

Abstract:

Salinity is one of the most important plant growth limiting factors. Whenever the soil mineral exceeds from certain limits, osmotic effects or toxic elements cases stress on plants. This study has been performed in order to investigate the effect of stair tillage on leaching in comparison with two other methods, fixed-deep tillage and no-tillage. The Randomized Complete Block design with the three treatments and three replications is used for the experiment. The experimental units are closed end strips with a length of 12 and Width of 2 meter. In stair treatment, each strip longitudinally divided in to three sections. Sections were tilled in depth 20, 40 and 60 cm respectively. The second treatment was tilled in 20cm in depth and third treatment was no tilled over the strip. The irrigation was performed in two stages. Soil sampling was done before and after each leaching. The measurements include the identification of acidity of paste and saturation extraction, measurement of salinity, sodium, potassium and total calcium and magnesium in the saturation extract. The absorption of sodium and potassium ratios was calculated. Results show the better performance in stair case method of leaching in soil profile. Fixed and no tillage treatments came in second and third step respectively. In the first irrigation, the salts movement pattern in the surface layer of the stair-till treatment is leaching of salts from the first and medium parts to the end of the bar. In the second irrigation, pattern showed leaching of salts from this part in this stage. Sodium modification in the stair case treatments acted more successful than other two treatments. Highest and lowest leaching of potassium occurred in the constant plowing depth and no-tillage treatment respectively. Also in stair case treatment, a minimum sum of calcium magnesium leaching has accrued.

Key words: Leaching, Salinity, Stair tillage