

COMPARISON OF CONTINUOUS AND INTERMITTENT LEACHING METHODS FOR THE RECLAMATION OF A SALINE SOIL

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ABSTRACT

Soil salinization is diminishing the agriculture productivity in the country. If remedial measures are not taken to tackle this problem, the fertile land will go out of cultivation in the near future. Several experiments have been conducted to reclaim the salt affected soils. However, growers still do not know how long it takes to reclaim saline soils. An experiment was carried out in the experimental field at the Centre for Bio-saline Agriculture at Latif Experimental Farm to compare the continuous and intermittent leaching methods for the reclamation of a saline soil. Six plots each of 2 m x 2 m were prepared on a saline soil. Three randomly selected plots were leached by continuous leaching method, while the remaining three plots were leached by intermittent leaching method. Analysis of soil samples showed that the soil was clay loam in texture between 0 and 60 cm depth. The average soil bulk density ranged between 1.13 and 1.20 g/cm³ and porosity ranged from 52 to 55%. Data analysis results revealed that after carrying the experiments for two months, continuous leaching method removed 61.59% of salts from the top 0-60 cm soil depth, whereas the intermittent leaching method removed only 46.14% of the salts from the same depth. When the two treatments were compared after five months of experimental work, intermittent leaching method removed 75.23% of salts from the top 60 cm layer as compared to 64.01% with continuous leaching method. Soil pH, SAR and ESP after two and five months of the experiment remained almost the same, however after two months of the experiment pH slightly increased in intermittent leaching and after five months of the experiment in continuous leaching method. Similar trend was observed in SAR and ESP which slightly increased in intermittent leaching method after two months of the experiment and in continuous leaching method after five months of the experiment. The statistical analysis of data showed highly significant ($p < 0.01$) decrease in EC of soil saturation extract and non significant ($p > 0.05$) decrease in pH, SAR, and ESP of all plots after two and five months of the experiment. The present study suggests that continuous leaching is the suitable method of leaching when time for leaching is a limiting factor. However, for better results for long duration (up to five months) intermittent leaching methods is more efficient.

Keywords: Leaching, continuous, intermittent, textu