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cdef	defg	bcdef	defg	abcdefg	fgh	yy ^{bcde}	h	K18×K3651/1
cdef	cdefg	bc	cdefg	abcdefg	y ^{bcdef}	y ^{bcde}	gh	K18×A679
cdef	bcdef	cdef	cdefg	ab	y ^{bcdef}	y ^{abcde}	defg	K18×K166A
cdef	a	bcd	a	abcdefg	abcd	y ^a	a	K18×K166B
cdef	bedef	bcdef	cdefg	ab	efg	bcde	defg	K18×K3640/5
cdef	a	y ^{bcdef}	b	ab	a	abc	ab	K18×K47/2-2-1-21-2-1-1-1
defg	bc	bcdef	y ^c	g	abcde	yy ^{ef}	y ^{def}	K18×K19
fgh	defg	fg	defg	abcdefg	efg	abcd	y ^h	K3651/1×A679
efgh	bcdef	efg	cdefg	abcdefg	abcde	y ^{cdef}	efgh	K3651/1×K166A
cde	y ^{bcde}	bc	cde	abcdefg	abcde	yy ^{bcdef}	cde	K3651/1×K166B
a	bcde	a	cde	ab	efg	y ^{abc}	defg	K3651/1×K3640/5
bcd	efg	b	efg	ab	gh	abcde	gh	K3651/1×K47/2-2-1-21-2-1-1-1
cdef	g	bcdef	g	ab	h	abcde	gh	K3651/1×K19
b	bcdef	a	cdefg	abcdefg	y ^{bcdef}	y ^{bcdef}	fgh	A679×K166A
y ^{cdef}	g	defg	g	ab	gh	y ^f	y ^h	A679×K166B
y ^{gh}	fg	y ^g	fg	abcdefg	h	yy ^{abcde}	fgh	A679×K3640/5
fgh	efg	fg	fg	abcdefg	y ^{bcdef}	abcde	defg	A679×K47/2-2-1-21-2-1-1-1
bc	fg	bc	fg	ab	fgh	def	h	A679×K19
cdef	bcd	bc	b	abcdefg	abcde	abc	cde	K166A×K166B
cdef	y ^{bcde}	bedde	cdefg	ab	y ^{bcdef}	ab	defg	K166A×K3640/5
defg	bedef	defg	cdefg	ab	efg	y ^{abc}	defg	K166A×K47/2-2-1-21-2-1-1-1
y ^{cdef}	bc	y ^{cdef}	y ^c	efg	a	abc	cde	K166A×K19
efgh	y ^{bcde}	fg	cde	abcdefg	abcde	abcde	y ^{cde}	K166B×K3640/5
cdef	bdefg	cdefg	cdefg	abcdefg	abcde	yy ^{abc}	cd	K166B×K47/2-2-1-21-2-1-1-1
cdef	b	bcd	y ^c	abcdefg	a	yy ^{bcde}	y ^{bc}	K166B×K19
h	defg	y ^g	defg	efg	y ^{bcdef}	abcde	y ^{defg}	K3640/5×K47/2-2-1-21-2-1-1-1
cde	g	bcd	efg	ab	fgh	bcde	defg	K3640/5×K19
cdef	a	y ^{bcdef}	ab	efg	a	y ^{bcdef}	defg	K47/2-2-1-21-2-1-1-1×K19

