

DIFFERENTIAL SALT LOADING OF ON-SITE DRAINAGE WATER AND ASSOCIATED SALT BALANCE

EI-Naka, E.A.

Soil Science Department, Faculty of Agriculture, El-Zagazig University.

ABSTRACT

Monitoring of salt loading in soils and water is important to avoid salt accumulation and their subsequent degradation. A field experiment was implemented in two sites in the EL-Zagazig Country, each with workable subsurface drainage network. Maize and wheat were grown in sequence under conventional management procedures. Emitted drainage effluents in the manholes were sampled for volume and chemical determination. The results indicate that EC, SAR, and ion concentrations increased as a function of time, sometimes by a factor of 4, due to diminution of emitted water. In most cases, Na was the most dominant due to feeble reactions with the exchange complex. Bivalent Ca, Mg, and SO₄ were closely affiliated to exchange, precipitation, and dissolution reactions. A considerable amount of salt was flushed out of the two fields during the growing season of maize followed by wheat. The total net salt balance of the two sites is negative, indicating that the soils have lost some of their initial salt content in an adventitious leaching process during irrigation. It is recommended that an integrated management of irrigation and subsurface drainage systems should be considered within a systemic approach to provide for the viable and sustainable agricultural production.

Keywords: salt balance, salinity, sodicity, subsurface drainage.

10784

10785

10786

10787

10788

10789

10790

10791

10792

10793

10794

10795

10796

10797

10784

10785

10786

10787

10788

10789

10790

10791

10085

El-Sayed, G.H. et al.

10792

10086