

Mathematical-modelling simulation of red gum lerp psyllid *Glycaspis brimblecombei* populational dynamic towards the strategy identification for biological control with its parasitoid *Psyllaephagus bliteus*

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The red gum lerp psyllid, *Glycaspis brimblecombei* (Hemiptera: Psyllidae), become a great worry to Brazilian forest sector, mainly where *Eucalyptus camaldulensis* have been planted; more susceptible to psyllid attacks. Chemical strategies to pest control have shown higher costs and problems associated to products registered for use on eucalyptus forests by certified companies. The biological control strategies become promising at brief term. *Psyllaephagus bliteus* (Hymenoptera: Encyrtidae), a red gum lerp psyllid internal parasitoid, prefers mainly third and fourth-instars of its nymphs. It has been mentioned as a strategy available to the psyllid control in Brazil, and demands both a psyllid and parasitoid massal laboratory rearings in order to be released on infested fields. In despite of that, it has been difficult to identify at laboratory conditions the psyllid adults (male and female) quantities that must be introduced in the cages in order to identify later the most propitious periods where the parasitoid preferable nymphs are present in order to enhance the parasitism index. This work presents considerations about results obtained by the mathematical-modeling simulator developed to follow the red gum lerp psyllid populational dynamic. Biological information on psyllid and parasitoid available in technical literature were used to formulate the mathematical-modelling and later codified on MatLab7 language to create different scenarios of initial population released inside the sleeve cage. As result it was identified that the most adequated levels of initial infestations to reach the enhancement of host-pest was found to 20 females: 80 males and also to 60 females: 40 males. These infestations resulted in a 3rd and 4th instars nymph populations of 286.61 and 215.0, respectively, both found on 18th day after infestations into the sleeve cage. It was also observed the presence of preferential nymphs at 16th and 21st days after pest-adult infestation on the plants into the cage.

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