LT₅₀ were determined. In addition, the most promising strains are being subjected to mass production studies in order to identify cost-effective production methods and to select the most stable and virulent formulated strains.

Thaumastocoris peregrinus, entomopathogenic fungi

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IUFRO17-4109 ***Picea abies* stump size and efficacy from treatment with *Phlebiopsis gigantea* and urea against Heterobasidion in Sweden**

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Abstract: Norway spruce (*Picea abies*), the most important planted commercial species in northern Europe, is under a constant threat from Heterobasidion root rot that is worsened by year-round cuttings and prolonged growing seasons. Heterobasidion can spread not only from spore infections on bigger sized Norway spruce stumps created in e.g. thinnings, but also from smaller sized stumps. Preventive action should therefore be taken also at pre-commercial thinning through stump treatment. Anecdotal data indicates though a reduced effect on smaller sized stumps. In Sweden two agents with different modes of action, urea and *Phlebiopsis gigantea*, are used at stump treatment, possibly with different efficacy at different sizes of stumps. The agents' efficacy were compared on smaller Norway spruce stumps ranging from 2-16 cm in diameter. The efficacy increases with stump size for *Phlebiopsis* while urea works perfect all over. The relevance of the influence of size can however be questioned since the smallest stumps had comparably low probability of getting infected, i.e. a low efficacy for small stumps is of less importance since only few stumps get infected. Conclusively it seems prudent and possible to treat also smaller sized stumps but stumps with a diameter of 80 mm or less may not be economically beneficial to treat.

stump treatment, efficacy, root rot, management

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IUFRO17-877 **Productivity losses caused by *Teratosphaeria nubilosa* on *Eucalyptus globulus* and *Eucalyptus maidenii* in Uruguay**

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Abstract: *Teratosphaeria nubilosa* severely affects young plantations of *Eucalyptus globulus* and *E. maidenii* in Uruguay. This work analyzes the effect of this pathogen on the growth and survival of both species, based on data from a naturally infected field trial. The degree of defoliation was quantified at 21 months old, and its effects on diameter and mortality were evaluated at 62 months old. Defoliation in *E. globulus* was higher than in *E. maidenii*, with an average of 52.5 and 28.8%, respectively. Four years after the epidemic, defoliation classes of 40% or higher had significant growth losses on *E. globulus*, while losses in *E. maidenii* were significant when defoliation was 30% or higher. An average loss in DAP of 27.5 % in *E. globulus* and 12.5 % in *E. maidenii* was observed. The most affected trees, with 70-80% of defoliation in *E. globulus* and 60% in *E. maidenii*, had similar growth loss in both species, suffering a reduction in DAP of 43.9% and 42.5%, respectively. By contrast, the average mortality that occurred between 21 and 62 months old was significantly higher in *E. globulus* (16.7%) than in *E. maidenii* (3.3%). Mortality in the higher defoliation classes reached 44.7% on *E. globulus* and 47.1% on *E. maidenii*. Although *E. globulus* showed greater susceptibility to the disease and higher productivity losses, the significant defoliation and growth losses registered in *E. maidenii* suggest that this species is not as suitable as previously thought to replace *E. globulus* on sites with high risk of *T. nubilosa*.

disease, defoliation, growth losses, mortality
