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**(*Brassica napus* L.)**

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(  
. (Malek-Ahmadi, 2003)

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(Brassica) )

(Fathi et al.,

.2002)

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(2002) Samadi & Bohrani

.(Holmes, 1980)

(1998) Leach et al.

(2002) Fathi et al.

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.(Shirani-Rad & Ahmadi, 1995)

(2002) Esmaeli et al.

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Zang & Sedum

.(Fathi et al., 2002)

(1995)

(2002) Fathi et al.

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(2001) Cheema et al.

Prasad & Shakla

(1991)

(2002) Salehian et al.

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(1991) Parkel & Bradley

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(D270N200)

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D270N300      D150N300

	(       )	(       )	(D150N0)	
	/	/	/	
%	(       )	(       )	(       )	
	(%       )	(       )	(       )	
	/ ns	/ ns	/ ns	(R)
	/ **	/ **	/ **	(D)
	/ **	/ **	/ **	(N)
	/ *	/ **	/ ns	(D*N)
	/ /	/ /	/ /	(E)
	/	/	/	(%CV)
	:ns	:%	:%	:** *

.(Salehian et al., 2002)

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

				(D150N300)
				(D150N0)

	(       )	(       )	(       )	( %CV)
	/ ns	/ ns	/ ns	( R)
	/ **	/ **	/ **	(D)
	/ **	/ **	/ **	(N)
	/ **	/ **	/ **	(D*N)
	/ /	/ /	/ /	(E)
	/	/	/	(%CV)
	:ns	:%	:%	:** *

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/	ns		(R)								
/	ns	/	**	/	**	/	**	/	**		(D)
/	ns	/	**	/	ns	/	*	/	**		(N)
/	ns	/	**	/	ns	/	ns	/	**		(D*N)
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/ i	/ i	/ f	N0		
/ fghi	/ h	/ e	N100		
/ def	/ g	/ e	N200		
/ bc	/ g	/ de	N300		
/ i	/ hi	/ cde	N0		
/ gh	/ f	/ cde	N100		
/ ef	/ f	/ cde	N200		
/ bcd	/ ef	bc	N300		
/ hi	/ de	/ de	N0		
/ cde	/ cd	/ ab	N100		
/ efg	/ c	/ ab	N200		
/ egh	/ a	/ bc	N300		
/ bcde	/ cd	/ cde	N0		
/ bc	/ b	/ bcd	N100		
/ ab	/ ab	/ a	N200		
/ a	/ a	/ ab	N300		

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/ / D150N0 D150N200 %

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<p>.( ) (D2)</p>	<p>/ / D270N300 D150N300 (D4)</p>	<p>.( )</p>
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( )	( )	( )	( )	( )	( )	( )	( )
/ g		g	e	ef	/ e		N0
/ efg		de	cd	/ d	/ de		N100
/ efg		cde	cd	/ b	/ b		N200
/ efg		ab	b	/ a	/ a		N300
/ fg		bcde	d	/ gh	/ cd		N0
/ g		abc	cd	de	/ cd		N100
bcde		abc	a	/ c	/ bc		N200
/ bcde		abc	a	/ c	/ b		N300
/ ab		fg	cd	/ h	/ cd		N0
/ bcde		cde	bc	/ fg	/ cd		N100
/ def		a	b	/ def	/ cd		N200
/ a		abc	b	/ d	/ cd		N300
/ abcd		def	bc	/ h	/ de		N0
/ abc		def	bc	/ gh	/ de		N100
/ abcd		efg	bcd	/ h	/ de		N200
/ cdef		abcd	bcd	/ i	/ de		N300

