CORRELATION ANALYSIS OF YIELD AND AGRONOMIC TRAITS IN SPRING SAFFLOWER GENOTYPES AT THREE LEVELS OF IRRIGATION

ANALYSE DE CORRELATION ENTRE LE RENDEMENT ET LES TRAITS AGRONOMIQUES DES GENOTYPES DE CARTHAME DE PRINTEMPS A TROIS NIVEAUX D'IRRIGATION

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ABSTRACT

To investigate and evaluate the effects of drought on yield and yield components on different genotypes of spring safflower (The resulting genotypes from Internal and foreign varieties) Experimental Farm in 2008 as a randomized block design in split plot design with three replications under No Drought stress and Tension (two levels of moderate and severe) at flowering stage in Miyaneh Islamic Azad University of Agriculture station to the implementation was. Variance and mean comparisons showed high variability between genotypes exist. Due to time stress (flowering stage) traits such as number of stems per plant, plant height and total number of leaves per plant at different levels of stress were not significantly different. Simple correlation coefficients, stepwise regression and path analysis for all genotypes under drought stress and different levels of stress were estimated. Under non-stress correlation coefficients yield components including grain number in the Capitol, Capitol number of empty seeds per plant with grain yield in the Capitol was positive and significant. The correlation coefficients between yield and other traits related to yield in different environmental conditions showed that the three conditions between performance and weight and there was a significant positive correlation. Stress conditions there significant interaction between genotype and environmental causes of correlations in terms of value were marked. So, citing the results of correlation in cases with genotype environment interaction exist must be made with caution.

Key words: *Correlation analysis - safflower - different levels of irrigation.*

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RESUME

Pour examiner et évaluer les effets de la sécheresse sur le rendement et les composants du rendement sur les différents génotypes de carthame de printemps, les expérimentations ont été menés en 2004 sur les parcelles de l'Université agricole de « Miyaneh Islamic Azad ». On a utilisé la conception RCBD sur la parcelle divisée avec 3 répétitions dans le cadre de « aucun stress de sécheresse » et deux niveaux de tension d'humidité du sol (modérée et sévère) lors de la fleuraison. La variation et les comparaisons moyennes ont montré la haute variabilité entre les génotypes. Les traits tels que le nombre de tiges par plante, la hauteur de plante et le nombre total de feuilles par plante aux différents niveaux de stress n'étaient pas significativement différents. Les coefficients de corrélation simples, la régression par point et l'analyse de chemin de tous les génotypes dans le cadre de différents niveaux de stress de sécheresse ont été évalués. Dans la condition de non-stress, les coefficients de corrélation entre les composants du rendement étaient positifs et significatifs. Les coefficients de corrélation entre le rendement et d'autres traits relevant des différentes conditions environnementales ont donné lieu à la corrélation positive significative.

Mots clés : *Analyse de corrélation, carthame, différents niveaux d'irrigation.*

1. INTRODUCTION

Safflower agronomic Carthamus tinctorius L. belongs to the composite it is different as a Gramineous and Bush Throughout the world have been scattered. certain desirable and characteristics such as plant: medical and food use of its petals, there meal as livestock feed suitable for ruminants Manufacturer, for high quality seed oil, there is 90% unsaturated fatty acids, especially linoleic acid and oleic acid, resistance to soil salinity Top relatively with dry air, including the case of safflower oil as a plant worth more than before May illustrate (4,5,10 and 13) global acreage, total production and yield of safflower hectare in order against 1128 million ha, 0/839 million tons and 744 kg have been reported (1). Research on this plant in the country since the late forties with a collection of native populations was initiated and then also received numerous varieties of other countries especially the United States continued. Mojtahedi Figures in reviews safflower external examination at the research station in Ahvaz Nebraska 10 foreign varieties with yield per hectare in 1618 Kilogram introduced as the best figure (quoting from the source 3). Ashry et al studies have shown that the number of yield components in safflower is number of capitol (quoting from the source 7). The purpose of this study to evaluate genetic variation between different traits studied genotypes of tolerance to drought stress conditions compared with normal function and estimate yield losses caused by drought stress, traits and estimation of trends in media without Significant stress and tension.

