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RNA Antisense Coat Protein Showing Promising Effects against Cotton Leaf Curl Disease in Pakistani Cotton

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Abstract : Cotton Leaf Curl Disease (CLCuD) is from Gemini virus and is transmitted through whiteflies in cotton. Transgenic cotton containing Antisense Coat Protein (ACP) has been found to show better results against CLCuD in cotton. In current research, Antisense Coat Protein was inserted in cotton plants to observe resistance developed in the cotton plants against CLCuD. T1 generation of plants were observed for its expression in plants. Tests were carried out to observe the expression of Antisense Coat Protein using Polymerase Chain Reaction (PCR) technique and by southern blotting. Whiteflies showing positive Cotton Leaf Curl Virus (CLCV) were reared and released in bioassay on ACP expressing cotton plants under laboratory as well as confined semi-field conditions. Results confirmed the expression of AC protein in PCR and southern blotting. Further laboratory results showed that cotton plants expressing AC protein showed rare incidence of CLCuD infection as compared to control. In the confined semi-field, similar results were observed in AC protein expressing cotton as compared to control. These results explicitly show that ACP can help to tackle the CLCuD issue in the future and further studies on biochemical processes involved in these plants and effects of ACP induction on non-target organisms should also be studied for eco-system.

Keywords : cotton, white flies, antisense coat protein, CLCV
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