LIST OF SYMBOLS

Symbol	Description	Unit
Y	Output	kg,
$\{X_s\}$	Input variable vector	(.)
TW	Total water used	m^3
X	Vector of inputs other than water	(.)
TW^k	Vector input of total water applied at stage 'k' of crop growth	m^3
σ	Marginal value product	$Rs\text{-}m^{-3}$
δ	Marginal physical product of water	$kg\ m^{-3}$
P_Y	Farm harvest price of final output	$Rs\text{-}kg^{-1}$
E_p	Elasticity of output	(.)
MP_i	Marginal product with respect to input X_i	$kg\ m^{-3}$
AP_i	Average product with respect to input X_i	$kg\ m^{-3}$
A_j	Area of the field under j^{th} crop	m^2
P	Rainfall	mm
R_o	Runoff from the field	mm
S_T	Maximum potential storage of the watershed	mm
CN	Curve number	(.)
X_1	Land	acre
X_2	Human Labour	man days
X_3	Material input	kg
X_4	Energy used in production	kWh
W_1	Water applied at crop growth stage I	M^3
W_2	Water applied at crop growth stage II	M^3
W_3	Water applied at crop growth stage III	M^3
W_4	Water applied at crop growth stage IV	M^3
h_0	State (groundwater depth) at period '0'	m
h_t	State (groundwater depth) vector for the period t (n-element)	(.)
q_t	Control (groundwater extraction) vector for period t (m-element)	(.)
W_t	Positive definite symmetric matrix (n x n – element)	(.)
w_t	n – element vector	(.)
F_t	n x m – matrix	(.)
Λ_t	m x m – positive definite symmetric matrix	(.)
λ_t	m – element vector	(.)
A_t	n x n matrix	(.)
B_t	n x m matrix	(.)
c_t	n – element vector	(.)
$h_t^{\#}$	Desired vector for state variable in period t,	(.)

$q_t^{\#}$	Desired vector for control variable in period t	(.)
$W_t^{\#}$	Positive definite symmetric penalty matrix on deviations of state variable from the desired path (diagonal matrix)	(.)
$\Lambda_t^{\#}$	Positive definite symmetric penalty matrix on control variable for deviation from desired paths (diagonal matrix)	(.)
G_t	Matrix of coefficients	(.)
g_t	Vector of coefficients	(.)
K_t	Riccati matrix (n X n)	(.)
P_t	An n-element vector	(.)
v_t	A scalar term	(.)
A, B, c	Coefficients	(.)
N	Sample size	(.)
$\hat{\rho}$	Estimate of the first order serial correlation	(.)
ρ	First order serial correlation	(.)
d	Durbin-Watson statistic	(.)