2. MATERIALS AND METHODS

This study in the spring of 2009 Farm Agricultural Research Station in Azad University of Miyaneh, was derived from safflower Internal and foreign hybridization were studied. Land preparation operations, including operations related to the plow, disk, leveling and creating pieces considered in Faro, evenly done. After the interval mapping test rows 50 cm (8)

Lines Length 3 Meter purpose. Planting shrubs intervals on lines 20 cm were considered. Planting seeds in operation since 19/1/2008, two days after rainfall Heiram working method was performed. Depth of planting seeds 4 cm and to ensure germination and has whole plant count per plot, number three seed in each hole were poured. All operations related to the weeds were the mechanical method and for the fight against aphids, in the field since 21/3/2009 with the amount of insecticide Metasitoks 1/ 5 in a thousand were poison sprayed. Posted 23/3/2009 in urea (40 percent nitrogen) to the farm roads were. Irrigation treatments without stress, according to regional conditions and temperature; intervals were 90-10 days. Under moderate stress treatments, irrigation was cut with flowering and this grain filling stage (seed dough) and then continued at intervals of 20-22 days, depending on the temperature of irrigation was performed. Treatments under severe stress with flowering irrigation was cut off and only time in history Beck 10/4/2008 to prevent the death of plants were irrigated plots desired. Main plots included different levels of irrigation (irrigation, drought and Medium Severe drought stress at flowering stage) and subplots, including different genotypes of safflower were. In this study, 10 attributes, including the number of lateral branches, number of Capitol plant and seed number in the Capitol, plant height, number of empty seeds in the Capitol, Capitol First distance from ground level, grain weight, grain yield per plant, total leaf number of main and dry leaves were recorded. It is necessary to measurements in all five plants randomly selected number, the desired trait and then measured the average were recorded. To compare genotypes tested in a simple variance split plot randomized complete block design was done for all characters. Mean comparisons using the Duncan test was performed. Before analysis of variance test for normality for all traits were performed. Path analysis to explain the correlation between variables was investigated. For the calculation of statistical software programs PATH.EXE, SYSTAT6, QP5, SPSS, MSTATC was used.

3. RESULTS AND DISCUSSION

Variance analysis

Analysis of variance showed the effect of drought stress at different levels (moderate and severe water stress) on plant traits such as number of the Capitol, Capitol grain number, grain weight, number of empty seeds in the Capitol, yield per plant and number of dry leaves on the surface 1% probability interval for the first trait in the Capitol from the ground level of 5% was significant. So update the above traits in genotypes tested under the influence of stress levels and stress is changed. The number of branch, leaf and total plant height significantly different levels of stress was observed. Among the lowest seed weight coefficient of variation (33 / 3%) and number of empty seeds in the Capitol highest coefficient of variation (39/35%) were having. CV yield per plant (60 / 5%), respectively. Low coefficient of yield variation may be related to the plant, which is calculated in terms of performance, not in plot units. Interaction between genotypes at different levels of drought stress traits except number of lateral branches and number of empty seeds in the Capitol, for other traits, the 1% probability level were significant. The number of lateral branches and number of empty seeds in the Capitol significant differences between genotypes were observed. Overall ANOVA indicated that significant genetic variation among genotypes for most of agronomic and phonological traits, and there can be variation in the selection program for resistance to water deficit was operating.

Mean comparisons

Genotypes studied at different levels of stress (moderate and severe) and normal conditions of different characteristics separately, using multiple range Duncan test at 5% probability level were compared. Traits such as number of lateral branches, number of Capitol in plant height, distance from the first Capitol and the total leaf surface in all three conditions, normal, moderate drought and severe water stress were not significantly different. Treatment average Grain 1000 weight, yield per plant and seeds per boll with increasing severity of drought stress significantly decreased the mean stress and empty seeds were significantly increased. Number of leaves dried in normal conditions, significant differences in the number of dry leaves was stress, but the average number of dried leaves in moderate and severe drought conditions was not significantly different. Drought stress during flowering on yield components, especially Grain 1000 weight, grain number and grain number empty Capitol, had a negative effect and they are reduced because of water deficit at flowering stage causes pollen and drought reduced the percentage of inoculated shows (11 and 12). Compare genotype interactions in different environments showed that in normal conditions, genotype number 1 (KH15.44) and No. 2 (KH90.411) and No. 5 (KH100511) had the highest yield among the genotypes were studied. Grain 1000 weight from genotype No. 2 (KH90.411) and genotype number 1 (KH15.44) were 659/53 and 752/51 g doses were having the highest values. Genotype No. 4 (KH23.57) had the highest number of seeds was Capitol. Moderate drought conditions and KH15.44 K.H.90.411 genotypes were having the highest grain yield. Severe drought conditions, genotypes, and KH96.450 KH23.57 highest yield were having.

