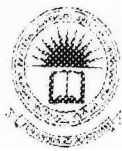


**MANAGEMENT PRACTICES TO RECLAIM  
SALT AFFECTED SOILS :- A REVIEW**



**BY**

**T.R. MUNASINGHA**



FTC 74



Project Report  
Library - EUSL

**DEPARTMENT OF BIOSYSTEM TECHNOLOGY  
FACULTY OF TECHNOLOGY  
EASTERN UNIVERSITY  
SRILANKA**

**2021**

## ABSTRACT

The salt content of the soil is known as soil salinity, and the process of increasing the salt content is known as salinization. Salts are found naturally in soils and water. Natural processes such as mineral weathering or the gradual withdrawal of an ocean both can cause salination. It can also occur as a result of man-made processes such as irrigation and road salt. are a naturally occurring component in soils and water.  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ , and  $\text{Cl}$  are the ions responsible for salination. these salts are flushed or leached out of the soil by drainage water in areas with adequate precipitation. Salts are deposited by dust and precipitation in addition to mineral weathering. Salts can build up in dry areas, resulting in naturally saline soils. The addition of salts to irrigation water can increase the salinity of soils. Irrigation management that provides adequate drainage water to leach added salts from the soil can help to prevent salt accumulation. Soil salinization has a negative impact on plant development and contributes to land degradation. Saline earth reduces agricultural productivity, worsens farmer well-being, and worsens the region's economic situation. Early management of soil salinity aids in its reversal. However, due to the negative effect of salinity on soil properties, heavy contamination results in the complete loss of farmlands and desertification. Soil salinization has a negative impact on plant development and contributes to land degradation.

Controlling soil salinity and reclaiming salinized agricultural land are two aspects of soil salinity control. The goal of soil salinity control is to prevent soil degradation caused by salination and to reclaim already salty (saline) soils. Soil reclamation is also referred to as soil improvement, rehabilitation, remediation, recovery, or amelioration. Irrigation is the most common man-made cause of salinization. Irrigation water from rivers or groundwater contains salts that remain in the soil after the water evaporates. The primary method of controlling soil salinity is to allow 10-20% of irrigation water to leach into the soil, which will then be drained and discharged via an appropriate drainage system. Because the salt concentration of drainage water is typically 5 to 10 times that of irrigation water, salt export equals salt import and does not accumulate.

## Table of Contents

Content	Page No.
ABSTRACT.....	4
ACKNOWLEDGEMENT .....	5
LIST OF TABLE.....	8
LIST OF FIGURES .....	8
ABBREVIATIONS .....	9
CHAPTER 01 .....	10
INTRODUCTION .....	10
1.1. Background.....	10
1.2. Problem statement and justification.....	14
1.3. Objective.....	15
CHAPTER 02 .....	16
2.0. Literature review .....	16
2.1. Origin of salt .....	18
2.2. Causes of soil salinity .....	20
2.2.0. Natural causes:.....	20
2.2.1. Anthropogenically causes: .....	20
2.2.2. Deforestation:.....	21
2.2.3. Accumulation of air-borne or water-borne salts in soils:.....	22
2.2.4. Overgrazing.....	22
2.3. Factors modifying the salinity: .....	22
2.4. Impact of salt.....	24
2.4.0. Impact of salt on Environment.....	24
2.4.1. Climate Change and Salinity.....	24
2.4.2. Negative Impacts of Salinity on Crop Physiology.....	25
2.4.3. Impact of salt on plant.....	26
2.4.3.1. Salt stress .....	26
2.4.3.2. Plants' Salt Stress Mechanisms .....	28
2.4.3.3. Salinity Effects on Plant Growth, Development and Biomass Yield.....	31
2.4.3.4. Shoot length .....	31
2.4.3.5. Number of Leaves.....	31
2.4.3.6. Biomass.....	31

2.4.4.	Effects on Vegetable Growth and Nutrition.....	32
2.5.	Measuring soil salinity.....	35
2.6.	Characteristics of Saline and Sodic Soils.....	37
2.6.0.	Categories of saline and sodic soils .....	39
2.7.	Reclamation of Salt affected Soil.....	40
2.7.1.	Organic amendment of soil salt reclamation.....	42
2.7.2.	Chemical method of soil reclamation .....	43
2.7.3.	Biological method of soil reclamation .....	45
2.7.3.1.	Phyto-desalinization.....	45
2.7.4.	Physical method of soil reclamation. ....	46
2.8.	Leaching Soluble Salts and Controlling Salinity. ....	48
2.9.	Irrigation .....	50
2.10.	Drainage Salts and Controlling Salinity.....	51
CHAPTER 03 .....		53
CONCLUSIONS.....		53
RECOMMENDATIONS AND SUGGESTIONS .....		55
REFERENCES .....		56

## LIST OF TABLE

Table 2.1: Soil salinity classes and associated effects on plants. ....	38
Table 2.2: Categories of saline and sodic soils .....	52

## LIST OF FIGURES

Figure 2.1 Mechanism of salt stress in plants.....	39
--	----