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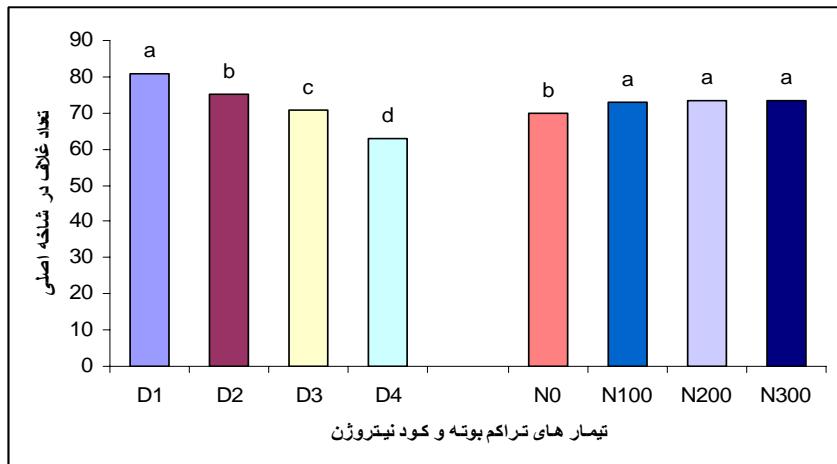
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( )	( )	( )	( )			
/ / i	/ abc	/ ab	/ efg	/ c		N0
/ / hi	/ abc	/ a	/ cd	/ a		N100
/ / a	ab	/ bc	/ a	/ a		N200
/ / ab	/ a	/ cd	/ a	/ a		N300
/ / defg	/ cde	/ c	/ fg	/ b		N0
/ / cde	/ ef	/ c	/ de	/ b		N100
/ / bcd	ef	/ c	/ bc	/ b		N200
/ / abc	/ cde	/ c	/ b	/ b		N300
/ / ghi	/ ef	/ de	/ fgh	/ b		N0
/ / efg	/ abc	/ e	/ ef	/ b		N100
/ / efg	/ abc	/ e	/ ef	/ c		N200
/ / def	/ cde	/ e	/ ef	/ c		N300
/ / hi	/ ef	/ de	/ j	/ c		N0
/ / ghi	/ cde	/ e	/ ij	/ d		N100
/ / fghi	/ ef	/ e	gh	/ d		N200
/ / efg	/ ef	/ e	/ hi	/ d		N300

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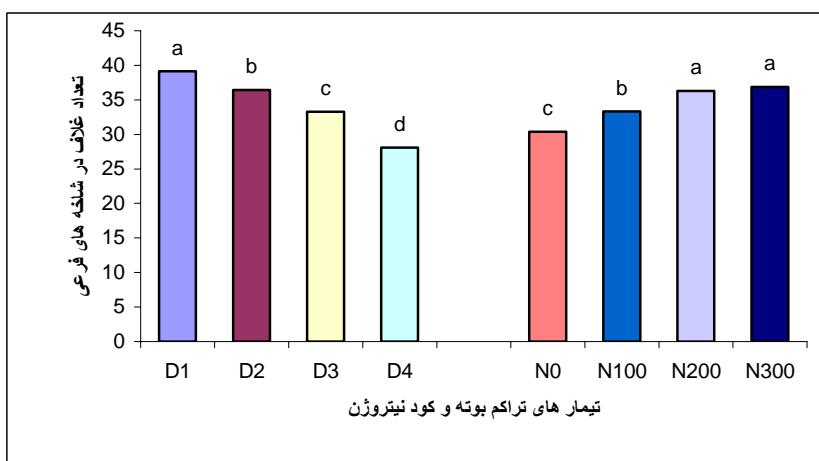
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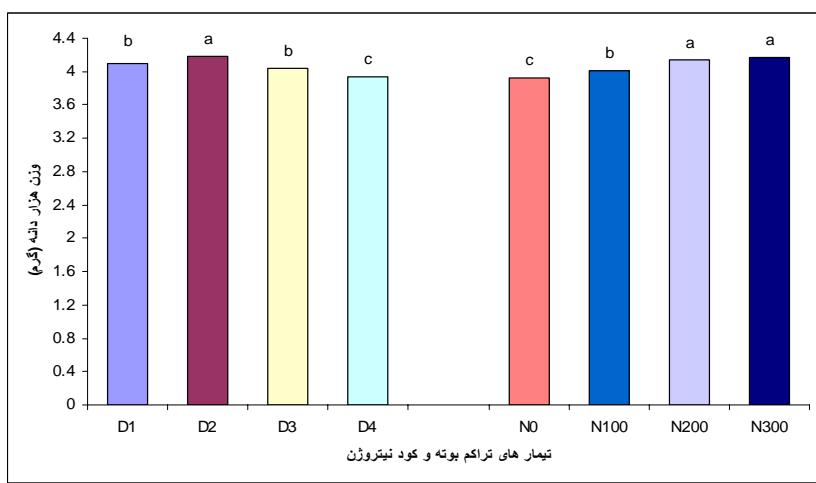
N300 N200,N100,N0