Table 1 - Analysis ANOVA për Genotype studiuar e safflower

Mean Square						Resource change
Yield bush	Number of empty seeds	Grain 1000 weight	Total grain Capitol	Total Capitol plant	Degree of freedom	
89/427	1/652	1/399	2/988	10/865	2	Repeat
6543/38**	86/433**	722/101**	171/973**	180/970**	2	Stress levels
19/549	0/552	0.997	4/872	17/107	4	Experimental error (1)
333/096**	1/059 ns	10/021**	45/634**	96/941*	5	Genotype
218/312**	0/497 ns	38/298**	31/994**	119/664**	10	Interaction Genotype * treatment
12/122	0/687	2/550	2/550	26/838	30	Experimental error (2)
5/06%	35/39%	3/33%	3/71%	16/07%		Coefficient of variation% CV

** = Significant at 1% probability level
* = Significant at 5% probability level
ns = No significant

Table 2 - Mean safflower traits at different levels of drought stress and normal

Yield bush	Number of empty seeds	Grain 1000 weight	Total grain Capitol	Total Capitol plant	Levels
89/36 a	0/1605 a	45/70 a	45/91 a	35/72 a	Normal
65/11 b	2.321 b	38/63 b	43/58 ab	31/44 a	Moderate stress
51/75 c	4/543 c	33/06 c	39/78 b	29/53 b	Severe stress
Sx-= 2/553	Sx-=0/429	Sx-=0/576	Sx-=1/274	Sx-= 2/388	

Different letters indicate significant differences at 5% probability level accommodation

Correlation between levels of traits in treatment

In normal conditions, the correlation between yield and plant traits such as seed weight per plant and number of the Capitol were positive and significant correlation between the number of lateral branches per plant per plant Capitol (0/6908) positive and significant at the 1 percent level, but correlation Number of lateral branches and plant height (-0/1295) negative and non significant calculated. Capitol between the number per plant with traits such as plant height (-0/2967), seed weight (-0/0560) and total number of main leaves per plant (-0/2580) was negative and non significant. The correlation between seed weight and seed number in the empty Capitol (-0/4703) and non-significant and negative traits such as total number of main leaves per plant (0/1019) and number of dry leaves per plant (0/3650) and positive and non significant Plant yield (0/4860) positive and 5 percent probability level was significant. Correlation between the number of empty seeds and the total number of main leaves per plant (0/1437) and non-significant and negative attributes of dried leaf number per plant (0/3650) were positive and non significant (Table 3).

Table 3-1 - Analysis of variance for the studied genotypes of safflower

Mean Square						Resource change
Yield bush	Number of empty seeds	Grain 1000 weight	Total grain Capitol	Total Capitol plant	Degree of freedom	
89/427	1/652	1/399	2/988	10/865	2	Repeat
6543/38**	86/433**	722/101**	171/973**	180/970**	2	Stress levels
19/549	0/552	0.997	4/872	17/107	4	Experimental error (1)
333/096**	1/059 ns	10/021**	45/634**	96/941*	5	Genotype
218/312**	0/497 ns	38/298**	31/994**	119/664**	10	Interaction Genotype * treatment
12/122	0/687	2/550	2/550	26/838	30	Experimental error (2)
5/06%	35/39%	3/33%	3/71%	16/07%		Coefficient of variation% CV

** = Significant at 1% probability level
* = Significant at 5% probability level
ns = No significant

Table 3-2 Average safflower traits at different levels of drought stress and normal conditions

Yield bush	Number of empty seeds	Grain 1000 weight	Total grain Capitol	Total Capitol plant	Levels
89/36 a	0/1605 a	45/70 a	45/91 a	35/72 a	Normal
65/11 b	2.321 b	38/63 b	43/58 ab	31/44 a	Moderate stress
51/75 c	4/543 c	33/06 c	39/78 b	29/53 b	Severe stress
Sx-= 2/553	Sx-=0/429	Sx-=0/576	Sx-=1/274	Sx-= 2/388	

Different letters indicate significant differences at 5% probability level accommodation

