# Abstract

The aim of present investigation was to determine the effect of exogenously applied Cytokinin (CK) and Glycine betain (GB) on physiological, biochemical and yield attribute of two rice cultivars viz. Basmati-385 and KS-282 to moisture stress. The rice plants were grown in pots in glasshouse at National Agricultural Research Centre Islamabad. Plant growth regulator; Cytokinin and osmoprotectant; Glycine betain was applied by spraying the plants at panicles initiation stage before drought stress treatment. The drought was applied by withholding water supply till signs of temporary wilting/leaf rolling appeared in potted plants.

Under drought stress, both the CK and GB spray increased significantly (P=0.05), the proline concentration in leaves and panicles of both the rice cultivars as compared to their control. The increase was greater with CK spray (21 to 29%) as compared to GB (11 to 23%). The concentration of soluble sugar in leaves was only increased significantly with GB. However, in panicles CK and GB increased significantly the soluble sugar. The increase was greater with CK as compared to GB. Starch concentration in leaves and panicles of both the rice cultivars were increased significantly (P=0.05) by CK and GB spray. The degrees of starch in panicles were more pronounced in Basmatti-385 than KS-282. The G.B and CK spray increased significantly, the superoxide dismutase (SOD) activity in both the rice cultivars as compared to their control. The increase was greater with CK as compared to GB.

Under the applied moisture stress, both CK and GB spray increased significantly the paddy yield in both the rice cultivars under drought condition. Further, CK and GB increased panicles length, number per plant, primary and secondary branches in both the rice cultivars. CK and GB increased significantly, the filled seeds and filled seed weight per panicle in both the rice cultivars. The increase in paddy yield and filled seed weight was more pronounced in Basmatti-385 as compared to KS-282. The increase was greater with CK as compared to GB. Under the applied moisture stress, both CK and GB spray increased significantly the paddy yield in both the rice cultivars under drought condition. Further, CK and GB increased panicles length,

number per plant, primary and secondary branches in both the rice cultivars. CK and GB increased significantly, the filled seeds and filled seed weight per panicle in both the rice cultivars. The increase in paddy yield and filled seed weight was more pronounced in Basmatti-385 as compared to KS-282. The increase was greater with CK as compared to GB.