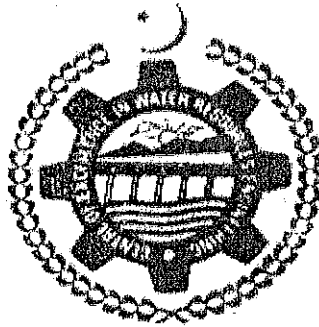


THESIS

**EVALUATION OF SUSTAINABILITY OF IRRIGATED AGRICULTURE
IN SPAIRA RAGHA PLAIN / NORTH WAZIRISTAN AGENCY**



By

Habib ur Rehman
(2003-PG-WRM-04)

For the Degree of

MASTER OF SCIENCE

IN

WATER RESOURCES MANAGEMENT

CENTRE OF EXCELLENCE IN WATER RESOURCES ENGINEERING
University of Engineering and Technology, Lahore, Pakistan

2005

ABSTRACT

Spaira Ragha Plain is situated in North Waziristan tribal region, 20 miles from Mirali town along north bank of Kaitu River. The Gross area of Spaira Ragha Plain is 7000 acres while the culturable command area is 4039 acres. The topography of Spaira Ragha Plain is cup shaped surrounded by low hills on all sides. The plain has shallow soil depth ranging from 3 to 15 ft. There is no irrigation system in the area and present cropping intensity of the area is 30%.

Canal irrigation is proposed under Kurram Tangi Dam Project for Spaira Ragha area. After the completion of irrigation plan the cropped area is anticipated to increase to 4020 acres with target cropping intensity of 100% comprising 40% Kharif crops and 60% Rabi crops. The irrigation proposed in Spaira Ragha Plain has over all irrigation system efficiency is 60%. Due to the shallow soil, large water losses and low hydraulic conductivity it is likely that this area may be threatened in future by water logging and subsequently secondary salinization

The present study describes the role of existing natural drains/nullahs in combating the water logging and extent of water logging in Spaira Ragha Plain under different scenarios considering the variation in different variables (recharge, hydraulic conductivity, soil profile depth and natural drains depth).

The results indicate that a large part of the area is liable to become water logged with in five years of the project operation. Project area is not very responsive to hydraulic conductivity and soil profile depth. Water logging in project area is very much dependent on recharge rate. Deepening of the existing drains has minimal effect on combating emergence of water logging.

It is recommended that the recharge rate should be reduced by effective water management. The provision of subsurface drainage should be provided and remodeling of the existing drains should be done.