Table 3-3 - Mean Squared safflower traits in normal conditions

Number of empty seeds	Total Capitol plant	Total grain Capitol	Grain 1000 weight	Yield bush	Traits Genotype	Row
0/074 a	48/222 b	45/593 d	51/752 b	111/450 a	K.H.15.44	1
0/074 a	39/926 b	41/593 d	53/659 a	95/129 b	K.H.90.411	2
0/296 a	27/000 c	44/296 c	43/313 c	82/051 c	K.H.96.450	3
0/074 a	35/667 b	51/704 a	39/275 d	77/019 d	K.H.23.57	4
0/222 a	35/407 b	44/333 c	43/534 c	96/506 b	K.H.100511	5
0/222 a	28/111 c	47/926 b	42/640 c	74/010 d	K.H.64.268	6
0/962	214/333	275/445	274/173	536/165	total	
Sx- = 0/33	Sx- = 2/11	Sx- = 0/65	Sx- = 0/53	Sx- = 1/42		

Different letters indicate significant differences at 5% probability level are

Table 3-4 - Mean squares of traits in safflower moderate drought conditions

Number of empty seeds	Total Capitol plant	Total grain Capitol	Grain 1000 weight	Yield bush	Traits Genotype	Row
2/556 b	27/778 a	50/889 a	38/093 b	70/441 a	K.H.15.44	1
2/074 b	29/148 a	43/148 c	41/259 a	69/246 a	K.H.90.411	2
1/444 a	33/148 a	40/630 d	40/321 a	63/155 ab	K.H.96.450	3
3/000 b	33/852 a	47/519 b	37/310 c	62/664 ab	K.H.23.57	4
2/704 b	31/519 a	40/111 dc	38/990 b	66/185 a	K.H.1004511	5
2/148 b	33/185 a	39/185 dc	35/798 d	59/000 b	K.H.64.268	6
13/926	188/63	261/483	231/771	390/691	total	
Sx- = 0/33	Sx- = 2/11	Sx- = 0/65	Sx- = 0/53	Sx- = 1/42		

Different letters indicate significant differences at 5% probability level are

Table 3-5 - Mean squares of traits in safflower severe drought conditions

Number of empty seeds	Total Capitol plant	Total grain Capitol	Grain 1000 weight	Yield bush	Traits Genotype	Row
4/370 b	26/444 b	38/185 b	33/073 b	48/928 c	K.H.15.44	1
4/815 ab	27/296 b	38/074 b	30/537 c	49/378 c	K.H.90.411	2
3/778 b	28/593 b	39/481 ab	35/650 a	61/658 a	K.H.96.450	3
4/889 ab	37/296 a	41/037 a	32/611 b	55/130 b	K.H.23.57	4
5/407 a	37/296 a	42/000 a	33/041 b	50/810 c	K.H.100511	5
4/000 b	20/259 c	39/926 ab	33/431 b	44/582 d	K.H.64.268	6
27/259	177/184	238/703	198/334	310/496	total	
Sx- = 0/33	Sx- = 2/11	Sx- = 0/65	Sx- = 0/53	Sx- = 1/42		

Different letters indicate significant differences at 5% probability level are

Table 3-6 - Mean characteristics of safflower genotypes studied at different levels of drought stress

