

# ANNUAL BIOTECHNOLOGY CONGRESS

August 17-18, 2017 | Toronto, Canada

## Genetic transformation of locally developed two cotton varieties [CRSP1 and CRSP2] with Bt and glyphosate tolerant genes

Shafique Ahmed

University of the Punjab, Pakistan

Expression of the transgene with a desirable character in crop plant is the ultimate goal of transgenic research. Transformation of two Bt genes namely Cry1Ac and Cry2A cloned as separate cassette under 35S promoter in pKHG4 plant expression vector was done by using shoot apex cut method of Agrobacterium. Molecular confirmation of putative transgenic cotton plants for Cry1Ac, Cry2A and GT gene was done through PCR and ELISA. Transformation efficiency of CRSP-1 and CRSP-2 was calculated to be 1.2 and 0.8% for Cry1Ac while 0.9 and 0.6% for Cry2A and 1.5 and 0.7% for GTG respectively. CRSP-1 was found to adopt natural environment (acclimatized) earlier than CRSP-2 when exposed to sunlight for one month. Expression of Cry1Ac, Cry2A and GTG was found to be 1.2, 1 and 1.3 ng/ $\mu$ l respectively for CRSP-1 as compared to CRSP-2 where expression was recorded to be 0.9, 0.5 and 0.9 ng/ $\mu$ l respectively. FISH analysis of the transgenic CRSP-1 and CRSP-2 demonstrated the presence of one and two copy

numbers respectively. Similarly, the response of CRSP-1 against Glyphosate @1900 ml/acre was far better with almost negligible necrotic spot and efficient growth after spray as compared to CRSP-2 where some plants were found to have necrosis and negative control where the complete decay of plant was observed after seven days of spray assay. Similarly, almost 100% mortality of 2nd instar larvae of *Heliothis armigera* was recorded after three days in CRSP-1 as compared to CRSP-2 where insect mortality was found to be less than 90%. Quantitatively speaking non transgenic plants were found with 23–90% leaf damage by insect, while CRSP-1 was with less than 5% and CRSP-2 with 17%. Taken together CRSP1 was found to have better insect control and weedicide resistance along with its natural ability of genetic modification and can be employed by the valuable farmers for better insect control and simultaneously for better production.

e: shafiq@cemb.edu.pk