

LABORATORY EVALUATION OF THE EFFECTS OF ATTRACT & KILL FORMULATIONS ON *ANASTREPHA FRATERCULUS*.

Borges, Rafael¹; Botton, Marcos²; Machota Jr., Ruben²; Boff, Mari Ines Carissimi³; Mafra-Neto, Agenor⁴

¹ISCA Tecnologias, BR 285, Km 461, Ijuí, RS 98700 Brasil. Email: rafael@isca.com.br. ²Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA-CNPV), Bento-Gonçalves, RS (Brasil). ³Universidade do Estado de Santa Catarina, Centro Agroveterinário, Lages, Brasil. ⁴ISCA Technologies, Riverside California, US.

Background: A new attract & kill (A&K) formulation was developed by ISCA Tecnologias to control fruit flies. In laboratory tests, we compared the efficacy of this new formulation with three commercial products used by fruit growers in southern Brazil. Mortality tests were performed with *Anastrepha fraterculus* (Diptera: Tephritidae) and results showed that the effectiveness of Anarosa formulations was directly proportional to increasing dose of insecticide. Formulations containing organophosphates and cypermethrin produced similar mortality results. The Anarosa formulations, regardless of the insecticide dose, were more effective than GF 120 for *A. fraterculus* control.

Methods: Experiments were conducted at the Entomology Laboratory of EMBRAPA Grapes & Wine, Bento Gonçalves, RS (temperature 25°C±2, relative humidity (RH%) 70±10, photoperiod 14 hours) with insects reared on a diet of wheat germ, brown sugar and soy extract (3:1:1). Mortality of adult 15-20 days of age *A. fraterculus* was evaluated. Each replicate consisted of a cage (300ml plastic cup without bottom, containing a circular floor paper, a 2 ml container for water and 0.8g of solid diet) with two pairs of adult insects. Treatments were applied to leaves of *Vitis vinifera* plants in a greenhouse setting. Using disposable syringes, a 5ml drop (4 mm in diameter) was placed on the upper leaf surface. After a three hour drying period, the leaves were collected in the laboratory and cut into a circular shape (3cm diameter) containing a drop of the treatment which was then presented to the adult flies. Each treatment was replicated 13 times; each cage was a replicate. Measurements were taken every two hours for the first 24 hours, followed by intervals of four hours until the completion of assessments after 96 hours.

Results: The most rapid mortality resulted from the Anarosa + 0.2% cypermethrin and Biofruit + 0.15% malathion treatments, which caused 100% mortality after 36 and 32 hours respectively. Anarosa + 0.4% spinosad resulted in 100% mortality after 44 hours. The Anarosa + 0.2% spinosad and molasses + 0.15% malathion treatments both resulted in 100% mortality after 48 hours. For the Anarosa treatments containing 0.1% and 0.05% spinosad, 100% mortality was reached after 52 and 60 hours for each treatment respectively. The GF 120 treatment resulted in 96% mortality at the end of the tests, while the standard treatment, Anarosa without insecticide, resulted in 13% mortality at the end of the experiment.

Conclusion: Anarosa treatments proved to be promising for controlling populations of *Anastrepha fraterculus* and the mortality effect of the formulations progressively increases with increasing insecticide concentration

Keywords: Anarosa, Spinosad, Mortality, *Anastrepha fraterculus*