

()

(Triticum aestivum L.)

*

(// : // :)

)
, UV-A, B, C) (
() (

CO₂

.(Schutz & Fangmeier, 2001 Watson et al., 1990)

CO₂

CO₂
(Ainaworth et al., 2004)
PEP UV
(Correia et al., 2005)
(He et al., 1995)
)
UV
(b a
UV
(Correia et al., 2002 & 2005)
UV
(Correia et al., 2005)
UV
(Correia et al., 2005; Musil, 1996)
UV-A, B, C
/
UV
(Nasibi et al., 2003)
UV
(Mazza et al.,
.2000)
UV (Olsson et al., 1998) UV-B
CO₂
(Tosserams et al., 2001)
UV-B
World Meterological)
(Organization, 1994
CO₂
CO₂
UV
UV-C
(nm)
UV-C
) UV-B
(
(
UV-B
(nm) UV-A
UV-A
()
UV
(Nogues & Baker, 2000)
UV
CO₂
(Donnelly, 2000)
CO₂
(Nie et al., 1995;
.Mulholland et al., 1997)

UV CO₂

(Smrkolj et al., 2005)

(Ashraf et al., 1994)

(Turujillo, 1994; Castrillo & Siosemarde et al., 2004)

(Siosemarde et al., 2004)

(%) (Castrillo & Turujillo, 1994)

UV-A, B, C UV-B UV-A UV-C (%)

(Nasibi et al., 2003)

UV UV UV-B UV

(Nasibi et al., 2003) UV

P₂O₅ (%)

(%)

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

Arnone ()
% (1940))
()

.(Arnone, 1940)

b a

a+b

/)

(TDR)

.(Lichtenthder, 1987; Ashraf et al., 1994)

.(

(1976) Bradford

(: :)

(UV-C Philips TUV 30W/G30T8; UV-B Philips UV-A 40W/12)

.(Krizek et al., 1998)

UV-A, B, C

(Digital UV Indicator)

Sinco 2100 UV-S

UV-3

cm⁻¹ M⁻¹

UV

CO₂

.(Krizek et al., 1998)

CO₂

)

CO₂

/

(Testo

Dubois

(1956) et al.

.(SAS Institute Inc., 1997)

SAS

(Dubois et

(

.al., 1956)

.(Steel & Torrie, 1998)

UV
A / (Nogues and Baker, 2000)
A UV
UV
B Mazza et al., Krizek et al., 1998)
.() (2000)
UV
() (Alexieva et al., 2001)
(P≤0.01)
UV
.()
B
.() (Buchholz, et al., 1995) UV
UV
a+b a, b
.() (P≤0.01) ()
.(Tosserams et al., 2001)
UV
/ B (Cen & Bornman, 1993)
A
.() UV
.() (Gonzales et al., 1996) UV
.() UV-
a+b b a
.() (Olsson et al., 1998) B
UV
(P≤0.05) .()
.(Smrkolj et al., 2005)

... :

a, () (P≤0.01) a+b b B A

) a+b b a (A B

/ / / UV

()

a+b b a UV UV

(Nasibi et al., 2003)

() a+b b a ()

UV

Krizek et) DNA

(Ormord & Hale, 2000 al., 1998 a+b b a

UV-C a ()

(Nasibi et al., 2003) (%)

()	()	()
/ a	/ cd	UV-A
/ ab	/ d	
/ bc	/ ab	UV-B
/ cd	/ a	
/ e	/ b	UV-C
/ de	/ b	

(P≤0.05)

()
/ c
/ bc
/ a
/ a
/ b
/ b

UV-A

UV-B

UV-C

(P≤0.05)

b
b

CO₂

CO₂ UV-B

(Agrawal, 1992)

UV

(Pessarkli, 1999)

(Ashraf et al., 1994)

(Smith et al., 2000)

CO₂

CO₂ a

(Schutz & Fangmeier, 2001)

(P<0.01)

(P<0.01)

CO₂

(Sicher & Bunce, 1997)

(P<0.05)

(Castrillo & Turujillo

et al., 1994)

a

(P<0.01)

(P<0.05)

(Schutz & Fangmeier, 2001)

a

% b %

(Siosemarde et al., 2004)

()	a+b	b	a	()	()	()
/ a	/ a	/ a	/ a	/ def	/ Cd	/ a
/ b	/ bc	/ cd	/ bc	/ cde	/ Bc	/ f
/ b	/ abc	/ abc	/ bc	/ f	/ D	/ b
/ bc	/ ab	/ ab	/ ab	/ ef	/ d	/ de
/ cd	/ bcd	/ de	/ bc	/ b	/ b	/ bc
/ bcd	/ bcd	/ cde	/ bcd	/ a	/ A	/ f
/ def	/ bc	/ bcd	/ bc	/ bc	/ B	/ b
/ de	/ bcd	/ cd	/ bcd	/ b	/ B	/ e
/ def	/ de	/ f	/ de	/ bc	/ bc	/ cde
/ def	/ e	/ f	/ e	/ bc	/ Bc	/ fg
/ ef	/ cde	/ def	/ cde	/ cd	/ bc	/ bcd
/ f	/ e	/ f	/ e	/ bc	/ bc	/ g

(P<0.05)

... :

C

(P≤0.01)

/

.()

.()

.(Safaii and Ghadiri, 1995) .() (P≤0.01)

UV-B

.(Greenberg et al., 1995)

.()

UV

Krizek et) (/)^A

.(al., 1998) C

UV

UV

D2 D1

.(Krizek et al., 1998) UV-A, B, C

./

.(Nasibi et al., 2003)

UV

UV

UV

CO₂

Sinclair et .(Kimball et al., 2002)

(2000) al. .(Mazza et al., 2000)

CO₂

.() (P≤0.01)

A

A

() /
 (C
 % a /
 % % C A .()
 (Schutz & Fangmeier, %
 .2001)
 در کل می‌توان چنین نتیجه گرفت که در آینده A
 چنانچه تغییراتی نظیر تغییرات ایجاد شده در UV، CO₂ و
 آبیاری در آزمایش حاضر وقوع یابد ارزش غذایی و میزان B A
 کربوهیدرات‌ها و پروتئین‌های محلول غلات به ویژه گندم
 نان که از مهمترین محصولات غذایی جهان می‌باشد .()
 کاهش پیدا خواهد کرد. و با کاهش بنیه گیاه میزان
 عملکرد این محصول راهبردی کم شده و امنیت غذایی CO₂ CO₂
 بشر به مخاطره خواهد افتاد. a

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