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cd	def	/ bcde	/ ghij	ŷl b	ŷl def	cdef	efgh	K18×A679	
ŷŷ ^{abcd}	ef	/ ŷe	/ abcde	ŷl b	ŷl ef	ŷ ^a	abcdef	K18×K166A	
a	a	/ e	ŷ ⁱ	ŷl b	ŷl a	abcd	abcde	K18×K166B	
abcd	bcde	/ abcd	/ ab	ŷl b	ŷl f	cd	ŷ abc	K18×K3640/5	
abcd	a	/ ŷ ^{abcd}	ŷl j	ŷl b	ŷl abcd	cde	abcdef	K18×K47/2-2-1-21-2-1-1-1	
ab	bcde	/ cde	ŷl ij	ŷl b	ŷl cdef	bcd	a	K18×K19	
ŷ ^d	f	/ ŷ ^{abcd}	/ abcdefg	ŷl b	ŷl cdef	cde	abcdef	K3651/1×A679	
abcd	def	/ ŷ ^{ab}	/ abcdef	ŷl b	ŷl def	cdef	abcdef	K3651/1×K166A	
abcd	cdef	/ abc	/ bcdefg	ŷl b	ŷl ef	def	ŷ bcdefg	K3651/1×K166B	
bcd	def	/ ŷ ^a	/ abcd	ŷl b	ŷl cdef	def	fgh	K3651/1×K3640/5	
ŷ ^{abcd}	def	/ abcd	/ abcd	ŷl b	ŷl f	ŷ ^{def}	fgh	K3651/1×K47/2-2-1-21-2-1-1-1	
abcd	ŷ ^{cdef}	/ ŷ ^{abc}	/ abc	ŷl b	ŷl f	def	ŷ cdefgh	K3651/1×K19	
abcd	def	/ a	/ abcdefg	ŷl b	ŷl bcde	cde	abcdef	A679×K166A	
ŷ ^{abcd}	def	/ abc	/ abcd	ŷl b	ŷl f	ŷ ^f	h	A679×K166B	
abcd	cdef	/ abcd	/ abcdef	ŷl b	ŷl f	cd	gh	A679×K3640/5	
d	ŷ ^{def}	/ de	/ hij	ŷl b	ŷl ef	ef	gh	A679×K47/2-2-1-21-2-1-1-1	
cd	ef	/ abcd	/ a	b	ŷl ef	cd	fgh	A679×K19	
ŷ ^{abc}	bcd	/ abcd	/ fghij	ŷl b	ŷl cdef	abc	ŷ abcd	K166A×K166B	
abcd	bcde	/ ŷ ^{abcd}	/ abcdef	ŷl b	ŷl bcde	cde	fgh	K166A×K3640/5	
ŷ ^{abcd}	bcde	/ ab	/ abcdef	ŷl b	ŷl def	def	ab	K166A×K47/2-2-1-21-2-1-1-1	
ŷŷ ^{abcd}	ŷ ^{bcde}	/ abcd	/ defghij	b	ŷl ab	ab	abcdef	K166A×K19	
abcd	def	e	/ defghij	/ a	ŷl cdef	abcd	ŷ abcd	K166B×K3640/5	
abc	b	/ abc	/ defghij	ŷl b	ŷl cdef	abcd	abcdef	K166B×K47/2-2-1-21-2-1-1-1	
abcd	ŷ ^{bc}	/ abcd	/ efg hij	ŷl b	ŷl abc	abcd	abcde	K166B×K19	
abcd	ef	/ ŷ ^{abcd}	/ hij	ŷl b	ŷl def	cdef	ŷ ^{defgh}	K3640/5×K47/2-2-1-21-2-1-1-1	
ŷ ^{abcd}	ef	/ abc	/ abc	ŷl b	ŷl def	def	ŷ ^{fgh}	K3640/5×K19	
ŷ ^{abcd}	ŷ ^{bcde}	/ abcd	/ abcdef	ŷl b	ŷl cdef	ŷ ^{cdef}	abcdef	K47/2-2-1-21-2-1-1-1×K19	

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An Evaluation of Some Quantitative Traits in Maize (*Zea mays* L.) Hybrids Under Heat Stress Using Multivariate Analysis

Z. Khodarahmpour¹ and R. Choukan²

Abstract

In order to determine the best index for evaluating maize genotypes, 28 maize hybrids were evaluated in two planting dates, 6 July to coincide heat stress with pollination time and 27 July as normal planting to avoid high temperature during pollination and grain filling period, using a randomized complete block design with three replications, in Shushtar city, in 2008. Results showed that in stepwise regression analysis for heat stress condition, grain dry matter weight and grain depth traits were entered in model but, for normal condition, nothing trait werenot entered in model. Factor analysis, for heat stress and normal conditions indentified three and five independent factors which explained 73.59 and 75.78 percent of all variations, respectively. In heat stress condition, first factor, named yield and yield components and in normal condition named ear morphology, explaining 43.78 and 18.96 percent of total variations, respectively. Second factor for heat stress and third factor for normal condition named grain characteristic, which explained 15.67 and 17.58 percent of total variations, respectively. Third factor in heat stress named ear morphology. Second factor, yield components, fourth factor grain width and grain dry matter weight and fifth factor grain yield named in normal condition. Based on the results, grain dry matter weight and grain depth under heat stress revealed as suitable traits which can discriminate maize genotypes.

Keywords: Factor analysis, Heat stress, Maize, Hybrids

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