D4 D3 ,D2 ,D1



N300 N200,N100,N0

D4 D3 ,D2 ,D1



N300 N200,N100,N0

D4 D3 ,D2 ,D1

.(Esmaeli et al., 2002) .( ) %

( ) .( )

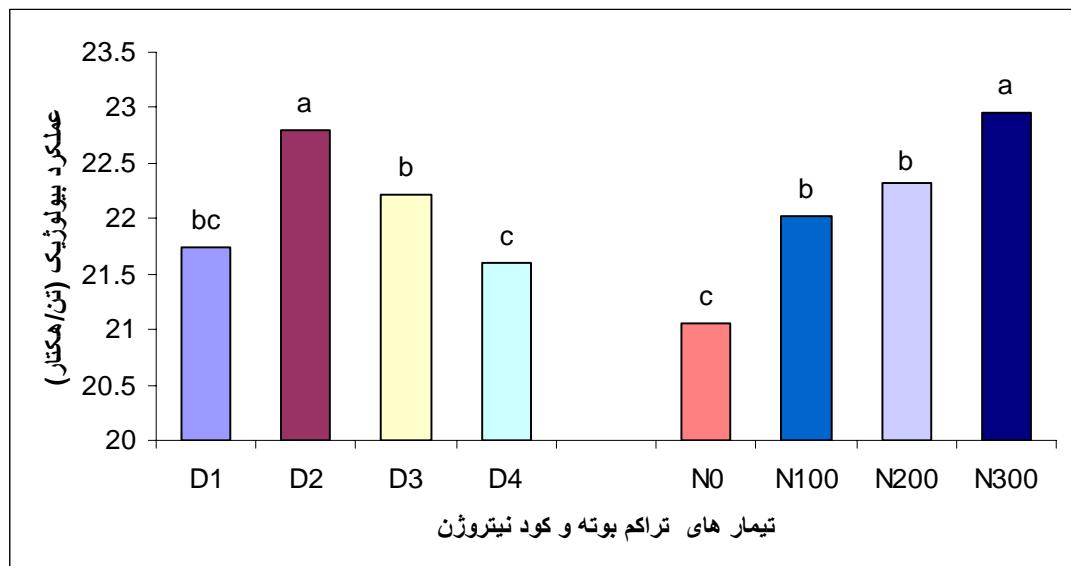
.( )

) ( .( ) Parkel & (1991) Prasad & Shakla  
(1991) Bradley  
(D150N0)

.( ) (N300)  
.(( )) (N0)

%

.( )



N300 N200,N100,N0

D4 D3 ,D2 ,D1

( % / ) ( % / )

(N3) .( ) (N0)

