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Agronomic and Grain Yield Components Traits under Drought Condition Of Some Maize (*Zea Mays*) Hybrids

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***Abstract**: Fifteen Maize genotypes were evaluated at two locations (Jebba and Rabba fields) using Randomized Complete Block Design (RCBD) with three replications during 2022/2023 cropping season. The objective was to study the relationship and contributions of some agronomic traits to grain yield generation in drought stress condition. Data collected on quantitative characters subjected to analyses of variance showed significant difference among genotypes at the two locations combined under water stress and non stress conditions. Significant differences were found amongst the genotype for all trait studied under the two conditions but only plant height under non drought stress condition. However, ears heights, weight of 100 kernel, number of kernel row per cob, number of kernel per row, cob length, cob diameter and kernels per cob were found to have positive and significant relationship with grain yield. Plant height, weight of 100 grains, Numbers of kernel per row and Number of kernel per cob recorded higher values under both condition, hence were found to have contributed more to yield in genotypes with maximum grain yield.Two genotypes DT SYN2-W x (W.DT STR Syn/TZL COMP1-W) F2 and DT SYN2-W x DT SYN 13-W F1 were superior in terms of grain yield production.*

Keywords: Grain yield, Maize, Agronomic traits, Correlation analysis, Drought

INTRODUCTION

Maize (*Zea mays* L.) is the most consumed staple food for many families in Sub-Saharan Africa, (Selvaraj & Nagarajan, 2011). Maize is an important cereal crop that provides raw materials for agriculture based industries in most growing regions of the word (Anees, *et al.*, 2016), and the most important cereal after wheat and rice. The demand for maize is increasing due to its wide range of industrial uses and reliable sources of calories for humans and livestock. It is a significant source of minerals, protein, and vitamin B. Maize is utilized in various forms such as porridge, beer, and pastes and fresh corn. High global demand of maize have increasingly resulted to annual production deficit, this could partially be addressed either by bringing more area under maize cultivation or by increasing the productivity of the crop through the adoption of developed high yielding hybrids (Jambagi & Wali, 2016).

Yield being a complex trait, is considerably influenced by different contributing yield components. The interaction between yield and these contributing components made it a complex quantitative trait. An insight into such interaction can improve the efficiency of breeding program significantly (Pavlov, *et al.*, 2015), this is achievable by providing appropriate selection indices. Therefore direct selection for yield may not be efficient enough but indirect selection for other yield related traits that are closely associated with yield with high heritability estimate will be more effective (Muhammad *et al*., 2003). The most critical and important agronomic characteristics of maize include grain yield, 1000 kernel weight, tassel branches, days to tasseling, days to silking, plant height, cob weight, cob height, leaf width, leaf length, leaf area, kernel rows, and kernel moisture (Malik *et al*., 2005). The direct effects of number of kernels per row, number of kernels per row and ear diameter were found to be the most source of yield variation contributed by the yield related characters (Yasien, 2000). Furthermore, Sadek *et al.*, (2006) reported that direct effect of number of grains per row, cob diameter, cob length had the highest effect on yield variation. Also, the report of Amin *et al*., (2003), revealed that number of kernels per row and 100- kernel weight contributed greatly to variation in grain yield directly or indirectly.

Correlation analysis indicate the association pattern of components of traits with yield; revealing overall influence of a particular trait on yield. The association between two characters can be directly observed as phenotypic correlation, while genotypic correlation expresses the extent to which two traits are genetically related (Pavlov, *et al.,* 2015). Both genotypic and phenotypic correlations among and between pairs of agronomic traits provide scope for indirect selection in a crop breeding program (Muhammad & Muhammad, 2001).

The main objective of the present study was to estimate the relationship of some agronomic and yield traits among 15 double hybrid maize.

MATERIALS AND METHODS

Experimental site

The experiment was conducted at Jebba and Rabba fields located at N 9º 11' E 4º 51' and N 9º15' E5º02' respectively.

