Water quality effect on fodder maize and soil characterstics

Abstract

The field experiment was conducted to observe the impact of different water qualities on salt-tolerant and sensitive maize cultivars at Sindh Agriculture University, Tandojam during Spring and Autumn seasons of 2006. Maize cultivars viz. tolerant (EV-1098, Agaiti-2002) and sensitive (EV-4001 and Akbar) were treated with water qualities viz. EC 0.40 (Canal water), 2.0, 4.0, 6.0 and 8.0 dS m-1. The applied saline water levels were prepared by mixing the canal water with poor quality tube well water (EC 11.00 dS m-1). Soil samples were collected from 0-15, 15-30, 30-45, and 45-60 cm for determination of physicochemical properties viz. Soil texture (pre sowing), pH, EC, SAR, soluble cations and anions. Tall plants, more green and less dry leaves per plant, higher green fodder yield, and dry fodder yield were recorded with the application of canal water having EC 0.4 dS m-1. Decreased values of all these traits recorded as the salinity level incre ased from EC 0.4 to 8.0 dS m-1. Among the cultivars, EV-1098 and Agaiti-2002 performed better under different water qualities as compared to EV-4001 and Akbar. Application of brackish water also significantly affected the soil chemical composition by enhancing EC, soluble sodium, and chloride contents in soil. It is concluded that application of canal water is suitable for maximum maize productivity with safeguard of soil profiles from further deterioration in terms of salt content. Alternate use of brackish water could be less than EC 4.0 dS m-1 and increase in EC beyond this level reduced maize fodder yield and degraded soil.

Keyword: Maize; Fodder; Water quality; Soil properties; Growth; Yield