**Abstract**

The inhibitory activity of bovine pancreatic trypsin inhibitor (aprotinin), a natural polypeptide and a proteinase inhibitor, was demonstrated on gut proteinases of three lepidopteran borers of sugarcane using commercially available aprotinin. A synthetic gene coding for aprotinin, designed and codon optimized for better expression in plant system (Shantaram 1999), was transferred to two sugarcane cultivars namely CoC 92061 and Co 86032 through particle bombardment. Aprotinin gene expression was driven by maize ubiquitin promoter and the plant selection marker used was hygromycin resistance. The integration, expression and functionality of the transgene was confirmed by Southern, Western and insect bioassay, respectively. Southern analysis showed two to four integration sites of the transgene in the transformed plants. Independent transgenic events showed varied levels of transgene expression