Yield bush	Number of empty seeds	Grain 1000 weight	Total grain Capitol	Total Capitol plant	Traits/Interaction Genotype * treatment	
111/4 a	0/07407 i	51/75 b	45/59 c	48/22 a	K.H.15.44	Normal
95/13 b	0/07407 i	53/66 a	41/59 fg	39/93 b	K.H.90.411	Normal
82/05 c	0/2963 i	43/31 cd	44/30 d	27/00 g	K.H.96.450	Normal
77/02 d	0/07407 i	39/28 g	51/70 a	35/67 cd	K.H.23.57	Normal
96/51 b	0/2222 i	43/53 c	44/30 d	35/41 cd	K.H.100511	Normal
74/01 c	0/2222 i	42/64 d	47/93 b	28/11 fg	K.H.64.268	Normal
70/44 f	2/556 efg	38/09 h	50/89 a	27/78 g	K.H.15.44	Average
69/25 f	2/074 g	41/26 c	43/15 c	29/15 fg	K.H.90.411	Average
63/15 h	1/444 h	40/32 f	40/63 ghi	33/15 dc	K.H.96.450	Average
62/66 h	3/000 e	37/31 h	47/52 b	33/85 cde	K.H.23.57	Average
66/18 g	2/704 ef	38/99 g	40/11 hij	31/52 ef	K.H.100511	Average
59/00 i	2/148 fg	35/80 i	39/19 jk	33/90 dc	K.H.64.268	Average
48/94 k	4/370 bc	33/07 j	38/19 kl	26/44 g	K.H.15.44	Severe
49/38 k	4/815 b	30/54 k	38/07 i	27/30 g	K.H.90.411	Severe
61/66 h	3/778 d	35/65 i	39/48 i	28/59 fg	K.H.96.450	Severe
55/13 j	4/889 ab	32/61 j	41/04 fgh	27/30 bc	K.H.23.57	Severe
50/81 k	5/407 a	33/04 i	42/00 f	37/30 bc	K.H.100511	Severe
44/58 l	4/000 cd	33/43 j	39/13 ij	20/26 h	K.H.64.268	Severe
Sx- = 2/370	Sx- = 0/5642	Sx- = 0/88	Sx- = 1/08	Sx- = 3/52		

Different letters indicate significant differences at 5% probability level are

Table 3-7 values of stress susceptibility (SSI) Fernandez index (STI) geometric mean productivity (GMP) in safflower genotypes studied

K.H.64.268	K.H.100511	K.H.23.57	K.H.96.450	K.H.90.411	K.H.15.44	Genotype/Index
0/748	1/159	0/687	0/849	1/003	1/36	Under moderate drought sensitivity index $_{(1)}$SSI
0/946	1/127	0/676	0/591	1/145	1/33	Under severe water stress sensitivity index $_{(2)}$SSI
1/029	1/506	1/138	1/222	1/553	1/851	Fernandez index under moderate drought $_{(1)}$STI
1/232	1/831	1/585	1/512	1/754	2/036	Fernandez under severe water stress index $_{(2)}$STI
66/080	79/120	69/471	71/985	81/162	88/603	Productivity index, geometric mean under moderate drought$_{(1)}$GMP
57/441	70/024	65/161	71/127	68/917	73/844	Geometric mean productivity index under severe drought $_{(2)}$GMP
59/197	71/167	64/937	68/954	71/251	76/93	The average yield in all genotypes, environmental conditions (normal, moderate stress, severe stress)

Table 3-8 - amounts of stress tolerance (TOL) arithmetic mean productivity (MP) case study in safflower genotypes

K.H.64.268	K.H.100511	K.H.23.57	K.H.96.450	K.H.90.411	K.H.15.44	Genotype/Index
66/505	81/345	69/841	72/603	82/187	90/945	An arithmetic average productivity index under moderate drought $_{(1)}$MP
59/296	73/658	66/074	71/854	72/253	80/189	An arithmetic average productivity index under severe drought $_{(2)}$MP
15/01	30/321	14/355	18/896	25/883	41/009	Moderate drought tolerance index $_{(1)}$TOL
29/428	45/696	21/889	20/393	45/751	62/522	Severe drought stress tolerance index $_{(2)}$TOL
59/197	71/167	64/937	68/954	71/251	76/93	The average yield in all genotypes, environmental conditions (normal, moderate stress, severe stress)

In moderate drought conditions, the correlation between yield and plant traits such as number of lateral branches (0/2152), the number of plant Capitol (0/1531), plant height (0/3407), distance from ground level first Capitol (0/3055), and the number of empty seeds in the Capitol (-0/0702) were negative and non significant. But traits such as number of seeds Capitol (0/3456) and seed weight (0/4315) had a positive correlation. Relationship between the number of lateral branches per plant and number of Capitol (0/6846) and total number of leaves (0/6908) positive and significant at 1 percent level and plant height (0/6490) and dry leaf (0/6601) positive and significant at the 5 percent level and with traits such as number of seeds Capitol

(-0/2444), distance from ground level first Capitol (-0/0845), Number of empty seeds in the Capitol (-0/2199) and yield per plant (-0/2152) was negative and non significant. Capitol between the number of traits such as plant and plant height (0/2086), distance from ground level first Capitol (0/1227), total leaf (0/5333) and dry leaf (0/5312) and positive correlation was non significant And the correlation between the number of traits such as grain and Capitol (-0/2609), grain weight (-0/2152), the number of empty seeds in the Capitol (-0/1325) and yield per plant (-0/1531) negative non significant were calculated (Table 4).