Experimental design and treatment

This experiment was carried out to study the relationship and contribution of some yield components to grain yield of maize under drought condition. Fifteen genotypes of maize (Table 1), sourced from International Institute of Tropical Agriculture (IITA), Ibadan Nigeria were evaluated in a randomized complete block design (RCBD) replicated 3 times under water stress and non stress conditions at two different locations. The genotypes were planted on 5 m single ridges row plots spaced 50 x 75 cm. Furrow irrigation system was used to deliver water to the field. The experiments under non stress condition received water every three days from the start to the end of the experiments, while the genotypes under water stress condition received water every three days for the first four weeks. Water application was withdrawn for another four weeks and re-watering continued till the end of the experiment. All other cultural practices were kept uniform to both trials.

Data collected

The following agronomic characters were measured. Cob length was measured as length of the cob from the base to tip and average for each genotype were taken from five randomly selected cobs. Cob diameter was taken in centimeter as the diameter of the peeled cob measured at the middle part of the cob. Numbers of kernels per row were counted on five randomly selected cobs and averaged recorded for each genotype. Numbers of kernel row per cob was counted on five randomly selected cobs and averaged for each genotype recorded. For weight of 100 kernels, five randomly selected cobs were hand threshed and three samples of 100 grains were weighed on electronic balance to obtain average 100-seed weight for each genotype. Yield per plant was taken in grams as, weight of the total kernel per plot divided by the total number of plants in that plot after threshing at 13% moisture content.

Data Analysis

Data collected were subjected to Analysis of Variance (ANOVA), to obtain more information about the relative contribution of specific characters to grain yield and remaining characters. Correlation analysis between mean of characters was performed using SAS, version 9.4 (2015). Differences in means were separated using the Duncan Multiple Range Test (DMRT), (Duncan, 1955).

Table 1. List of the genotypes used for the trials

CODE	Names of Genotypes
1	DT SYN2-W x (W.DT STR Syn/TZL COMP1-W)F2
2	DT SYN2-W x DT SYN2-W F1
3	DT SYN2-W x DT SYN 13-W F1
4	DT SYN2-W x DT Syn-1 F2
5	DT Syn-1 F2 x (W.DT STR Syn/TZL COMP1-W)F2
6	DT Syn-1 F2 x DT SYN2-W F1
7	DT Syn-1 F2 x DT SYN 13-W F1
8	DT SYN 13-W F1 x (W.DT STR Syn/TZL COMP1-W)F2
9	DT SYN 13-W F1 x DT SYN2-W F1
10	DT SYN2-W F1 x (W.DT STR Syn/TZL COMP1-W)F2
11	DT SYN 12-W x (W.DT STR Syn/TZL COMP1-W)F2
12	DT SYN W x (W.DT STR Syn/TZL COMP1-W)F2
13	DT SYN2-W x DT SYN2-W F1
14	DT SYN2-W x DT SYN 13-W F1
15	DT SYN2-W x DT Syn-1 F2

RESULT AND DISCUSSION

The result of the analysis of variance presented on table 2 revealed that genotypes significantly deferred from one another for all traits studied. These suggest that all the character under study had quite variable traits. Melil *et. al*., 2013 states that a difference among cultivars at appreciable level within a population is required to facilitate and sustain an effective plant breeding programs

Days to 50% Tasseling

The data for days to 50 % tasseling presented in Table 2 showed significant differences for various maize hybrids under water stress condition. Maximum numbers of days to 50% tasseling (83.00) days were observed for hybrid 11(code), followed by hybrid 12 (81.33) days and 2(80.33) days, while Minimum number of days (66.67) were observed for hybrid with code 1 and 67.33 days for hybrid 5. However hybrid with code 8 showed maximum day's to50% tasseling (77.67days) and hybrid code 1 had minimum days to tassel under non water stress condition (66.67days). Efforts made to determine the relative contributions of yield related characters to grain yield, revealed that days to tasseling, plant height, leaf length, days to silking, number of leaves per plant, number of tassel branches per plant, leaf width, cob diameter, cob length, number of cobs per plant, number of kernel rows per cob, weight of thousand kernels, are cob character that determine the yield. However, Ti-da *et al*., (2006) in their study to determine the effects of drought on grain yield and yield components of maize, reported that cob characteristics deteriorated and yield of maize decreased significantly under drought conditions.

