STUDY OF CORRELATION COEFFICIENT IN SEVENTY-FIVE PROMISING GERMPLASMS OF CASHEW NUT (*ANACARDIUM OCCIDENT ALE, L.*) IN JHARGRAM, WB.

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Abstract: Cashew is a bean shaped nut that grows on a tropical evergreen tree. In recent years, the importance of cashew in terms of human health is gaining momentum. The nuts (kernels) of 75 promising cashew germplasms were taken from different soils of Jhargram, WB, India, into consideration for the study [I, III].The study reveals that there was a significant positive (such as the trait named nut weight with plant girth, nut yield etc) & negative (such as the trait named nut weight with pollination index etc) correlation at genotypic & phenotypic level for different traits. These studies provide information on the relationship & also give an idea on the cause of its relationship which is very much important in respect to identification of yield components [II, IV].

Key words: Correlation, germplasms, cashew nut, genotypic, phenotypic, abnormal flowers, fruit retention, anthesis & anther dehiscence.

Introduction: Cashew (*Anacardium occidentale* L), family Anacardiaceae is a native of Brazil and it was introduced in India in the early 16th century. It is one of the first fruit trees from the New World to be introduced in the Old World and has a long history as a useful plant [VI,IX]. But only in the present century, it had become an important tropical tree crop. So in order to keep our prime position in global trade and to make the prices of the Indian Cashew competitive at International market, there is an urgent need to increase the productivity of high yielding cashew germplasms per unit area from the existing germplasms by proper and statistical / biometrical evaluation. For developing high yielding superior germplasms, the information on association of characters with nut yield and among themselves was of great importance [VII, IX] . Hence, the study was conducted to find out the association of quality traits of 75 germplasms with respect to 18 breeding traits.

Material & methods: This type of study was undertaken because there was no information available on the potential & effectiveness of this approach as compared to the conventional method of breeding in cashew nut. The ultimate aim of this study was to identify some cashew germplasms having high yield and better quality. Experiments were conducted in Regional Research Station of BCKVV at Jhargram as per the methodology proposed by National Research Centre for Cashew at Karnataka during the flowering season of 2010 to 2016 [V,X].

Observations: Positive & significant genotypic & phenotypic association of all the traits with yield (except the traits named leaf area, number of abnormal flowers, fruit retention, anthesis & anther dehiscence) was established (Table: 1 & 2).

Discussion: The phenotypic as well as genotypic correlation coefficients between different pair of morphological characters were established. Correlation studies between characters play an important role in the determination of the most efficient breeding procedures. Stronger the association of a trait with yield, the more will be the successes of selection program me. In the present investigation, the genotypic correlation coefficients were generally higher than the phenotypic correlation coefficients. This is due to the masking effects of environment in the total expression of the genotypes. The results indicates that there was a positive & significant correlations at genotypic & phenotypic level for the traits like plant height & girth, number of flowers, weight of kernel , apple & nut with nut yield. It can be concluded that improvement of these component characters would bring about an increase the yield of cashew nut. The obtained results can be compared [VI, VII, VIII, X].

Conclusion: The results indicate that there was a significant positive (such as the trait named nut weight with plant girth, nut yield etc) & negative (such as the trait named nut weight with pollination index etc) correlation at genotypic & phenotypic level

for different traits [I,IV,VII]. These studies provide information on the relationship & also give an idea on the cause of its relationship which is very much important in respect to identification of yield components [II, III, and V]

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Table: 1. Estimation of Genotypic correlation coefficient between pair of morphological traits of Cashew nut.

