

CHARACTERIZATION BY PCR ANALYSIS OF CRYI GENES FROM BACILLUS THURINGIENSIS STRAINS EFFICIENT AGAINST FALL ARMYWORM, SPODOPTERA FRUGIPERDA

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Fall armyworm, Spodoptera frugiperda, is the most important maize insect pest in Brazil and its damage can reduce yield up to 34%. The objective of this work is to utilize the PCR technique to characterize Bacillus thuringiensis (B.t) strains that controls S. frugiperda in maize crops. Strains of B.t were obtained from soil samples collected all over Brazil and from labs around the world. Bioassays showed that three strains were very effective against S. frugiperda, two of them (344 and 7B8) collected from soil samples and one (T09) obtained at the Institute Pasteur. The DNA of these strains were first probed with cryl (Lepidoptera specific) and cryIII (Coleoptera specific) general primers via PCR analysis. The results showed that all three strains harbour only cryl genes specific for Lepidotpera. To further characterize . these strains, 12 specific cryl primers were employed. Known specific cryl PCR products, in the range of 130 to 367bp, were obtained with four primers cryIAb, cryIB, cryID and cryIE * showing that strains 344, 7B8 and T09 harbour the same cryl genes. The only difference was the amplification of an unexpected fragment of approximately 140bp when a mixture of cryIB, cryIC and cryID specific primers was used. CryIII primers used as a control showed no presence of bands in the gel. Analysis by phase contrast microscope showed that crystal proteins produced by these strains were all bipyramidal crystals. Also, eltrophoretic analysis of proteins by SDS-PAGE showed the same protein banding pattern for the three strains.