Days to 50% silking

Data regarding days to 50% silking (Table 2) under water stress condition showed significantly maximum number of days to 50% silking (87.00 days) for hybrid code 11, followed by hybrid 12(86.23 days) and 14(85.00days), while minimum number of days (70 and 71.33 days) were found for hybrid 1 and 5. Furthermore hybrid 8 recorded the longest days (85.00days) to silking while hybrid 1 had least number of days to silking (70.00days) under non stress condition. The variance in days to 50% tasseling and silking observed in this trial might be due to the genetic variability for the traits found amongst the treatments. Longer days to tasseling and silking found under water stress condition were however attributed to the delay in the maturity of the reproductive organs. The results is supported by the reports of Fekadu *et al*., 2014 and Tadesse *et al*., .2018, Similar findings was also reported by Liu *et al.*, 2004, under water stressed condition.

Plant Height

Various maize hybrids exhibit significant differences for plant height. The hybrid 1(117.80cm) followed by hybrid 5(95.40cm) produced the tallest plant and hybrid 11(30.00cm) and 12(54.10cm) produced the dwarf plants under water stress condition. While hybrid 4(128.50cm) and 1(123.7cm) produced the tallest plant under non stress condition respectively. The dwarf plant under this condition was recorded for hybrid 12(92.00) and 13(102.50cm), (table 2). In this study, plant height ranged from 117.80cm to 30.00cm in drought stress condition and in non stress condition, between 128.50cm and 92.00cm. It is observed that hybrids under stress condition had low plant height compared to hybrids under non stress condition. The reduction in height observed across the hybrids under water stress condition was attributed to a decline in cell enlargement resulting from water deficit. Similar results were reported by Anjum *et al.*, 2011b and Nazir *et al*., 2010.

Ear Height

The hybrid 1(43.00cm) produced plant with significantly higher ear height followed by hybrid 3(32.40), while hybrid 11(11.00cm) and 12(15.80cm) produced plant with the shortest ear height under water stress condition. However, hybrid 14(47.50cm), 1(44.70cm) and 6(44.60cm) produced plants with significantly higher ear height under non stress condition, whereas minimum ear height was recorded for hybrid 7(32.50cm) and 13(32.50cm) (Table 2). In a similar trend of ear height was also recorded in both stress and non stress condition in which most of the hybrids in stress condition were short-heighted compared to hybrids under non stress condition with high heights. Studies showed that elongation of stem in maize under drought stress was reduced during vegetative stage. (Bhatt and Rao, 2005; Kusaka et al., 2005; Shao et al., 2008), this results find support with the earlier reports of Anjum et al 2011b and Nazir*et al*., 2010.

Weight of 100 kernels

Perusal of the data recorded for weight of 100 kernels presented on table 2, showed that different maize hybrids have significantly different kernel weight. Hybrid 1(11.76) followed closely by hybrid 4(10.20) and 14(10.20) recorded higher weights under water stress condition, while hybrid 12(3.45) and 11(4.12) produced kernels with less weight. Among the maize hybrids maximum weight were recorded for hybrid 1(15.50) and 4(12.00), while the minimum weight were recorded for hybrid 8(6.57) and 12(6.60) under non stress condition. The reduction in weight under water stress condition was attributed to lack of adequate water during grain filling stage. Drought stress during post-anthesis stages was found to be responsible for grain weight reduction (Oveysi *et al*., 2010).

