

ABSTRACT

The present study was aimed at the determination of the effects of exogenously applied salicylic acid on growth and other physiological parameters of salt stressed *Zea mays* L. cv. NMH-909 plants and its role in the alleviation of the adverse effects of salinity in these plants. The application of salicylic acid was done as foliar spray, 40 days after sowing at the vegetative stage of maize plants. The effect of salicylic acid was observed at three different levels of salinity viz. control, 4dSm^{-1} , 8dSm^{-1} and 12dSm^{-1} . With the increase in the salinity level, there was a delay in germination and reduction in seedlings weight and lengths. It was observed that all the studied parameters were affected harmfully by salinity. Root dry weight reduction was 5.30%, 16.56% and 32.14% at 4dSm^{-1} , 8dSm^{-1} and 12dSm^{-1} respectively whereas shoot dry weight reduction was 10.99%, 23.78% and 37.25% at 4dSm^{-1} , 8dSm^{-1} and 12dSm^{-1} respectively in comparison to the control. There was notable reduction in plant height, leaf number, plant fresh-dry weights, total chlorophyll contents and productivity. A considerable decrease in the photosynthetic rate and transpiration rate was observed. Application of salicylic acid was effective in the amelioration of detrimental effects of salt stress on maize plants. 150ppm salicylic acid was the most effective and it increased the shoot dry weight to 52.55% at 12dSm^{-1} . Plants with applied salicylic acid showed much better growth and productivity in comparison to those plants which were not treated with salicylic acid. The improvement in the parameters of growth induced by foliar application of salicylic acid was better in plants under saline conditions as compared to the plants of non-saline conditions. Under non-saline conditions, salicylic acid application in 150ppm concentration was the most effective. In saline conditions, the improvement increased with the increase in the salicylic acid concentration and 150ppm salicylic acid gave best results and proved to be the most effective concentration in mitigating the harmful effects of salts on maize plants. Weight of grains improved up to 89.81% and 104.08% at 8dSm^{-1} and 12dSm^{-1} respectively with the application of 150ppm salicylic acid. It can be inferred that the exogenous application of 150ppm salicylic acid gave best results at all the levels of salinity and considerably improved growth, yield and physiological parameters of *Zea mays* L. cv. NMH-909 and salicylic acid can be implicated to alleviate adverse effects of salinity on maize plants.