INITIAL ASSESSMENT OF GM COTTON RESISTANT TO COTTON BOLL WEEVIL BASED ON FEEDING BIOASSAYS AND ELISA

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RESUMO
The boll weevil (*Anthonomus grandis*) is the main pest of cotton crop due to cause serious damages to reproductive structures, affecting directly the yield. The effective control is done through chemical insecticides, which substantially increase management costs. Control via transgenesis is a promising strategy and less harmful to the environment, especially by using Cry proteins, derived from endophytic *Bt* bacteria. In 2015, the biotech team from Embrapa introduced a *cry 10*-construction into cotton plants, isolated from a *Bt* strain that showed low DL_{50} in boll weevil feeding bioassays (7.12 mg/mL). In order to test the toxicity of Cry proteins were conducted in laboratory bioassays feeding with boll weevil and ELISA assays. Three hundred and sixty plants T0 were grown in green house and further were evaluated in feeding bioassays and ELISA tests, carried out in Entomology and Biotech Labs, at Embrapa Algodão (Campina Grande, PB). Antibody used in ELISA tests was provided by Biological Control team, at Embrapa Cenargen (Brasilia, DF). Seven events were selected, among them five showed mortality rate ranging from 60% to 72%, and Abs-reading ELISA from 0.600 to 2.00 nm. Eighty-one seeds T1 derivate from these events (T0) were grown in rows in a greenhouse. From 65 d, plants were infested with two couples of adult insects under restraint environment. Shedding buds were daily recorded during 10 d and evaluated as natural shedding (NS, no boll weevil symptom), feeding (FB) and oviposition (OBO). Based on total of plant evaluated, 44% from T1-346, 50% from T1-371, 46% from T1-336 and 13% from T1-357 did not show bool weevil symptom. The average natural shedding in control plants was 30% and 19% in T1 plants. The averages of insect perforations in selected plants was 10%, including feeding and oviposition, while the control was 35%. In ELISA assays carried out in selected T1 events, twenty two showed twice the value of control plants (Abs-reading), indicating that they are promising for further molecular assays in order to identify events resistant to boll weevil. These results are quite relevant to Brazilian cotton belt because, up to now, no commercial GM cotton has resistance to bool weevil. So, this study represents an expressive oportunity for control this pest by molecular tools.

APOIO
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