Severe drought conditions the correlation between yield and plant traits such as number of lateral branches (0/329), the number of plant Capitol (0/569), number of seeds in the Capitol (0/437) and seed weight (0/906) Positive And 5 percent significance level was calculated. Between branch number and plant traits such as Total Capitol (0/613), seed weight (0/285), yield per plant (0/329) and total number of leaves (0/434) and positive correlation at the 5 percent level With traits such as distance from the ground first Capitol (-0/317), the number of empty seeds in the Capitol (-0/293) negative and 5 percent probability level were significant. Capitol between the number per plant with traits such as seed weight (0/471) and yield per plant (0/569) positive and significant at the 5 percent level and with traits such as distance from the first Capitol Ground level (-0/331), the number of empty seeds in the Capitol (-0/277) negative and significant at the 5 percent level of probability was calculated. The correlation between seed weight with seed number in the empty Capitol (-0/803) and dried plant leaves (-0/724) was negative and significant (Table 4).

Table 4-1 simple correlation coefficients safflower studied under normal Conditions

Number of leaves per plant dry	The total number of leaves per plant	Yield bush	Total Seed The empty Capitol	Grain 1000 weigh	Distance First Capitol of the surface	Total Seed Capitol	Plant height	Total Capitol plant	Traits	raw
0/1134	-0/2580	0/4787*	0/2903	-0/056	0/1985	0/4827*	-0/2968	1	Total Capitol plant	1
0/5602 *	0/1030	0/2066	0/809	0/1866	0/1706	1			Total Seed Capitol	2
0/0439	-0/1019	-0/4860*	-0/4703*	1					Grain 1000 weigh	3
0/3650 *	-0/1437*	0/0014	1						Total Seed The empty Capitol	4
-0/2140	0/5417	1							Yield bush	5

** = Significant at 1% probability level
* = Significant at 5% probability level
ns = No significant

Table 4-2 Coefficients of simple correlation study of safflower genotypes under conditions of moderate drought

Number of leaves per plant dry	The total number of leaves per plant	Yield bush	Total Seed The empty Capitol	Grain 1000 weigh	Distance First Capitol of the surface	Total Seed Capitol	Plant height	Total Capitol plant	Traits	raw
0/5312*	0/3353*	-0/1153	-0/5132	-0/2215	0/1227	-0/2609	0/2086	1	Total Capitol plant	1
-0/1481	-0/4400	0/6345	0/2004	0/694**	0/2157	1			Total Seed Capitol	2
-0/2650	-0/9394	0/5431*	-0/3816	1					Grain 1000 weigh	3
-0/3348	-0/7190	-0/2070	1						Total Seed The empty Capitol	4
-0/2889	-0/1397	1							Yield bush	5

** = Significant at 1% probability level
* = Significant at 5% probability level
ns = No significant

Table 4-3 Coefficients of simple correlation study safflower under severe drought conditions

Number of leaves per plant dry	The total number of leaves per plant	Yield bush	Total Seed The empty Capitol	Grain 1000 weigh	Distance First Capitol of the surface	Total Seed Capitol	Plant height	Total Capitol plant	Traits	raw
-0/230	0/133	0/569*	-0/277 *	0/471*	-0/331*	0/172	0/058	1	Total Capitol plant	1
-0/343*	-0/117	0/437*	-0/492*	0/327*	0/220	1			Total Seed Capitol	2
-0/724**	0/056	0/906**	-0/803**	1					Grain 1000 weigh	3
0/646**	-0/126	-0/780**	1						Total Seed The empty Capitol	4
-0/692**	-0/005	1							Yield bush	5

** = Significant at 1% probability level
* = Significant at 5% probability level
ns = No significant

4. CONCLUSIONS

It seems that stress intensity by large number of dried leaves and subsequently providing material Assimilation to increase grain weight is lower. Thus grain weight loss and ultimately gaining more yield decreases. Comparison of correlation between yield and other traits related to environmental performance in different conditions showed that the three conditions between yield and seed weight and secondly there was a positive correlation significant interaction between genotype and environment (stress) caused between some important characteristics And function of different correlations in terms of sign and be seen so much when the genotype environment interaction is significant correlation between use of selection for yield traits in order to more consistently be done with caution.

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