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(// : // :)

F₁

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SCA GCA

(Singh & Chaudhary, 1985)

Hosseini et al. .

(2002)

(Can et al., 1997)

(1998) Azad et al.

(2002) Sadeghi et al.

(1998) Kiyanosh & Abdemishani

(2004) Bagheri et al.

IR58 ×

(1991) Hoang & Long

F₂

(1991) Bui & Tuan

DOS Hayman

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F₁

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(Scshu, 1988)

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(/)

F

(/)

Hayman (1956b) Griffing

(1956a, 1956b) Griffing

(1954a)

(/)

GCA

(/)

SCA

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(

Hayman

t

(1954a, 1954b)

(/)

H₀ : b = 1

(gr)	(gr)	(mm)	(mm)				(cm)	(mm)	(cm)	(cm)		
/ c	/ a	/ b	/ b	/ d	/ c	/ b	/ a	/ c	/ b	/ c	/ d	
/ c	/ d	/ c	/ a	/ c	/ b	/ b	/ a	/ c	/ a	/ b	/ b	
/ c	/ b	/ a	/ b	/ b	/ a	/ b	/ a	/ a	/ b	/ c	/ c	
/ b	/ d	/ c	/ a	/ c	/ d	/ b	/ b	/ c	/ c	/ a	/ d	
/ a	/ c	/ b	/ b	/ a	/ b	/ a	/ c	/ b	/ c	/ d	/ a	

($P \leq /$)

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g_i

GCA

SCA

g_i

(Hosseini et al., 2002; Kiyanoosh, 2000; Sadeghi et al.,2002)

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g_i

(g_i)

(g_i)

(g_i)

(g_i)

g_i

g_i

g_i

g_i

g_i

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MS												
(gr)	(gr)	(mm)	(mm)					(cm)	(mm)	(cm)	(cm)	
/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **
/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	GCA
/ **	/ **	/ ns	/ **	/ **	/ **	/ ns	/ **	/ **	/ **	/ **	/ **	SCA
/ ns	/ ns	/	/ ns	/ ns	/ ns	/ ns	/ ns	/ ns	/ ns	/ **	/ ns	/ ns
/	/	/	/	/	/	/	/	/	/	/	/	
/	/	/	/	/	/	/	/	/	/	/	/	%CV

: ns .

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(g_i)

(gr)	(gr)	(mm)	(mm)					(cm)	(mm)	(cm)	(cm)	
/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ **	/ *	/ ns	/ **	/ **
/ **	/ **	/ **	/ **	/ **	/ ns	/ ns	/ ns	/ ns	/ **	/ *	/ **	/ **
/ **	/ *	/ **	/ ns	/ ns	/ **	/ ns	/ **	/ **	/ **	/ **	/ **	/ **
/ ns	/ **	/ **	/ *	/ **	/ **	/ *	/ **	/ **	/ *	/ *	/ **	/ **
/ **	/ **	/ ns	/ *	/ **	/ ns	/ **	/ **	/ **	/ **	/ *	/ **	/ **
/	/	/	/	/	/	/	/	/	/	/	/	SE (g _i)

: ns .

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Griffing

(1956b)

$$\delta_D^2 = \delta_{SCA}^2, \delta_A^2 = 2\delta_{gca}^2$$

$$h^2 = \frac{\delta_A^2}{\delta_P^2}$$

$$\frac{MS(GCA)}{MS(SCA)}$$

(S_{ij})

SCA

$$\frac{MS(GCA)}{MS(SCA)}$$

S_{ij}

S_{ij}

×

(2000) Kiyanosh

Mohammad- (1998) Kiyanosh & Abdemishani

×

(1993) Gravois & McNew (1998) salehi et al.

H₂ H₁ F D

(S_{ij})

(gr)	(gr)	(mm)	(mm)			(cm)	(mm)	(cm)	(cm)		
/ **	/ **	/ *	/ **	/ *	/ *	/ **	/ *	/ **	/ ns	/ **	×
/ ns	/ **	/ ns	/ *	/ **	/ *	/ ns	/ **	/ ns	/ *	/ **	×
/ ns	/ **	/ *	/ ns	/ **	/ ns	/ **	/ **	/ ns	/ **	/ **	×
/ **	/ *	/ **	/ ns	/ **	/ ns	/ **	/ **	/ ns	/ **	/ **	×
/ *	/ **	/ **	/ *	/ ns	/ ns	/ **	/ ns	/ *	/ *	/ **	×
/ ns	/ **	/ **	/ **	/ **	/ *	/ **	/ **	/ *	/ **	/ **	×
/ **	/ **	/ ns	/ **	/ **	/ **	/ **	/ **	/ ns	/ *	/ **	×
/ *	/ **	/ ns	/ **	/ ns	/ **	/ **	/ *	/ ns	/ **	/ **	×
/ **	/ **	/ *	/ **	/ **	/ **	/ **	/ ns	/ *	/ *	/ *	×
/ **	/ ns	/ **	/ **	/ **	/ ns	/ *	/ **	/ **	/ **	/ *	×
/	/	/	/	/	/	/	/	/	/	/	SE (S _{ij})

: ns .

