

CHAPTER - 6

RECOMMENDATIONS

The regulation of canal supplies especially when these are short of total requirement; on the run of the river; WJC System, becomes complex to operate. The net irrigation requirement keeping in view the crop water requirement; subsoil water level; rainfall pattern & residual moisture content at the time of sowing; infiltration rate i.e. soil characteristics etc. varies from WJC sub-system at Disty & Minor level in its various tracts. The rotational programmes are being framed keeping in view expected supplies; prevalent cropping pattern after discussion with agriculture deptt. etc. but the finer details to take into consideration residual moisture; varying soil characteristics & cropping pattern developing on the whims & fancies of farmer remain unrelated to actual releases. Since the rotational programme at the start of crop season does not & cannot take into account varying cropping pattern & also the time of sowing in different areas; the water deliveries during various stages of growth too result in crooked distribution even denying water during critical period of growth or releasing water when not required & allowing in running to waste down up to tail etc. This at best can be now avoided by steps described below. The following recommendations based on practical achievable considerations are made to attain improvement in WUE.

Technical Measures & Water Management Techniques

- 1) Detailed study at micro level i.e. at minor level upward to branch and distribution of supplies within the network on a sub-branch so meticulously matched by release & diversion to minimise loss & maximise usage.
- 2) The first watering can be eliminated where residual moisture so warrants.

- 3) Where there is chronic shortage at critical stage due to inadequacy of supply; supplemental or conjunctive use ensured.
- 4) An integrated system of practices evolved over the sub-branch unit to optimise use of ground water, surface water & micro irrigation practices like sprinkler, drip etc.
- 5) There is ample scope to revise, rationalize & reduce water allowance fixed long back in the Remodelling of WJC project where there is waterlogging; salinity
- 6) Drainage & Irrigation go hand in hand and for healthy growth of plant, drainage congestion is as harmful as lack of irrigation supply during keen demand.
- 7) Even if the Haryana Canal Act 1974 provides liberty to farmer to adopt any cropping pattern; educating farmer by persuasion, motivation & adaptive trials is essential to encourage cropping pattern which suit the climate, soil, water availability & uniformity at least at some level say tertiary level; can better tune supplies & thus save wasteful supply by simply sticking to rotation.
- 8) Installation of sprinkler & drip is not merely watersaving in sandy areas etc. but even in areas of plenty to avoid water logging; and wasteful overuse of water.

Where surface water is in plenty & ground water fresh and sweet a balance has to be drawn. It has been observed that head reach of W.J.C. in distt. of Karnal, Yamuna Nagar, Kurukshetra & even Panipat are paddy growing. Farmer gets plenty of water from canal & additional rice-shoots as well; but as ground water too is handy; shallow & fresh he extracts this source too.

It is recommended that in such areas farmer should be encouraged to use ground water & surface waters be carried to areas of water scarcity where even ground water is not available. For such

purpose matching of schedule of rates would need increasing water charge for surface water and reducing power rates for ground water.

- 9) The volumetric charge for irrigation water is recommended where there is tendency to over-use water at the expense of tailenders. Experiments had been done on Narwana Branch areas & some areas of Bhalaut Sub Branch but system was dropped due not to its doubt in effectiveness but lack of sound communication vis-à-vis prevalent method; one reason being fear of demolition of the institution of Patwari system.
- 10) The WJC tract is vast and variable as far as soil characteristics are concerned. There is a good scope of covering south-western part where only fractional supplies are run in big canals; to encourage sprinkler and drip irrigation.
- 11) Zoning can be done for
 - i) Predominantly ground water extraction by state or private tubewells.
 - ii) Surface Irrigation from canals.
 - iii) Surface Irrigation & T/W Irrigation
 - iv) Flow & Sprinkler Irrigation
 - v) Sprinkler Irrigation; Canal based or provided with tanks or fitted on T/ws
 - vi) Drip Irrigation; which is suitable even by using saline waters for certain tolerant crops; orchids
- 12) The tail areas of canals & tail areas of even watercourses are chronic sufferers as do the irrigation figures consistently. It is the responsibility of the deptt. to ensure equity which can be achieved by,

- a) Maintaining efficiency diagram of each outlet.
- b) Setting of outlets from head to tail suitably to match full supply level pattern of channel.
- c) Tattling of outlets in head & middle reach in case of their overdrawal or deprivation at tails.
- d) Supplementing supplies at tail or incentives or subsidy for micro-irrigation practices.
- e) Volumetric charge of water released.

STRUCTURAL & STRATEGIC

- 1** As detailed here-to fore Hathnikund Barrage Completed over 3 years back be commissioned to save not only massive transit loss of precious water between Hathnikund Barrage and Tajewala Head works in the river bed but also save multi-million cost each month on double maintenance; staffing; loss of generation of power etc. This is likely to result in additional 15 cumecs of water availability during critical lean months sufficient to irrigate about 1.25 lakhs hectares of command area in each crop; sufficient to mitigate water supply suffering of Delhi State if made available..
- 2** Augmentation canal with designed capacity of 128 cumecs renovated & rehabilitated at huge cost recently in 2000 be run to design capacity to save avoidable losses by routing of supplies through unlined WJC when supplies not even required. Why augmentation canal even after rehabilitation at huge cost not run even with 75% of its capacity & precious waters wasted need reason & accountal as discussed in foregoing pages. The losses which have been allowed to occur due to non-use of declared capacity / rehabilitated capacity is again tens of cumecs each day.

Supplies which could be saved at 'B' or 'C' could more than sufficiently slake the thirst of drinking water supply needs of Delhi and the National Capital Region (NCR).

INFRASTRUCTURAL & ADMINISTRATIVE

1. Upgrading communication system to reduce time lag is needed to reduce or enhance releases and its implementation by rapid diversion or reduction to eschew wastage & optimisation of available water resource; as well as incorporate the fluctuating flows as well as varying crop water needs consistent with climatological factors .
2. Improving structural efficiency of head regulators; cross-regulators outlets, proportionate regulators; bridges by better upkeep; redesign for proportionate drawl of silt, avoidance of weed growth; upkeep of regime of channel & equity in distribution.
3. Regular hydraulic survey of canals from head to tail to ensure if FSL & bed levels are true to design & take corrective measures.
4. Framing rotational programme of group of channels; in keeping with deliveries at stress value rather than excess after re-designing water allowance on rational consideration.
5. Continuous monitoring of "H" over crest of outlets & monitoring efficiency diagram of each channel.
6. Enforcement of canal act provision to maintain water course below the outlet to stop wastage & minimize losses due to evapotranspiration through unwanted growth, pilferage, leakages, cuts, breaches, heading up or even pollution.
7. Land levelling of fields, & educating farmers to switch over to & improve farming practices i.e.

- a. Preparation of fields
- b. Check-basin, border strip, furrow depending upon local conditions to achieve uniform distribution

Thus apart from efficiency of water delivery from reservoir / head works to outlet head through conveyance and distribution system; the irrigation methods employed in irrigating farm or field too shall have three efficiencies viz. application, storage and distribution efficiency.

Since losses are enormous and maximum below the outlet in the field water course and on the farm itself; this component of study and recommendations shall have greater bearing on overall achievement of water-use efficiency

- 8 Upgrading & rationalising of schedule of rates for incentives for economic use of water & disincentive for over-use
- 9 Review of schedule of rates based on water-use by crop; as already broadly recommended by special committee (See Annexure 5.2)
- 10 Recycling of waste waters
- 11 Volumetric charge on subsystem as experiment and bulk charge at head of tertiary system from PIM agency & leaving it to Minor Committees to have their own differential or equitable water charge system.