

## BT CRY PROTEINS: MOLECULAR CLONING OF NEW GENES WITH POTENTIAL APPLICATION IN THE CONTROL OF COTTON INSECT PESTS.

Magalhaes M.T.Q.<sup>1,2</sup>, Batista J.A.N.<sup>1</sup>, Silva S.M.B.<sup>1</sup>, Fragoso R.R.<sup>1,3</sup>, Ramos H.B.<sup>1,3</sup>, Oliveira-Neto O.B.<sup>1</sup>, Dias S.C.<sup>1</sup> and Grossi De Sa M.F.<sup>1</sup>

<sup>1</sup>Embrapa Genetics Resource and Biotechnology. <sup>2</sup>Universidade Federal do Rio Grande do Sul. <sup>3</sup>Universidade de Brasília.

The cotton boll weevil (*Anthonomus grandis*) and the fall armyworm (*Spodoptera frugiperda*) are considered key pests in the cotton crop, causing severe damages in worldwide production. The use of *Bacillus thuringiensis* endotoxins to control these insect arises as an efficient alternative of control. Its crystalline inclusions formed during sporulation, composed by delta-endotoxin, present specific toxicity against the insects and are harmless to humans. Aiming to identify specific toxins to *A. grandis*, we have characterized a Brazilian Bt strain. Biochemical and electronic microscopy characterization showed the presence of spherical and bipyramidal crystals composed with proteins of 130 and 70 kDa. By using primers for *cry* genes we cloned three genes identified as *cry1Ab*, *cry1la* and *cry8*. The Cry1la had 99% identity with other described Cry1la proteins and Cry8 toxin shows 68% of identity with other Cry8 protein group. The Cry8 toxin show lower identities, suggesting be a novel toxin with different insecticide specificity. Both *cry8* and *cry1la* genes were expressed in an *Escherichia coli* system and bioassays with recombinant-proteins showed activity towards *A. grandis* and *S. frugiperda*. These new genes isolated represent a great potential to be used in genetic improvement program of cotton crop to *A. grandis* and *S. frugiperda* control. Novel specificities based on the sequence of the new *cry8* and *cry1la* genes can be explored by the use of techniques such as DNA shuffling. Supported by Embrapa, Fapal, Fialgo, CNPq and CAPES.