

() , ()

*

(// : // :)

:

%

()

%

:

(Hunt, 2001)

(ASAE)

(ASAE,

.2000b)

(Hunt, 2001)

)

(

(Replacement)

"

"

(ASAE, 2000a)

()

()

(Ashtyani *et al.*, 2006)

/ /

(Najafi & Zibae, 2004)

()

(Koupahi & Kazem Nejad, 1997)

)

(

(DEA)

(Najafi & Shajari,

.1997)

Farell,)

:

(1957)

(Banaeian *et al.*, 2010)

DEA

(Mohammadi *et al.*, 1998)

(Imami

.Meybodi, 2000)

)

(

(CRS)

CRS

()

(CRS)

(VRS)

()

(VRS)

CRS

CRS

CRS

(VRS)

(Banker et al., 1984)

(Charnes et al., 1978)

$$\sum_r u_r y_{rj0} \text{ Max} \quad ()$$

$$\sum_i v_i x_{ij0} = 1 \text{ s.t.} \quad ()$$

$$\sum_r u_r y_{rj} - \sum_i v_i x_{ij} \leq 0 \quad \text{for } j=1,2,\dots,n$$

$$u_r \geq \varepsilon \quad \text{for } j=1,2,\dots,s$$

$$v_i \geq \varepsilon \quad \text{for } j=1,2,\dots,m$$

n

m

s

u

v

()

x

()

y

(x)

(y)

(Anon., 2007)

(y/x)

DEA-Solver

DEA

(Charnes,

.1978)

(Ghasiri et al., 2008)

$$= \frac{u_1 y_1^{j*} + u_2 y_2^{j*} + \dots + u_N y_N^{j*}}{v_1 x_1^{j*} + v_2 x_2^{j*} + \dots + v_M x_M^{j*}} \quad ()$$

, ()

()

:

DEA-Solver

()

()

(kg MJ⁻¹)

()	/
/	
/	

(Zangeneh et al., 2010)

()	()
()	()

()

DEA

()

/	/			()
/	/	/	/	()
/	/	/	/	()
/	/	/	/	
/	/	/	/	
/	/	/	/	
/	/	/	/	
/	/	/	/	
/	/	/	/	
/	/	/	/	
/	/	/	/	

*

()

()

DEA-Solver

(/)

(%)

IV

%

()

()

)

(

)

(

(

()

()
)
 (
 (%)
) (%)
 () ()
 () ()

t		
()		
%		
%		
t		
t		
/	/	
/		
/		
/	/	()
/	/	()
/	/	()

()
 ()
 (%)

%
 %

REFERENCES

Machinery Management Engineering Practice.
 ASAE Standards S495. (2000b). *Uniform Terminology for Agricultural Machinery Management.*
 Ashtyani, A. Ranjbar, I. & Turchi, M. (2006). Nomination of economical lifetime of three
 Anonymous. (2007). *Annual Agricultural Statistics.* Ministry of Jihad-e-Agriculture of Iran. Retrieved June 12, 2010, from <<http://www.maj.ir>>. (In Farsi)
 ASAE Standards EP496. (2000a). *Agricultural*

productivity measurement. Institute of Commercial Observations & Researches of Tehran. (In Farsi)

- Koupahi, M. & Kazem Nejad, M. (1997). Investigation on economic technical efficiency analysis of tea planter in Gilan province with underscore on age, Resources & land size effect. *Journal of Agricultural Economic & Development*, 5(17), 89-99. (In Farsi)
- Mohammadi, D. (1998). *Efficiency appointment of corn component production & investigation of effective component on it*. Agricultural Research Center of Fars Province. Economical investigation group on research plans. (In Farsi)
- Najafi, B.A. & Zibae, M. (2004). Investigation on technical efficiency of Fars wheat farmers: a case study. *Journal of Agricultural Economic & Development*, 2(7), 71-86. (In Farsi)
- Najafi, B.A. & Shajari, S. (1997). Wheat planter efficiency & effective factors on it: A case study in Fars province. *Journal of Agricultural Economic & Development*, 5(19), 7-30. (In Farsi)
- Zangeneh, M. Omid, M. & Akram, A. (2010). A comparative study on energy use & cost analysis of potato production under different farming technologies. *Energy*, 7(35), 2927-2933.
- tractor model in Iran (A case study in Dashte Naz Mazandaran farming company). *Agricultural Science*, 12 (1), 221-230. (In Farsi)
- Banaeian, N. Zangeneh, M. & Omid, M. (2010). Energy use efficiency for walnut producers using Data Envelopment Analysis (DEA). *Australian Journal of Crop Science*, 4 (5): 359-362.
- Banker, R.D., Charnes, A., & Cooper, W.W. (1984). Some models for estimating technical & scale inefficiencies in data envelopment analysis. *Management Science*, 30(9): 1078-1092.
- Charnes, A. & Cooper, W. & Rhods, E. (1978). Measuring the efficiency of decision making units. *European Journal of Operational Research*, 2, 429-441.
- Farrell, M.J. 1957. The measurement of productive efficiency, *Journal of the Royal Statistical Society*, 120: 252-90.
- Ghasiri, K. Mehrno, H. & Jafari, A.R. (2008). *Introduction on Fuzzy Data Envelopment Analysis*. Center of Scientific Publication of Azad University of Qazvin. (In Farsi)
- Hunt, D.R. (2001). *Farm Power & Machinery Management*. Tenth Edition. Iowa State University Press, Ames, USA.
- Imami Meybodi, A. (2000). *Principle of efficiency &*