

Characterization of pesticide resistance in horn fly populations as a risk factor for fixation of resistance alleles in cattle tick populations - Brito L.G.^{1*}, Oliveira M.C.S.², Foil L.D.³, Guerrero F.D.⁴, Perez de Leon A.⁴, Barbieri F.S.¹, Chagas A.C.S.², Barros A.T.M.⁵

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The false assumption that parasites control is easily accomplished by the use of chemical means alone has led to the development of parasite resistance. In Brazil, the losses related to infestations by cattle ticks and horn flies are substantial, since nearly all regions where the cattle are raised in Brazil are also favorable to the development of these parasites. The selection caused by chemical treatments increases the frequency of resistant individuals in the parasite population, with consequent reduced efficacy of pesticide products and level of control. The problem of resistance of cattle ticks and horn flies tends to get worse in the short term because the chemical treatments targeting one species also impose a selective pressure on the other species since both parasites infest the same host. Currently, molecular diagnostic tools used in epidemiological studies are fundamental to discover and measure the risk factors responsible for the establishment of resistant genotypes in parasite populations. Therefore, the aim of this studies is to characterize the population dynamics and predominant genetic mechanisms of the pesticide resistance response in populations of *H. irritans* and *R. microplus*, as well as to verify whether identification of genetic mutations conferring resistance to insecticides in horn flies can be used as an indicator to predict the appearance of resistance in tick populations. The early detection of resistance in horn flies can lead to the formulation of improved management strategies regarding the products used to control ticks, thus contributing to delay the establishment of pesticide resistance in those populations.

Key-words: resistance alleles, *Haematobia irritans*, *Rhipicephalus microplus*

Embrapa project number: 02.10.06.017.00.00