

(2) Parameters

A = concentration of recharge water in saline area. (mg/liter)

B = fraction of tubewell water to be exported to prevent salt build-up.

b_A = annual gross benefits on a million acre tract. (millions of rupees per year)

C = concentration of applied irrigation water (mixed canal and pumped water) in the saline area. (mg/liter)

C_{MAX} = maximum allowable concentration of applied irrigation water in the saline area. (mg/liter)

C_e = annual cost of exporting of saline water. (millions of rupees per year/maf per year)

C_m = annual cost of increasing capacity of canals into saline area. (millions of rupees per year/maf per year)

C_w = annual cost of tubewell water. (millions of rupees per year/maf per year) (includes power, maintenance and operation and amortized cost of wells, appurtenances and electrification); see Appendix Report "Indus Basin Studies" Harvard Water Resources Group, 1963 for a discussion of costs.

Δ = average rate of irrigation, in acre feet per acre, per year in the non-saline area. In most of the computations this figure was set at 3.5 feet/yr (3.9 feet per year including effective rain) which is believed to be close to the optimal rate of water application (including requirements for leaching) during the first level of development.

$k\Delta$ = average rate of irrigation, in acre feet per acre per year in the saline area. In most computations, Δ was set at 3.5 feet per year. The parameter k, where $k > 1$, takes into account the additional amount of water needed to offset the adverse effects of salinity on plant growth (See Chapter 2). It is a function of the salinity of the mixture of canal and pumped water applied to crops. For example, when this concentration is 2000 ppm, the value of k was taken to be 1.25.

F = ratio of the unit cost of export to the unit cost of tubewell water ($C_e:C_w$).

L = ratio of gross benefits per million acre tract per year to the unit cost of tubewell water ($b_A:C_w$), (ft per year).

M = ratio of the unit cost of canals in the saline area to the unit cost of tubewell water ($C_m:C_w$).

N = net benefits. (millions of rupees per year per million acres).

NB = ratio of net benefits to unit cost of tubewell water ($N:C_w$).

R = effective rainfall. (maf/yr) Average value for the Former Punjab and Bahawalpur, 5.2 inches per year.