: ** *

SCA GCA

()					(h _N ²)	(h _B ²)			$\frac{MS(GCA)}{MS(SCA)}$
↑	×	↓	↑	/	/	/	/	/	ns
↓	×								
↑	×	↑		/	/	/	/	/	**
↓	×	↓		/	/	/	/	/	ns
↑	×	↑		/	/	/	/	/	*
↓	×	↓		/	/	/	/	/	ns
	×			/	/	/	/	/	**
	×			/	/	/	/	/	**
	×			/	/	/	/	/	*
↑	×	↓	↑	/	/	/	/	/	ns
↓	×			/	/	/	/	/	ns
↑	×			/	/	/	/	/	ns
↓	×	↓	↑	/	/	/	/	/	ns
	×			/	/	/	/	/	ns
	×			/	/	/	/	/	ns

: ns .

: ** *

F

$$H_0 : b = 1$$

(D)

(H₂ H₁)

F

()

$$\frac{H_2}{4H_1}$$

$$\left(\sqrt{\frac{H_1}{D}}\right)$$

(

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$$U=V= /$$

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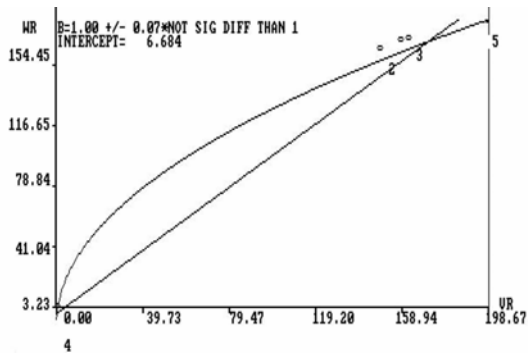
$$\frac{H_2}{4H_1}$$

$$\left[\frac{\sqrt{(4DH_1)+F}}{\sqrt{(4DH_1)-F}}\right]$$

()

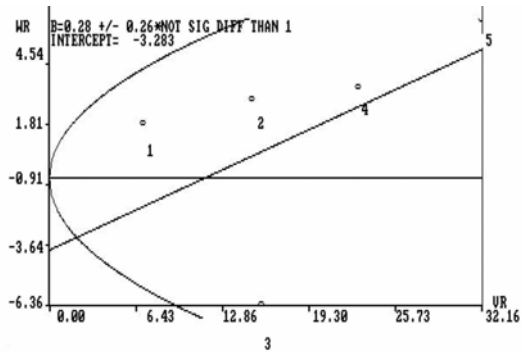
(gr)	(gr)	(mm)				(cm)	(mm)	(cm)	(cm)		
/	/	/	/	/	/	/	/	/	/	/	D
/	/	/	/	/	/	/	/	/	/	/ ns	F
/	/	/	/	/	/	/	/	/	/	/	H ₁
/	/	/	/	/	/	/	/	/	/	/	H ₂
/	/	/	/	/	/	/	/	/	/	/ ns	\hat{h}_2
/	/	/	/	/	/	/	/	/	/	/	Error
/	/	/	/	/	/	/	/	/	/	/	$\sqrt{\frac{H_1}{D}}$
/	/	/	/	/	/	/	/	/	/	/	$\frac{H_2}{4H_1}$
/	/	/	/	/	/	/	/	/	/	/	$\left[\frac{\sqrt{(4DH_1)+F}}{\sqrt{(4DH_1)-F}}\right]$

Wr
() /



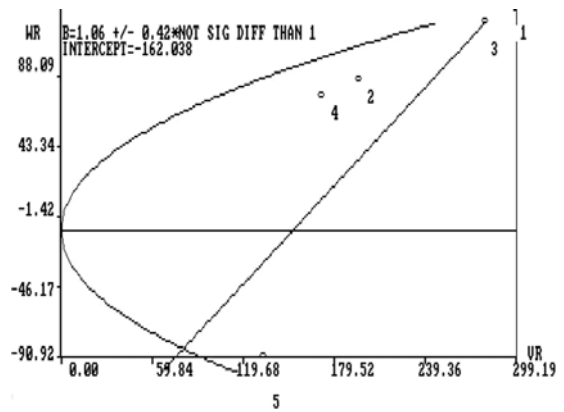
()
()

