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SCA GCA

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W_r (a = - /)

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(GCA)

(SCA)

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SCA GCA
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	/ **	- / **	/ **	- / *	- / ns
	/ $\hat{\eta}$ ^ ns	/ **	/ $\hat{\eta}$ **	/ ns	
	/ *	/ $\hat{\eta}$ ns	- / **		
	- / **	/ ns			
	/ **				
				/	SE (\boldsymbol{g}_i)
				/ $\hat{\eta}$	SE (s_{ij})
	.	:ns	:	** *	*

$\hat{1}$	/	/																																									
(s_{ij})	$\tilde{\sigma}$	$\tilde{\sigma}$	$\tilde{\sigma}$	$(\tilde{\sigma})$	$\tilde{\sigma}(g_i)$	$\tilde{\sigma}$	$\tilde{\sigma}$	$\tilde{\sigma}$	$\tilde{\sigma}$	$\tilde{\sigma}$	$\tilde{\sigma}$	$\tilde{\sigma}$	$\tilde{\sigma}$	$\tilde{\sigma}$																														
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	/ **	/ ns	/ ns	$\hat{1} / *$	- / **																																							
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	/ $\hat{1}$ **	$\hat{1}$ **	$\hat{1}$ **																																									
	/ **	- $\hat{1} \tilde{\sigma}^{ns}$																																										
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												$\hat{1} \hat{1}$	$SE(g_i)$																															
												$\hat{1}$	$SE(s_{ij})$																															
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.					ns	$\hat{1}$. ** *																													

$$\begin{aligned}
& \left(\begin{array}{c} S_{ij} \\ g_i \end{array} \right) \\
& \times \\
& S_{ij} \quad (- / \hat{\sigma}^{**}) \quad g_i \\
& \cdot \\
& S_{ij} \\
& \times \\
& S_{ij} \quad g_i \\
& \cdot \\
& \left(\begin{array}{c} S_{ij} \end{array} \right) \\
& \cdot \\
& \delta_D^2 = \delta_{SCA}^2, \delta_A^2 = 2\delta_{gca}^2 \cdot \left(\begin{array}{c} S_{ij} \end{array} \right)
\end{aligned}$$

.....

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

$$\frac{MS_{GCA}}{MS_{SCA}}$$

SCA GCA -

				$\frac{MS_{GCA}}{MS_{SCA}}$
()				
×	/ î	/	î î	/ ns
×	/	î /	î /	î ns

.ns

î H₂ H₁ F D

$$\frac{MS_{GCA}}{MS_{SCA}}$$

(D)
(H₂ H₁)

$$\left(\sqrt{\frac{H1}{D}}\right)$$

() ()

F .(î)

$$\bar{\theta} \frac{\partial}{\partial \theta} \left(\frac{1}{\theta} \right) = - \frac{1}{\theta}$$

$$\left(\frac{1}{\theta} \right)$$

$$\left(\frac{1}{\theta} \right) \quad F \quad .$$

- $\hat{\theta}$

$\frac{\sqrt{(4DH_1)+F}}{\sqrt{(4DH_1)-F}}$	$\frac{H_2}{4H_1}$	$\sqrt{\frac{H_1}{D}}$	Error	\hat{h}_2	H_2	H_1	F	D
$\frac{1}{\hat{h}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{h}\hat{\theta}}$	$\frac{1}{\hat{h}\hat{\theta}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{h}}$
$\frac{1}{\hat{h}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{h}\hat{\theta}}$	$\frac{1}{\hat{h}\hat{\theta}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{\theta}}$	$\frac{1}{\hat{h}}$

$$\left(\frac{1}{\theta} \right) \quad \frac{H_2}{4H_1}$$

$$\left(\frac{1}{\theta} \right)$$

$$\frac{1}{\theta}$$

.

.

$$\left(\frac{1}{\theta} \right)$$

$$F$$

.

$$\frac{\sqrt{(4DH_1)+F}}{\sqrt{(4DH_1)-F}}$$

$$- \frac{1}{\theta} \quad W_r$$

$\hat{\theta}$

.

$$\left(\frac{1}{\theta} \right)$$

$$\left(\frac{1}{\theta} \right)$$

$$\frac{\sqrt{(4DH_1)+F}}{\sqrt{(4DH_1)-F}} \quad \frac{H_2}{4H_1} \quad F$$

.

$$\hat{\theta}$$

$$\hat{\theta}$$

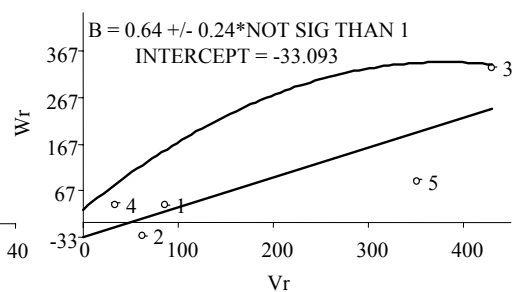
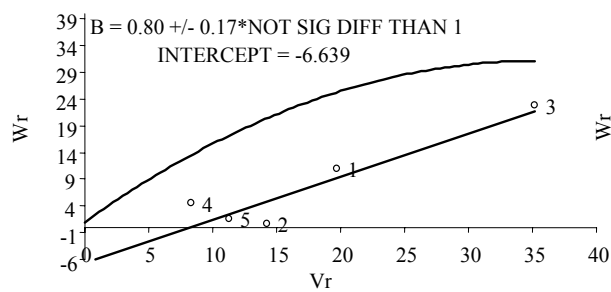
$$\left(\frac{1}{\theta} \right)$$

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$$- \quad / \quad \check{\mathcal{O}} \quad \text{Wr}$$
$$(\quad)$$

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$$\left(\begin{array}{ccccccc} -1 & & & & & & \\ & -1 & & & & & \\ & & -1 & & & & \\ & & & -1 & & & \\ & & & & -1 & & \\ & & & & & -1 & \\ & & & & & & -1 \end{array} \right)$$

SCA

x

×

$$F_1$$

×

×

GCA

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Determination of Gene Effects and Combining Ability of Early Maturity and Yield Traits In Rice

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Abstract

Five rice genotypes (Hassani, Dailamani, Shastak-mohammadi, Sange-tarom and Daei-shastak) and their 10 hybrids obtained through half a diallel set were evaluated for combining ability and gene effects studies of early maturity and yield traits. Single seedlings of each entries were transplanted at 20×20 cm spacing in 2×4 m² plots using a randomized block design with three replications during 2004-2005 at research station of Sari Agricultural Sciences and Natural Resources University. General combining ability (GCA) and specific combining ability (SCA) were calculated for these agronomic traits. The results showed significant difference between general (GCA) and specific combining ability (SCA) for the investigated characters. This indicates the role of additive and non-additive gene effects in inheritance of the traits. Also the results showed that selection for early maturity and yield characters can't well succeed, because of there were a high amount of non-additive gene effects in the genetic variance. Thus, these characters were important for production of hybrid variety and application of heterosis. In this study, investigation of graphic Wr-Vr analysis for early maturity indicated overdominance effect because the regression line intercepted the Wr axis at negative point ($a = -6.64$). The GCA effects of each parent for these traits showed that the Daei-shastak is good general combiner for yield.

Keywords: Combining ability, Gene action, Rice, Diallel cros

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