Number of kernel rows per cob

Data in Table 2 showed that hybrids differed significantly for kernel row per cob. Amongst the hybrids, 1(16.73), 6(11.60) and 14(11.30) produced large number of kernels rows per cob, while the minimum number were produced by hybrid 2(3.38), 7(3.66) and 12(4.17) under drought stress. However under non stress condition hybrids 10(26.76), 11(26.30) and 1(25.63) produced maximum number of kernels per row, while hybrids 12(15.33), 13(16.56) and 6 (16.63) produced minimum number of kernels row per cob.

Number of kernel per row

The hybrid 1(13.52), 3(10.43) and 14(9.00) produced large number of kernels per cob under water stress condition as revealed by table 3, while hybrids 12(2.01), 2(2.75) and 15(3.11) produced the least number of kernels per cob. Meanwhile under the non stress condition, hybrid 3(15.42), 14(15.30) and 1(14.98) produced the maximum number of kernels per cob, while minimum numbers were produced by hybrids 15(10.30) and 8(10.23) respectively.

Cob length

Data on cob length as in Table 2 revealed that hybrid 8(10.67cm), 7(10.63cm) and 3(10.11cm) produced the longest cob under water stressed condition respectively, while shortest cob was produced by hybrids 12(5.77cm) and 5(7.10cm). Under non stressed condition, hybrids 4(13.70cm), 14(13.47cm), 7(13.28cm) and 1(13.00cm) produced the longest cob while hybrids 13(9.66cm), 12(9.400cm) and 15(9.23cm) produced the shortest cobs. The minimum cob length as observed in this study resulting from water stress imposed at vegetative stage was in agreement with the findings of Zamir *et. al*., 2015, where maize plants exposed to drought at vegetative stage recorded reduced cob length. Continuance drought stress during tasseling and silking stages adversely reduces cob size and potential yield, Mostafavi et al. (2011).

Cob diameter

Based on the data recorded for cob diameter, maximum cob diameter were recorded for hybrids 1(11.40), 8(10.98), 7(10.60) and minimum diameter were recorded for hybrids, 2(5.80) and 12(4.80) under water stressed condition. However maximum diameter were recorded for hybrids 4(13.60), 14(12.33) and 11(12.10) respectively, while minimum diameter were recorded for hybrids 15(9.55cm), 3(9.60) and 5(9.60) under non stressed condition. Cob diameter is one of the important components measured in determining maize yield potential. Among yield components affected by drought is cob diameter. Significant reduction in cob diameter induced by drought at ear initiation was reported by Khodarahmpour and Hamidi, 2012

Number of kernel per cob

Considering the data recorded for number of kernel per cob, hybrid 1(226.20), 15(226.20), 14(101.70) recorded higher number of kernels per cob under water stressed condition while hybrids, 2(10.30) and 7(14.64) had least numbers of kernel per cob. Also hybrids 1(375.40), 14(367.20) and 11(373.50) recorded higher number of kernels per cob while hybrids 13(196.40) and 6(204.60) recorded least number of kernels per cob under non water stressed condition. The reduction in the number of kernel per cob observed in this study is attributed to failure in pollination. Ti-da *et al*., (2006) in their study to determine the effects of drought on the grain yield and yield components of maize, reported that cob characteristics deteriorated and the yield of maize decreased significantly under drought conditions. Esmail *et al*., (2012), reported that reduction in grain per cob is attributed to embryo abortion and delay in silk emergence caused by inadequate moisture. Furthermore, Li *et al*. (2012) discovered that maize grown in a well watered condition resulted in increased grains per cob.

