



Effect of Poor-quality Water on Soil Enzyme Activities in Arid Soils of Punjab

BK Yadav

Punjab Agricultural University, Regional Research Station, Bathinda-151001, Punjab, India

E-mail: bkyadav74@pau.edu

Abstract

Soil salinization is one of the most serious land degradation problems in the world. Excessive amounts of salts present in the soil have an adverse impact on soil microbial population and their activities. The aim of this study was to analyze the impact of soil agriculture management such as continuous poor quality water irrigation in arid soils on soil chemical, soil dehydrogenase and enzymes activity. Soil pH increased with increase in soil depth, and slightly higher soil pH was recorded in tube well water irrigated soils as compare to canal water. The higher soil electrical conductivity (EC) was recorded in tube well water irrigated soils compared to canal water in surface soils, and decreased with soil depth. The water quality not affected the soil organic carbon. A higher dehydrogenase activity (7.0 % and 4.0%) was reported in surface soils (0-15 cm) as compared to subsurface soils (15-30 cm) with canal water and tube well water, respectively. The poor quality water slightly influences the DHA in upper soil layers and reduced the activity by 2.9% in surface soil. Similarly, acid and alkaline phosphatase activity was higher in surface soils as compared to sub surface soils, irrespective of water quality. The surface (0-15cm) soils showed 3.3% and 3.4% higher acid phosphatase compare to subsurface (15-30 cm) soils irrigated with canal and tube well water, respectively. Whereas, in surface soils (0-15 cm) 3.4% and 1.5% more alkaline phosphatase was reported as compared to subsurface soils (15-30 cm) irrigated with canal and tube well water, respectively.

Key words: Soil enzyme, Soil salinity, Soil dehydrogenase, Acid phosphatase, Alkaline phosphatase, Arid soil