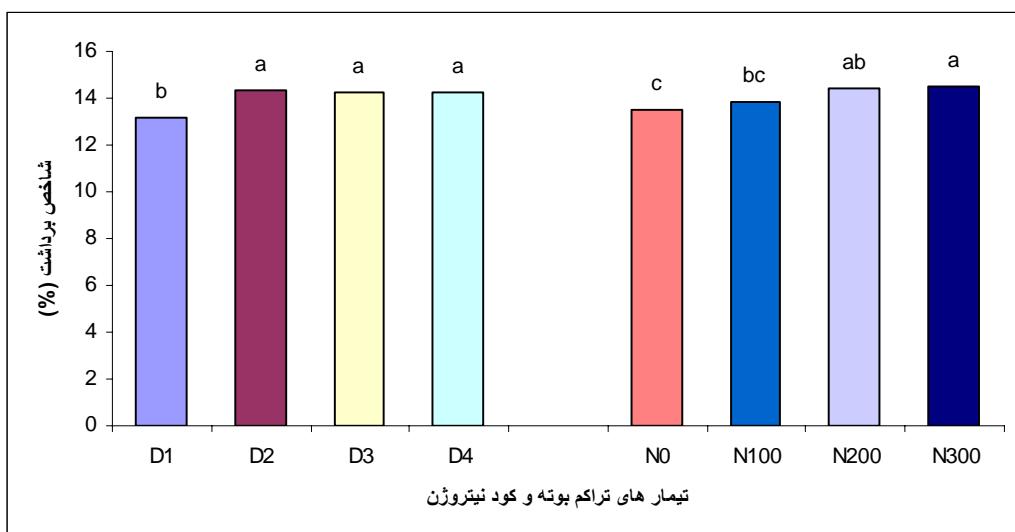
( ) .( ) (D2)

. ( ) (D1) ( ) ( % / )

( ) .( ) (D1) ( ) ( % / )

( ) .( ) (D1) ( ) ( % / )

. ( ) (D1) ( ) ( % / )



## REFERENCES

- Cheema, M. A., Malik, M. A., Hussain, A., Shah, S. H. & Basra, S. M. A. (2001). Effect of time and rate of nitrogen and phosphorus application on the growth and the seed and oil yields of canola (*Brassica napus*). *Journal of Agricultural and Crop Science*, 186 (2), 103-115.
- Esmaeli, M., Gholchin, A. & Khyaviee, M. (2002). Determining the level and time of nitrogen application in colza production at two climatic conditions of Zanjan province. In: Proceedings of the 7<sup>th</sup> Iranian Crop Science Congress. Karaj, Iran. 24-26 August 2002.
- Fathi, G., Banisaidy, A., Siadat, S. A. & Ebrahimpour, F. (2002). Effects of different N levels and plant density on grain yield of rapeseed cultivar PF 7045 in Khuzestan conditions. *The Scientific J Agriculture*, 25(1), 43-58. (In Farsi).
- Holmes, M. R. J. (1980). *Nutrition of the oilseed rape crop*. Applied Science Publishers, London. Pp. 156.

5. Leach, J., Stevenson, H. & Renbow, A. J. (1998). Effects of high plant population on the growth and yield of winter oil seed rape. *Journal of Agricultural Camb Science*, 132, 173-180.
6. Malek-Ahmadi, H. (2003). *Effect of plant density and nitrogen fertilizer on competition ability of canola (Brassica napus L.) with weeds*. M. Sc. thesis, University of Tehran, Agriculture College, Karaj, Iran.
7. Parkel, R. G. & Bradley, R. (1991). The effects of fertilization to nitrogen and plant boron for spring rape. *Indian Journal of Agricultural Science*, 22, 38-43.
8. Prasad, S. & Shakla, D. N. (1991). The response of nitrogen and plant population on yield, percent of oil seed of canola (*Brassica napus L.*). *Canadian Journal of Plant Science*, 38(3), 283-291.
9. Salehian, J., Rafiey, M., Fathi, G. & Siadat, S. A. (2002). Effect of plant density on seed yield and growth of colza varieties at Andimeshek conditions. In: Proceedings of the 7<sup>th</sup> Iranian Crop Science Congress. Karaj, Iran. 24-26 August 2002.
10. Samadi, A. R. & Bohrani, M. J. (2002). Effect of plant density and sowing date on yield and yield components of two colza cultivars at Darab conditions. In: Proceedings of the 7<sup>th</sup> Iranian Crop Science Congress. Karaj, Iran. 24-26 August 2002.
11. Shirani-Rad, A. H. & Ahmadi, M. R. (1995). Effects of sowing date and plant density on agronomic characters of two winter rapeseed cultivars in Karaj. *Seed and plant J*, 11(2), 9-20.
12. Zang, P. H. & Sedum, P. J. (1995). Interactions among phosphorus, nitrogen and growth in oilseed rape. *Canadian Journal of Plant Science*, 74(3), 173-181.