Wr
() /



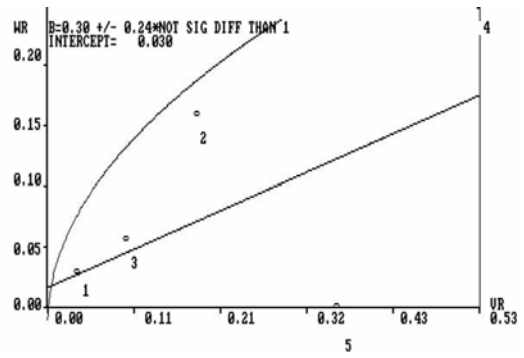
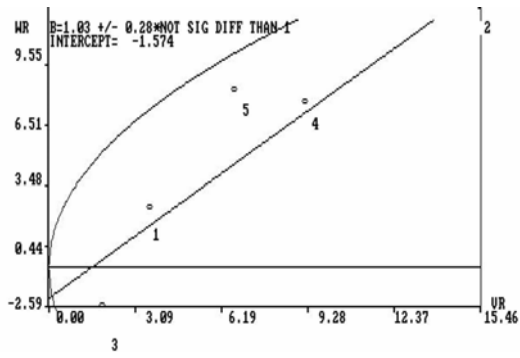
()

Wr
() /



W_r
()

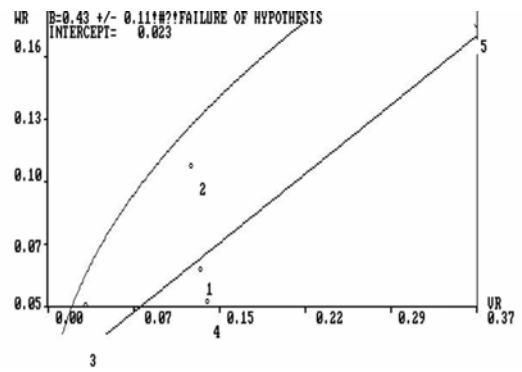
W_r
()



GCA

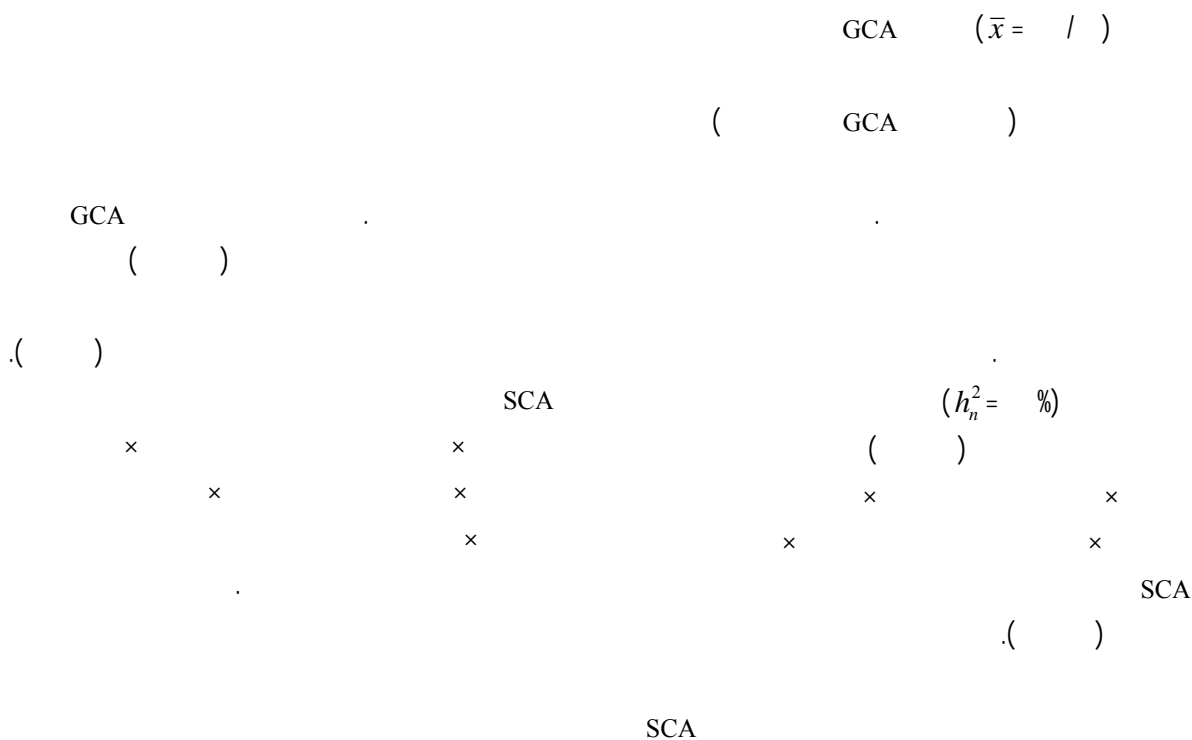
SCA

F₁



(Gravois & McNew, 1993)

W_r
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