

( ) , ( )

\*

( // : // : )

(A<sub>3</sub>) (A<sub>2</sub>) + (A<sub>1</sub>)  
(B<sub>2</sub>) (B<sub>1</sub>) (B<sub>3</sub>)

% / MJ ha<sup>-1</sup> / /  
% \*

(Zea mays)

(Williams, 2004)

(Brassica napus L.)

(Michel &

Borrelli, 1985)

mr.mobtaker@yahoo.com :

\*

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, ( )

( / ) (

(Singh et al., 2008)

(2009) Tabatabaefar et al.

% /

% /

% / % /

% /

(Chaplin et al.,

% /

.1988)

(Eskandari, 2002)

(Zentner et al.,

%

%

%

.2004)

(2007) Shamsabadi & Rafiee

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( )

)

(

+

:(A<sub>1</sub>) :

)



	(MJ unit <sup>-1</sup> )		
Mobtaker et al. (2010)	/	h	
Singh (2002)	/	h	
Singh (2002)	/	L	
		kg	
Mohammadi et al. (2008)	/	kg	
Mohammadi et al. (2008)	/	kg	(P <sub>2</sub> O <sub>5</sub> )
Shrestha (1998)	/	kg	(K <sub>2</sub> 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)

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

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

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

Shamsabadi& Rafiee ( )  
 (2009) Tabatabaefar et al. (2007)

(t ha <sup>-1</sup> )	/	+	:(A <sub>1</sub> )
	/		:(A <sub>2</sub> )
	/		:(A <sub>3</sub> )
(t ha <sup>-1</sup> )	/		
	/		
	/		

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

( )  
MJ ha<sup>-1</sup> (A<sub>3</sub>) / (A<sub>2</sub>) / (A<sub>1</sub>)

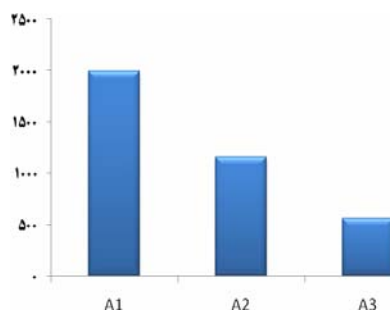
Tabatabaeefar et al.,

(2009)

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

( / )

(Singh et al., 2008)



( )

%

%

\*

( )

( ) ( )

( / ) (A<sub>3</sub>)  
www.SID.ir

%

%

%

\*

+

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