



## Management Aspects of Surface Irrigation-Yield Loss Due to Water Logging in Godavari Basin-India

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### Introduction

The Sri Rama Sagar Project was constructed across river Godavari in Pochampad(V) to irrigate a total command Area of 0.67 mha.(Administrator-cum-CE-SRSP et.al.1981) Irrigation projects are specifically designed for increasing the crop production and yet the very projects may cause degradation and loss of production and land resources through soil salinization, if adequate provisions for drainage and salinity control are not made. An intensification of agricultural production on a global scale is necessary in order to secure the food supply for an increasing world population (Bruno Glaser et.al.2002). The Irrigation potential created under SRS project is about 0.67million hectares and it has fallen to 0.242 million hectares at present. It was observed that an area of 42,729 Ha. under G6-Godavari basin was identified as waterlogged and about 55,180 hectares was prone to water logging. Un controlled application of water in the command area of the major irrigation project generally lead to deleterious consequences like water logging, salinity and alkalinity problems. Saline Water is one of the most common pollution in fresh ground water (David Keith Tod et.al 1980).On account of this fact, water-logged area has been increasing in G6-Godavari Basin Excess salts, regardless of composition; generally keep the soil clays in a flocculated state.

Since the problems of water logging and soil salinity were diagnosed in recent years, the several studies were conducted by visiting the sites and collecting the soil samples and tested in laboratories. However, there is a decreasing trend in crop yields per hectare due to water logging salinity/alkalinity in Sri Ram Sagar Project Command. The results obtained suggest that about 39% of area is under water logging condition and affected by Salinity and alkalinity.

The main objective is

- 1) To examine the magnitude and socio-economic consequences of water logging and salinity due to canal irrigation.
- 2) To examine the production loss, growth of weeds, infestation of diseases etc. due to, mis-management of surface irrigation.
- 3) To suggest appropriate measures for overcoming the problems of water logging and soil salinity.
- 4) To suggest Leeching and drainage arrangements.

Hence this problem is selected for suggesting Remedial Measures.

### Materials and Methods

In General, water quality along the Corridors is good and complies with CPCB Surface Water Quality norms. Ground water is a major source of domestic as well as agricultural water supply in the area. Details of water quality features are obtained. Application of more irrigation water than required by crops is practiced in G6-Godavari basin. Water logging and soil salinity are the two major problems affecting the agricultural productivity and sometime becomes too severe to take it out from economic crop production (Central Soil Institute.et.al.2002). In India, vast areas have been brought under irrigation without provision of drainage component. Even though the water quality is good, large scale irrigation has led larger scale water logging and wide spread salinity in the canal command area.

In this research Method the change in soil profile has been studied. In addition, excess use of fertilizers like N,P &K during the years 2015 to 2018 has been increased from 69469 tons to 88520 tons.The case study of Sri Rama Sagar Project indicates that water logging is caused by the interaction of large number of factors

such as ground water recharge, drainage, surface irrigation, cropping patterns, ground water with drawl for irrigation, soil characteristics, seepage, excess use of fertilizers from field channels and distributaries. In command area of Sri Rama Sagar Project observation wells indicated waterlogged and non-waterlogged areas in the same command.

Site investigation and site surveys were revealed the information like topographic details, soil profile, salinity/alkalinity, EC, pH and soil Texture in villages of Sri Rama Sagar Project Command.

For delineating water logged area, dug wells are located in the command and depth of water table is observed season wise post monsoon depth of water table are generally considered for delineating water logged area.

It is seen that the expected yield of rice stages at 3.5 t/ha. and the average yield is 2.6 t/ha. Water logging and salinity have shown an increasing trend in many of the developing countries(Kasuhan Kitilia et.al2004). Water is even a scarce resource in these areas and even then loss of productivity is caused by over use, misuse and mismanagement of water.

### Results and Concluding Remarks

The soils were analysed for chemical properties as per procedures out lined by Jackson, 1973.The Ec of experimental area varied from 0.05 to 4.4mmhos/cm and the pH varied from 7.6 to 8.6 . The Ec value decreased is slightly alkaline soils and increased for Saline Soils.

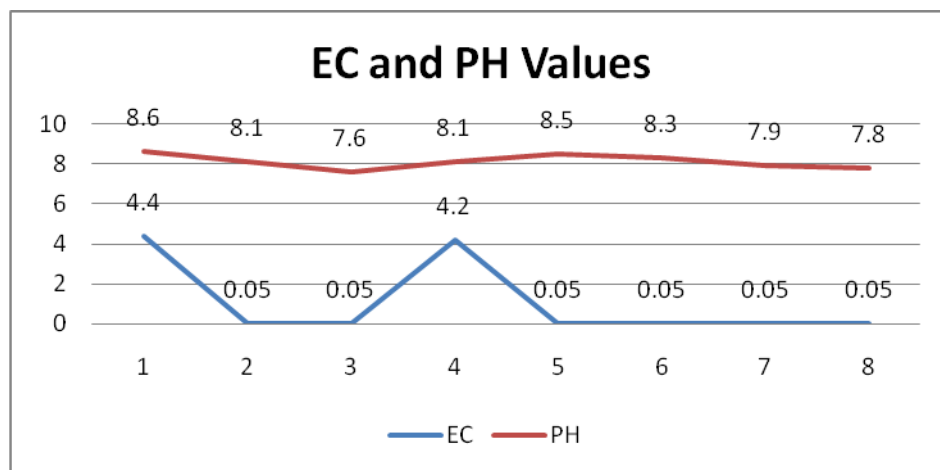


Figure 1. Trend Showing the variation in Ec & pH Values

Soil pH is one of the most important parameters which influence plant growth. The pH and EC are arrived. The research is based on data collection for last 5 years for 6 different crops. Arrive loss in yield per each crop after which financial evaluation is to be done.

The main Object of this research is to suggest leaching and arranging the pattern of drainage by conducting several field and laboratory tests. Similarly, for the removal of excess water, installation of surface and sub surface drainage is an important regulatory measure (Ravaneet Saini, Gopala Krishnaan,NK.Tuli,Gurmeet Kaur et al.2013) drainage followed by leaching with good quality water removes excess salts from the root zones, of the crop. An efficient drainage system is essential for the quick disposal of the storm water and excess irrigation water(Prof.Bancy Mati et.al 2014).Wter logging is a common problem of management. It is observed that the action taken by Irrigation department is not effective.**Hence,research is done to suggest methods of leaching and adopting different types of drainage systems as a pre-requisite, at the stage of planning canal irrigation projects itself in order to avoid huge social costs due to water logging and salinity.**

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