Effects of the Transgenic and Traditional Corn Plant Development on the Growth Rates and Demographic Parameters of an Evolved Diet Strain of Spodoptera frugiperda (Lepidoptera: Noctuidae)

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Spodoptera frugiperda (FAW) is an important pest of maize. Bt resistance has been studied for more than 50 years, however there is still an interrogation on the susceptibility to the Bt-Cry proteins and the factors that may produce such susceptibility. Therefore, the purpose of this study was to continue, for a second year evaluations of an evolved diet strain of FAW; which consisted in a series of nine bioassays in order to complete a comparison of its eating behavior, growth rates, and demographic parameters using transgenic and traditional young corn plants. After combined results from last year's research, no significant differences in stage development were found among traditional or transgenic, young or fully developed plants. The rejection of the diet strain FAW to its natural host also was observed in young tissues of both varieties. Growth disruptions were found from third to sixth instars. Fourth instar fed with young corn showed a better survival than those fed with fully developed plants. In general, this investigation clearly indicates: 1) The adaptation of FAW to artificial diet; 2) FAW certainly will be able to evolve an adaptation to any Bt-Cry-protein based on the ability of the late larval stages to grow on Bt-1F; 3) FAW populations found in the field should not necessarily be considered as a Bt resistant, because that populations could be originated from larvae in refugees close to corn plantations; and 4) insects developed on artificial diet cannot be used for Bt resistance studies due to false susceptibility.