



s_m_sajadiyan@yahoo.com

()





()

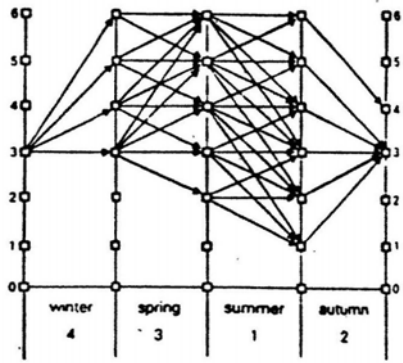
:()

()	:			
	/	/	/	/
	/	/	/	/
	/	/	/	/
	/	/	/	/



()

()



:()

)

(

()



$$f_n(i) = \min_j [C_n(i,j) + f_{n-1}(j)] \quad n=1,2,3,4,\dots,N \quad (1)$$

$$f_n(i_n) = \max_{x_n} [c_n(x_n) + f_{n-1}(i_n - x_n + q_n)] \quad (n=1, \dots, N) \quad (2)$$

$$f_n(i_n) = \max_{x_n} [c_n(x_n) + f_{n-1}(i_n - x_n + q_n)] \quad (n=1, \dots, N) \quad (3)$$

$$f_n(i_n) = \max_{x_n} [c_n(x_n) + f_{n-1}(i_n - x_n + q_n)] \quad (n=1, \dots, N) \quad (4)$$

$$f(i) = \max_{x_1} [c_1(x_1) + f(i - x_1 + q_1)] \quad (i=1, \dots, I_1) \quad (a)$$

$$f(i) = \max_{x_1} [c_1(x_1) + f(i - x_1 + q_1)] \quad (i=1, \dots, I_1)$$

$$f(i) = [c_1(x_1) + f(i - x_1 + q_1)] = [c_1(x_1) + f(i - x_1 + q_1)] = + = (x_1(i) = x_n^*(i_n))$$

$$f(i) = [c_1(x_1) + f(i - x_1 + q_1)] = / + = / \quad (x_1(i) =)$$

$$f(i) = [c_1(x_1) + f(i - x_1 + q_1)] = / + = / \quad (x_1(i) =)$$

$$f(i) = [c_1(x_1) + f(i - x_1 + q_1)] = / + = / \quad (x_1(i) =)$$

$$f(i) = [c_1(x_1) + f(i - x_1 + q_1)] = / + = / \quad (x_1(i) =)$$



$$f(x) = [c(x) + f(i - x)] \quad (x = 0, 1, \dots, i) \quad (2)(a)$$

$$f(i) = \max_{0 \leq x \leq i} [C(x) + f(i - x)] \quad (i = 1, 2, \dots) \quad (b)$$

$$i_2 =$$

$$\max_{0 \leq x \leq i} \left[\begin{array}{l} C_r(x) + f_1(i - x) \\ C_r(1) + f_1(i - 1) \\ C_r(2) + f_1(i - 2) \end{array} \right] = \max$$

$$\begin{aligned} (2)(a) \quad & X_2^*(2) = 2 \\ (a) \quad & f_1(1) - f_1(3) \end{aligned} \quad (2)(b)$$

$$f(i) = \max_{0 \leq x \leq i} [c(x) + f(i - x)] \quad (i = 1, 2, \dots) \quad (c)$$

$$(2)(c)$$

$$f(x) = \max_{0 \leq x \leq i} [c(x) + f(i - x)] \quad (d)$$

$$(4)(d)$$

$$\begin{aligned} & = \dots \\ & \dots \end{aligned}$$



()



$$\begin{aligned}
 MAX \quad Z &= [\sum X_{io} Y_{io} - \sum \sum X_{ik} \Delta V_{ik}] P_i - \sum A_{ij} (X_{io} - X_{ik}) C_{ij} \\
 \sum X_{io} W_{io} - \sum \sum X_{ik} \Delta W_{ik} &\leq 0 \\
 \sum A_{ij} (X_{io} - X_{ik}) &\leq S_j \\
 X_{ik} - X_{io} &\leq 0 \\
 X_{io} \geq 0, X_{ik} &\geq 0
 \end{aligned}$$