Table 2: Combined mean comparison of treatment measured in stress and non stressed conditions at two locations

Treatment Code	Days to Tassel		Days to Silk		plant height (cm)		Ear height (cm)		W. 100 kernel		No of kernel rows per cob	
	ST	NST	ST	NST	ST	NST	ST	NST	ST	NST	ST	NST
1	66.67 f	66.67 e	70.00 g	70.00 g	117.8 a	123.70	43.00 a	44.70 b	11.76 a	15.50a	16.73 a	25.06 bc
2	80.33 a	71.00 cd	81.67 bc	73.33cd	59.90 i	109.00	18.50 ij	36.50 e	6.110e	11.15bc	3.383 g	24.83 bc
3	73.67 bc	70.33 d	75.67 ef	71.33efg	90.30 c	115.40	32.40 b	36.00 ef	6.340de	11.00bcd	9.200 e	20.36 de
4	70.67 cd	68.33 de	75.00 ef	70.67fg	77.00 f	128.50	27.20 de	39.00 d	10.20ab	12.00b	9.030 e	24.00 c
5	67.33 ef	70.00 d	71.33 fg	71.00efg	95.40 b	100.00	29.80 c	40.20 cd	9.600 b	11.60bc	10.00 cde	18.32 fg
6	72.33 bcd	73.67 bc	76.33 de	77.00b	77.70 f	123.20	25.70 ef	44.60 b	5.520ef	9.050ef	11.60 b	16.63 gh
7	72.33 bcd	69.33 de	78.33 cde	72.00def	57.70 j	116.50	17.80 jk	32.50 g	5.330efg	10.13cde	3.663 g	20.20 de
8	73.00 bcd	77.67 a	80.33 cd	85.00a	80.20 e	107.50	26.30 de	33.90fg	8.120 bcd	6.570g	4.650 g	19.78 ef
9	70.33 cde	71.00 cd	74.33 ef	74.67c	84.80 d	121.00	28.70 cd	41.00 cd	6.700 cde	9.453de	9.450 de	20.76 de
10	69.67 def	69.33 de	75.67 ef	72.67de	74.50 g	127.40	20.70 hi	41.50 c	9.200 b	10.49bcde	10.80 cd	26.76 a
11	83.00 a	68.00 de	87.00 a	71.00efg	30.00 l	119.00	11.00 l	40.00 cd	4.120 fg	8.850ef	7.500 f	26.30 ab
12	81.33 a	75.00 ab	86.23 a	78.33b	54.10 k	92.00	15.80 k	33.50 g	3.453 g	6.600g	3.430 g	15.33 h

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13	72.00 cd	70.67 cd	81.00 bc	75.00c	88.80 c	102.50	23.40 fg	32.50 g	8.700 b	9.050ef	6.900 f	16.56 h
14	75.67 b	69.33 de	85.00 ab	71.67defg	89.40 c	122.70	30.50 bc	47.50 a	10.20 ab	11.10bc	11.30 bc	24.00 c
15	73.67 bc	73.67 bc	81.00 bc	78.00b	65.50 h	113.70	21.60 gh	36.00 ef	8.550 bc	7.550fg	4.170 g	21.86 d
P for G	*	*	*	*	**	NS	**	**	**	**	**	**
P for Loc	*	**	NS	**	*	*	NS	NS	*	**	**	**
CV	10.28	9.73	11.00	9.33	19.91	15.51	22.9	13.63	20.7	16.14	20.37	13.37

