

(Nicotiana tabacum L.)

*

(/ / : / / :)

NAA

MS

/ BAP

MS

NAA

(R²= /)

(Kamel, 1985; Kim & Hwang, 1981; Skula, 1983)

(1981) Kim & Hwang

(Chawla, 2003)

(Dimanov, 2001)

NAA

±

Torrecilla et al.

(2002)

(1999) Weeks et al.

/ BAP

MS

(Chawla, 2003)

NAA

±

(1981) Keum & Jen .

Sc72×Va115

(1982) Nessler et al. .

()

(2002) Dimanov

/

()

SAS

مواد و روش‌ها

(X)

()

(Y)

%

p

MS

y q x

(Murashige & Skoog, 1962)

$$Vr = a_{r1}y_1 + a_{r2}y_2 + \dots + a_{rq}y_q$$

F CV :
 ()
 F
 / %

$$U_r = a_{r1}x_1 + a_{r2}x_2 + \dots + a_{rp}x_p$$

$$U_1 = a_{11}x_1 + a_{12}x_2 + \dots + a_{1p}x_p$$

$$U_2 = a_{21}x_1 + a_{22}x_2 + \dots + a_{2p}x_p$$

$$\dots$$

$$U_r = a_{r1}x_1 + a_{r2}x_2 + \dots + a_{rp}x_p$$

CV

(Farshadfar, 2001)

F				
F	CV	CV	CV	CV
/	/	/	/	/
/	/	/	/	/
/	/	/	/	/
/	/	/	/	/
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/	/	/	/	/

(Rezaei & Soltani, 1998)

(ME)

(Nash & Sutcliffe, 1970)

$$ME = 1 - \frac{\sum_{i=1}^n (y_i - \hat{y}_i)^2}{\sum_{i=1}^n (y_i - \bar{y})^2}$$

$$\hat{y}_i$$

$$y_i$$

$$\bar{y}$$

(Kamel, 1985; Kim & Hwang, 1981; Skula, 1983)

$$\frac{(\quad) / (\quad) + /}{(\quad) + /}$$

$$(\quad) /$$

(1999) Weeks et al.

)

(t

(Kamel, 1985; Skula, 1983)

y

x

جدول ۲- همبستگی ساده بین صفات در سوماکلون‌های توتون

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
/																			
0.15*	/																		
0.20**	0.35**	/																	
0.30**	0.45**	0.25**	/																
0.40**	0.55**	0.35**	0.20**	/															
0.35**	0.48**	0.30**	0.25**	0.15*	/														
0.20**	0.30**	0.20**	0.15*	0.10*	0.25**	/													
0.10*	0.15*	0.10*	0.05*	0.10*	0.15*	0.20**	/												
0.05*	0.10*	0.05*	0.05*	0.10*	0.15*	0.20**	0.15*	/											
0.05*	0.10*	0.05*	0.05*	0.10*	0.15*	0.20**	0.15*	0.10*	/										
0.05*	0.10*	0.05*	0.05*	0.10*	0.15*	0.20**	0.15*	0.10*	0.05*	/									
0.05*	0.10*	0.05*	0.05*	0.10*	0.15*	0.20**	0.15*	0.10*	0.05*	0.05*	/								
0.05*	0.10*	0.05*	0.05*	0.10*	0.15*	0.20**	0.15*	0.10*	0.05*	0.05*	0.05*	/							
0.05*	0.10*	0.05*	0.05*	0.10*	0.15*	0.20**	0.15*	0.10*	0.05*	0.05*	0.05*	0.05*	/						
0.05*	0.10*	0.05*	0.05*	0.10*	0.15*	0.20**	0.15*	0.10*	0.05*	0.05*	0.05*	0.05*	0.05*	/					
0.05*	0.10*	0.05*	0.05*	0.10*	0.15*	0.20**	0.15*	0.10*	0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	/				

% **% *

شهادتی مقدم و همکاران: بررسی صفات زراعی و فیزیولوژیکی در سوماکلون‌های توتون ...

$$(V_1 \ U_1)$$

V ₃	V ₂	V ₁	Y
/	/	/	
/	/	/	
/	/	/	

V₁
U₁

:

(Rezaei & Soltani, 1998)

$$(V_2 \ U_2)$$

V₂

U₂

$$Y = -1531/3 + 231/4SD + 15/2LL + 137/3NC + 4/9 HI$$

=Y

=LL

=SD

=HI

=NC

$$) \quad ()$$

(

)^۴

)^۵

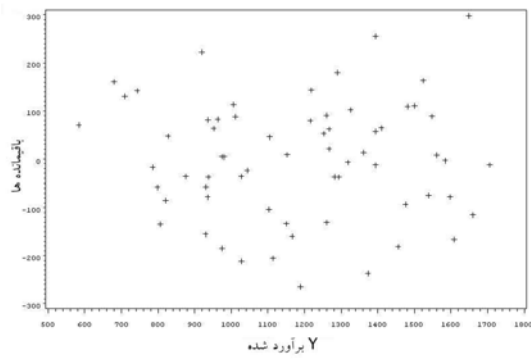
(

(Vif)^۶

t

U ₃	U ₂	U ₁	صفات گروه X
-۱/۸۶۴	-۱/۲۱۱	-۰/۸۰۴	ارتفاع بوته
-۰/۴۸۵	-۰/۲۶۷	۰/۰۰۱	میزان کلروفیل برگ
-۰/۹۱۷	-۰/۵۴۸	-۰/۱۴۰	طول برگ
۰/۵۷۱	۰/۹۹۶	-۰/۴۵۶	عرض برگ
۲/۰۰۲	۰/۵۷۰	۰/۰۷۴	تعداد برگ
۰/۰۶۹	-۰/۲۳۶	۰/۰۲۶	قطر ساقه
۰/۳۶۷	۰/۱۲۲	-۰/۲۰۸	روز تا گلدهی
-۰/۰۲۰	۰/۶۰۵	-۰/۰۴۹	درصد ماده خشک
۳/۰۷۲	۰/۷۰۷	۰/۰۹۹	طول میانگره
۰/۲۸۵	۰/۴۶۵	۱/۱۹۰	عملکرد برگ سبز

1. Stepwise
2. Studentized residual
3. Linearity
4. Equal variance
5. Independent of the error term
6. Variance inflation factor



/ (Nash & Sutcliffe, 1970)

R ²	R ²		t		t	(Beta)
	(Vif)					
/	/	/	/	/	/	/
/	/	/	/	/	/	/
/	/	/	/	/	/	/

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