Foliar applied potassium nitrate was effective in improving growth of salt-stressed sunflower plants

In order to study the effectiveness of foliar-applied potassium (K^+, 1,25%) using different salts (KNO_3, KCl, K_2SO_4, K_2CO_3, KH_2PO_4 and KOH) in improving the inhibitory effect of salt stress on sunflower plants, a greenhouse experiment was conducted in Pakistan. Sodium chloride (150 mM) was applied through the rooting medium to 18-days old plants and after 1 week of salt treatment; amounts of 25 mM solution of K-source were applied twice with a 1-week interval as foliar spray. Salt stress adversely affected the growth, yield components, gas exchange, and water relations, and also caused nutrient imbalance in sunflower plants. However, foliar-applied different sources of potassium improved shoot and root fresh and shoot dry weights, achene yield, 100-achene weight, photosynthetic rate, transpiration rate, stomatal conductance, water-use efficiency, relative water content, and leaf and root K^+ concentrations of sunflower plants, grown under saline conditions. Of the different salts, KNO_3, K_2SO_4, K_2CO_3 and KH_2PO_4 were more effective than KCl and KOH in alleviating salt-induced inhibitory effects on sunflower plants. These more effective K sources improved the growth and some key physiological processes of sunflower plants.