Table 2: Continued

Treatment Code	No of kernal per row		Cob length (cm)		Cob diameter (cm)		No of kernal per cob		Kernel yield/plant (g)	
	ST	NST	ST	NST	ST	NST	ST	NST	ST	NST
1	13.52 a	14.98 ab	9.430 cde	13.00 abc	11.40 a	12.10 bc	226.2a	375.4a	30.28 a	32.80 b
2	2.750hi	12.00e	9.000ef	12.83abc	5.800 h	10.60d	10.31i	298.0 de	8.720 gh	27.50 d
3	10.43 b	15.42a	10.11abc	12.26cd	7.760 d	9.600f	95.96bc	314.6cd	8.300 h	16.21 fg
4	6.760de	14.00bc	9.100def	13.70a	7.500 de	13.60a	61.04e	336.0 b	12.00 d	30.20 c
5	8.450 c	12.83de	7.100h	10.53fg	7.400 de	9.600f	84.50d	235.0fg	13.75c	15.85 g
6	7.890cd	12.30e	8.800ef	10.97ef	6.650fg	10.43de	91.52cd	204.6 h	13.10c	15.15 gh
7	4.000gh	12.20e	10.63ab	13.28ab	10.60 b	11.83bc	14.64hi	246.4f	9.440fg	29.55 c
8	5.600ef	10.33f	10.67a	10.20fgh	10.98ab	11.60c	26.04g	204.3 h	10.56e	17.90 f
9	9.100 c	13.53cd	7.900g	10.10fghi	6.030 gh	10.73d	86.00d	280.9e	10.70e	30.20 c
10	8.500 c	12.20e	8.300fg	11.67de	7.450 de	11.83bc	91.80cd	326.5 bc	10.20ef	33.10 b
11	8.120 c	14.20bc	8.800ef	12.40bcd	6.900ef	12.10bc	60.90e	373.5a	10.20ef	36.60 a
12	2.010 i	13.43cd	5.770i	9.400hi	4.800i	9.900ef	21.13gh	205.9 h	5.440i	13.85 h
13	5.100fg	11.86e	7.900g	9.667ghi	8.000 d	10.47de	35.19f	196.4 h	9.900ef	20.15 e
14	9.000 c	15.30a	8.700ef	13.47a	9.600c	12.33b	101.7b	367.2a	20.95 b	36.55 a
15	3.110hi	10.30f	9.850bcd	9.230i	6.650fg	9.533f	226.2a	225.2 g	7.820 h	13.80 h
P for G	**	**	**	**	**	*	*	*	**	**
P for Loc.	**	**	**	**	**	NS	*	NS	**	**
CV	27.87	12.02	11.98	9.36	12.03	12.42	41.6	17.86	15.55	18.44

P for G: probability for genotype, P for Loc.: probability for Location, CV: Coefficient of variation, ST: Stress, NST: Non stress

W.100: Weight of 100 kernel

Grain Yield

Perusal of the data recorded for kernel yield per plant presented in table 2 depicted that different maize hybrids have significantly different grain yield production potential. The possible reasons for the observed differences could be variations in their genetic makeup. Among the maize hybrids maximum yield (30.28g and 20.95g per plant) were obtained by hybrid 1 and 14 under water stressed condition, while the minimum yield was obtained by hybrid 12 with a value of 5.44g per plant. Furthermore, maximum yield (36.60g, 36.55g, 33.10g) were obtained by hybrids 11, 14 and 1under non stressed condition. Based on the yield performance in the hybrids under stress and non stress condition, high grain yield was recorded in two hybrids each among the categories. In the present study, it was further observed that the hybrids with the highest plant height, ear height, weight of 100 grain, number of kernel row per cob, number of kernel per row, number of kernel per cob and cob diameter, under stress and non stress condition produced high grain yield per plant.

Correlation Among Characters

Values of phenotypic correlation coefficients estimated for characters studied including grain yield are presented in Table (3). The data showed that significant and positive correlation coefficients were found between grain yield and ear height, weight of 100 kernel, number of kernel row per cob, number of kernel per row, cob length, cob diameter and number of kernel per cob under stress and non stress condition. However, significant but negative correlations were observed between grain yield and days to 50% tasseling and 50% silking under both conditions. The knowledge of correlation coefficients between different yield components helps the maize breeder to understand the nature and magnitude of the association between traits which usually contribute to better yield. Positive and significant associations found between yields and its component in this study could help in the selection of high grain yielding hybrids through selection of one or more of these characters. This result indicates that selection for long ears heights; weight of 100 kernel, number of kernel row per cob, number of kernel per row, cob length, cob diameter and more kernels per cob may be accompanied by increasing grain yield of maize. Bello *et al*., 2012 reported similar results in a study of other genotypes. Similar results were also reported by Ali *et. al*., 2010, Aminu and Izge, 2012 and Yahaya *et al.*, 2021. Furthermore, Mostafavi et al. (2011) in a similar experiment observed that drought stress had adverse influenced on the yield attributes and yield of maize hybrids.

