Abstract

Cadmium (Cd) accumulation in crops and the risk of Cd entering the food chain are severe health concerns, causing maize growth reduction. The combination of farmyard manure with salicylic acid reduces Cd stress and increases crop resistance to abiotic stress. The current research evaluated the effects of Cd stress on maize plants to discover toxic effects of Cd and an efficient strategy to alleviate them. Seeds of maize were sown in pots, salicylic acid, farm manure and Cd at different concentrations (100mg/kg and 200mg/kg) were used in a completely randomized design (CRD). Thirty days old maize seedlings were evaluated for their response to the treatments. The findings indicated that the maize growth was significantly boosted by the combined application of farmyard manure and salicylic acid compared to control and contaminated treatments. The use of farm manure and Salicylic acid in combination significantly improved vegetative growth of maize seedlings planted at different concentrations of Cd compared to the treatments that had only cadmium concentration alone at different levels. The maximum improvement was in T6 (farmyard manure), followed by T2 (farmyard manure) and T3 (salicylic acid). The maximum negative impact was observed in T5 (200 mg kg -1 of Cd) followed by T4 (Cd 100mg/kg) and T10 (salicylic acid and Cd 200mg/kg) with soil concentration of 100mg kg -1 and 200 mg kg -1 with salicylic acid respectively. Our findings suggest that the use of salicylic acid together with farm manure is the best approach to mitigate the Cd stress in the contaminated soils in which maize is grown.