

() , ()

*

(// : // :)

(A₃) (A₂) + (A₁)
(B₂) (B₁)
(B₃)

%
% / MJ ha⁻¹ / /
%

(*Zea mays*)

(Williams, 2004)

(*Brassica napus L.*)

(Michel &

Borrelli, 1985)

mr.mobtaker@yahoo.com :

*

()

(/) (

(Singh et al., 2008)

(2009) Tabatabaefar et al.

% /

% /

% / % /

% /

(Chaplin et al.,

% /

.1988)

(Eskandari, 2002)

(Zentner et al.,

%

%

%

.2004)

(2007) Shamsabadi & Rafiee

()

)

(

+

:(A₁) :

)

/

GJ/ha

:(A₂)

:(A₃)

()

:(B₃)

:(B₂)

:(B₁)

۱ بلوک	B ₂	A ₁ B ₁	B ₃	B ₃	A ₃ B ₁	B ₂	B ₂	A ₂ B ₃	B ₁
۲ بلوک	B ₁	A ₃ B ₂	B ₃	B ₁	A ₁ B ₃	B ₂	B ₃	A ₂ B ₂	B ₁
۳ بلوک	B ₃	A ₁ B ₁	B ₂	B ₁	A ₂ B ₂	B ₃	B ₁	A ₃ B ₃	B ₂
۴ بلوک	B ₂	A ₂ B ₃	B ₁	B ₃	A ₃ B ₁	B ₂	B ₁	A ₁ B ₂	B ₃

() ()



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MJ ha⁻¹

%

(MJ unit ⁻¹)			
Mobtaker et al. (2010)	/	h	
Singh (2002)	/	h	
Singh (2002)	/	L	
		kg	
Mohammadi et al. (2008)	/	kg	
Mohammadi et al. (2008)	/	kg	(P ₂ O ₅)
Shrestha (1998)	/	kg	(K ₂ O)
Mobtaker et al. (2010)	/	kg	
Mandal et al. (2002)		kg	
Hatirli et al. (2005)	/ *	kWh	
Kitani (1999)		kg	()
Phipps et al. (1976)	/	kg	()

(Mohammadi & Omid, 2010; Mobtaker et al., 2010)

$$= \frac{(\text{MJ ha}^{-1})}{(\text{MJ ha}^{-1})} \quad (1)$$

$$= \frac{(\text{kg ha}^{-1})}{(\text{MJ ha}^{-1})} \quad (2)$$

$$= (\text{MJha}^{-1}) - (\text{MJ ha}^{-1}) \quad (3)$$

(t ha ⁻¹)	/	+	:(A ₁)
	/		:(A ₂)
	/		:(A ₃)
(t ha ⁻¹)	/		
	/		
	/		

بهره‌وری انرژی (kg MJ ⁻¹)	نسبت انرژی	انرژی خالص (MJ ha ⁻¹)	انرژی ستانده (MJ ha ⁻¹)	انرژی نهاده (MJ ha ⁻¹)	تیمار
۲/۴	۵/۰	۱۱۴۶۱۷	۱۴۳۱۷۰	۲۸۵۵۳	A ₁
۲/۵	۵/۱	۱۱۵۶۵۷	۱۴۳۳۷۶	۲۷۷۱۹	A ₂
۲/۶	۵/۴	۱۱۸۳۱۵	۱۴۵۴۳۶	۲۷۱۲۱	A ₃

()
MJ ha⁻¹ (A₃) / (A₂) / (A₁)

() ()

Tabatabaeeefar et al.,

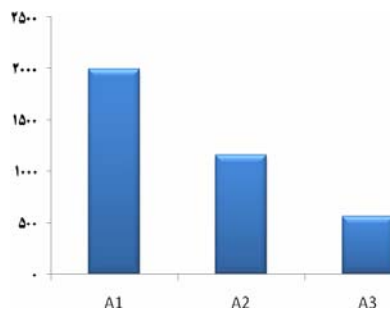
(2009)

F

/ ns	/	/	
/ ns	/	/	(A)
	/	/	(Ea)
		/	(MP)
/ ns	/	/	(B)
/ *	/	/	*
	/	/	(Eb)
		/	(SP)
		/	
			ns

(/)

(Singh et al., 2008)



()

%

%

*

*

()

()

()

()

(/)

(A₃)

%

%

%

*

+

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