

THESIS

A STUDY OF WATER ALLOCATION FOR LBDC AREA WATER BOARD

Submitted by

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ABSTRACT

Lower Bari Doab Canal (LBDC) off takes from the River Ravi at Balloki Barrage in Kasur District about 65 KM in South-West of Lahore. The canal command is located from latitude $29^{\circ}-55'$ N longitude $71^{\circ}-25'$ E to latitude $32^{\circ}-45'$ N longitude $73^{\circ}-50'$ E. It irrigates agriculture land in Kasur, Okara, Sahiwal ,Khanewal Districts and small piece of land of Faisalabad and Vehari Districts.

Originally , LBDC system was designed with a cropping intensity of 66%. Increased population coupled with a major water resource impoundment and improved cropping technologies have resulted in a more intensive irrigation system with cropping intensity reaching to 150%. Inequitable distribution of irrigation water is an other problem. It is occurring that water does not reach the tail end of the system or not at the rate intended in the design. Poor operation and maintenance, lack of monitoring facilities on the operational performance, illegal pumping from canal and political intervention add to the inequity in distribution. This ultimately lead to low crop yield .The government is adopting a new approach for efficient and self sustaining irrigation system to increase the productivity of crops. The irrigation services are being decentrallized by commercially oriented Area Water Board and the board is being framed on LBDC and LCC(East) system.

This study was conducted to evaluate the crop water requirements and water availability for the LBDC system and how the internal regulation with in canal command is made. Data was collected related to the canal on ten daily basis and crops. Modified Penman Method was used to evaluate the crop water requirements for Balloki-Okara Division,

Sahiwal Division and Khanewal Division separately. Then comparison was made with crop water requirements and water availability at crop root level. The crop water requirements at head of canal were determined and comparison was made with water availability at head of canal.

For the existing cropping intensity, the crop water requirements at crop root level is 4.227 MAF and delivery at crop root level is 3.394 MAF. 80.30% of crop water requirement is being met by the water and still there is shortage of 19.70 %.

Internal regulation was evaluated for Balloki-Okara Division, Sahiwal Division and Khanewal Division separately. During Kharif season these divisions are getting 102.96 %, 84.55 % and 80.20 % of their allocated discharge and during Rabi season, they are getting 100.50 %, 82.63% and 80.83 % of their allocated discharge respectively. To evaluate the regulation within division distributaries lying in Okara Division were selected. Regulation was studied on ten daily basis and it was concluded that inequitable distribution of supplies exist at all level of canal.

Crop water requirements for 1000 acres of land for Balloki-Okara Division, Sahiwal Division and Khanewal Division were determined separately for Kharif and Rabi season. During Kharif season Crop water requirements at crop root level for 1000 acres of land are 1713, 1904, 531 AF for Balloki-Okara Division, Sahiwal Division and Khanewal Division respectively and during Rabi season, the requirement is 1072, 1255 and 1453 AF for these Divisions. When surface water is used in conjunctive use of ground water, then the recommended crop water requirements for 1000 acres of land are 1325, 1474

and 1958 AF during Kharif season and during Rabi season the requirement is 830,971,1124 AF respectively.

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