CONCLUSION

Analyzing the different maize hybrids under study and other important attributes related to grain yield under drought stress and non stress condition, it is concluded that plant height, weight of 100 grains, numbers of kernel per row and number of kernel per cob recorded higher values under both conditions, hence were found to have contributed more to yield in genotypes with maximum grain yield. Two genotypes 1 (DT SYN2-W x (W.DT STR Syn/TZL COMP1-W)F2) and 14 (DT SYN2-W x DT SYN 13-W F1) remained superior in terms of yield production under both condition . It is therefore recommended for further evaluation for kernel yield.

Table:3 Correlation coefficients of kernel yield and other agronomic traits of maize cultivars evaluated under stress conditions at two locations

	K/Y/P (g)	Days to Tassel	Days to Silk	Plant H(cm)	Ear H (cm)	W. 100 kernel (g)	No K/ R/C	No kernel per row	Cob L (cm)	Cob D (cm)	No k per cob
K/Y/plant (g)	1										
Days to Tassel	-0.37**	1									
Days to Silk	-0.28**	0.75**	1								
Plant height (cm)	0.09	-0.50**	-0.39**	1							
Ear hieght (cm)	0.21**	-0.47**	-0.38**	0.80**	1						
W. 100 kernel	0.55**	-0.40**	-0.25**	0.40**	0.38**	1					
No K/R/C	0.37**	-0.46**	-0.26**	0.51**	0.41**	0.49**	1				
No of ear per row	0.38**	-0.48**	-0.28**	0.55**	0.48**	0.45**	0.75**	1			
Cob length (cm)	0.24**	-0.24**	-0.05	0.24**	0.23**	0.23**	0.14*	0.36**	1		

Cob diameter (cm)	0.33**	-0.29**	0.05	0.27**	0.18	0.31**	0.45**	0.44**	0.47**	1	
No of kernel/cob	0.32**	-0.42**	-0.27**	0.52**	0.44**	0.51**	0.81**	0.78**	0.20**	0.39**	1

Table. 3 Correlation coefficients of grain yield and other agronomic traits of maize cultivars evaluated under nonstress conditions at twolocations

	K/Y/plant (g)	Days to Tassel	Days to Silk	Plant H (cm)	Ear H (cm)	Weight of 100 kernel	No k/ R/C	No kernel per row	Cob L (cm)	Cob D (cm)	No k/ per cob
K/Y/plant (g)	1										
Days to Tassel	-0.33**	1									
Days to Silk	-0.32**	0.93**	1								
Plant height (cm)	0.16*	-0.50**	-0.50**	1							
Ear hieght (cm)	0.13	-0.08	-0.11	0.05	1						
W. 100 kernel	0.18**	-0.14*	-0.18**	0.15*	0.1	1					
No k/ rows per cob	0.57**	-0.34**	-0.29**	0.17*	0.21**	0.20**	1				
No K/ per row	0.29**	-0.48**	-0.45**	0.21**	0.18**	0.11	0.32**	1			
Cob length (cm)	0.38**	-0.54**	-0.53**	0.30**	0.09	0.13	0.41**	0.42**	1		
Cob diameter (cm)	0.23**	-0.29**	-0.28**	0.23**	0.13*	0.07	0.21**	0.29**	0.23**	1	
No of kernel/cob	0.54**	-0.52**	-0.48**	0.24**	0.25**	0.16*	0.78**	0.68**	0.49**	0.33**	1

K/Y/Plant: Kernel Yield per plant, Plant H: Plant Height, Ear H: Ear Height, No K/R/C: Number of Kernel Row per Cob, Cob L: Cob Length, Cob D: Cob Diameter, Number of Kernels per cob.

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