در جایی که:

$$(i=1,2,\dots,n), (k=1,2,\dots,s), (j=1,2,\dots,v)$$

Z = درآمد خالص زراع

$$X_{io} = \text{سطح زیرکشت محصول } i \text{ در شرایط آبیاری کامل}$$

$$Y_{io} = \text{عملکرد محصول } i \text{ در واحد سطح در شرایط آبیاری کامل}$$

$$X_{ik} = \text{سطح زیر کشت محصول } i \text{ در شرایط کم آبیاری}$$

$$Y_{ik} = \text{عملکرد محصول } i \text{ در واحد سطح در شرایط کم آبیاری}$$

$$P_i = \text{قیمت محصول } i$$

$$C_{ij} = \text{هزینه نهاده } j \text{ که برای واحد سطح محصول } i \text{ بکار گرفته می شود}$$

$$W_{io} = \text{میزان آب مصرفی در واحد سطح جهت محصول } i \text{ در شرایط آبیاری کامل}$$

$$W_{ik} = \text{میزان آب مصرفی در واحد سطح جهت محصول } i \text{ در شرایط کم آبیاری}$$

$$W = \text{میزان آب موجود}$$

$$S_j = \text{میزان نهاده موجود } j$$

$$A_{ij} = \text{مقدار مورد نیاز نهاده } j \text{ برای یک هکتار محصول } i$$



()

()

:

y_i

w_i

n

$$\sum_{i=1}^n y_i = na_1 + \sum_{i=1}^n w^2_i b_1 + \sum_{i=1}^n w_i c_1$$



$$\sum_{i=1}^n w_i y_i = \sum_{i=1}^n w_i a_1 + \sum_{i=1}^n w_i^2 b_1 + \sum_{i=1}^n w_i^3 c_1$$

$$\sum_{i=1}^n w_i^2 y_i = \sum_{i=1}^n w_i^2 a_1 + \sum_{i=1}^n w_i^3 b_1 + \sum_{i=1}^n w_i^4 c_1$$

$$C(w) = a_2 + b_2 W$$

$$+ \quad = a_2$$

$$b_2 = \frac{\text{متغيرهاي هزينه}}{\text{مصرفي ميزان آب}}$$

: (W_m)

$$y_{(w)} = a_1 + b_1 w + c_1 w^2$$

$$\frac{\partial y}{\partial w} = b_1 + 2c_1 w = 0$$

$$w_m = \frac{-b}{2c_1}$$

:

:

$$p_i \times \frac{\partial y_{(w)}}{\partial w} = \frac{\partial C(w)}{\partial w}$$

$$p(b_1 + 2c_1 w) = b_2 :$$

$$w_1 = \frac{b_2 - pb_1}{2pc_1}$$

$$w = P$$



)

(

()

:

$$w_w = \frac{p_c a_1 - a_2}{p_c c_1}$$

Ww

(**w_m**)

:

$$w_e = \frac{b_2 - p_c b_1 + z_1}{2p_c c_1}$$

$$z_1 = \left[(p_c b_1 - b_2) - 4p_c c_1 \left(\frac{p_c b_1^2}{4c_1} - \frac{b_1 b_2}{2c_1} \right) \right]^{0.5}$$

-

-

:



- English, M., Deficit irrigation: Analytical framework, J.ASCE, 116:413-426, 1990.
- Ghahraman, B., and A.R. Sepaskhah, Optimum deficit irrigation of cotton & Potato fields in a Semiarid region of Iran. Journal Sci & Tech. 21 : 395-405 , 1997.
- Hillier, F.S. Intriduction to operations Research. 4 nd, 1989.
- English, M.J. and S.N. Raja , Review Perspectives on deficit irrigation,. Agr. Water Manag. 32 : 1-14, 1996.
- Meredith, D.D., K.W. Wrong, R.W. Woodhead & R.H. Wortmal, Design and Planning of engineering systems. 2 nd end. Englewood cliffs, Nj : prentice – Hall, 1985.
- Ossenbruggen, P.J., Systems analysis for civil engineers. New York: Wiley, 1984.



- TahaH. A., Principles of operation research with application to managerial decisions, end edn. Englewood Cliffs, NJ: Prentice – Hall, 1975.
- Taha,H.A., Operation research.An Introduction , 3 rd edn, New york : Macimillan, 1982.
- Warner, R.FKG-C.Dandy, planning and Design of engineering systems, 1990.
- Wsgner , H.m., principles of operations research with applications to managerial decisions, 2 nd Englewood cliffs, Nj : prentice – Hall, 1975.