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
A	0.336**	0.217	0.207	0.155	0.049	0.191	0.298**	0.184	0.083	0.152	0.123	0.040	-0.465**	-0.023	0.147	-0.171	-0.149
B		0.130	0.227*	-0.208	0.206	0.180	0.431**	0.407**	0.413**	-0.043	0.437**	-0.035	-0.271*	0.118	0.059	-0.048	-0.025
C			0.493**	0.172	0.343**	0.476**	0.066	0.024	0.293**	0.295**	0.051	0.065	-0.267*	-0.201	-0.305	0.024	-0.025
D				0.266*	0.740**	0.957**	0.454**	0.255**-	0.490**	0.483**	0.301**	-0.234*	-0.239*	-0.647*	-0.235*	-0.103	-0.156
E					0.457**	0.488**	-0.114	-0.195	-0.100	0.150	-0.323**	-0.043	-0.014	0.443**	-0.157	0.029	0.075
F						0.872**	0.408**	0.176	0.375**	0.258*	0.216	-0.222	-0.161	-0.812**	-0.227*	-0.265*	-0.311**
G							0.410**	0.192	0.432**	0.442**	0.214	-0.235*	-0.214	-0.755**	-0.258*	-0.146	-0.205
H								0.580**	0.615**	0.208	0.718**	-0.323**	-0.293**	-0.425**	0.038	-0.246*	-0.165
I									0.666**	0.144	0.539**	-0.278*	-0.129	-0.264*	0520**	-0.212	-0.137
J										0.238*	0.653**	-0.237*	-0.158	-0.403**	-0.285**	0.028	0.060
K											0.155	-0.102	0.064	-.249*	-0.063	-0.033	-0.071
L												-0.253*	0.153	-.253*	-0.040	-0.127	-0.038
M													0.110	0.709*	-0.083	0.100	0.115
N														0.172	0.016	0.174	0.172
O															0.142	0.173	0.207
P																-0.297**	-0.239*
Q																	0.936*

A=PLANT HEIGHT. %	G=TOTAL FLOWER NO.	M=FRUIT SET.	** SIGNIFICANT AT 5
B=PLANT GIRTH. %	H=NUT YIELD.	N=FRUIT RETENED.	* SIGNIFICANT AT 1
C=LEAF AREA.	I=KERNEL WEIGHT.	O=POLLINATION INDEX.	
D=MALE FLOWER N.	J=NUT WEIGHT.	P=SHELLING %.	
E=ABNORMAL FLOWER NO .	K=FLOWERING DURATION.	Q=ANTHESIS.	
F=PERFECT FLOWER.	L=APPLE WEIGHT.	R=ANTHER DEHISCENCE.	

Table: 2. Estimation of Phenotypic correlation coefficient between pair of morphological traits of Cashew nut.

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
A	0.301 **	0.214	0.206	0.148	0.049	0.190	0.297 **	0.180	0.082	0.146	0.122	0.038	-0.374 **	-0.022	0.143	-0.167	-0.144
B		0.118	0.208	-0.174	0.198	0.169	0.392 **	0.363 **	0.376 **	-0.032	0.396 **	0.003	-0.158	-0.099	0.053	-0.036	-0.022
C			0.489 **	0.168	0.334 **	0.473 **	0.066	0.025	0.291 *	0.282	0.050	0.056	-0.222	-0.194	-0.295 **	-0.025	-0.025
D				0.254 *	0.724 **	0.955 **	0.452 **	0.249 *	0.488 **	0.467 **	0.299 **	-0.213	-0.188	-0.618 **	-0.229 *	-0.100	-0.149
E					0.429 **	0.479 **	-0.110	-0.188	-0..96	0.135	-0.311 **	-0.046	-0.011	-0.410 **	-0.153	-0.023	-0.074
F						0.861 **	0.401 **	0.175	0.368 **	0.245 *	0.211	-0.191	-0.123	-0.790 **	-0.212	-0.258 *	-0.298 **
G							0.409 **	0.189	0.431 **	0.425 **	0.213	-0.214	-0.168	-0.728 **	-0.251 *	-0.142	-0.198
H								0.568 **	0.614 **	0.201	0.716 **	-0.297 **	-0.234 *	-0.409 **	0.037	-0.241 *	-0.162
I									0.652 **	0.127	0.528 **	-0.242 *	-0.083	-0.248 *	-0.539 **	-0.199	-0.127
J										0.229 *	0.650 **	-0.219	-0.128	-0.387 **	-0.279 *	0.026	0.058
K											0.152	-0.095	0.059	-0.233 *	-0.069	-0.031	-0.063
L												-0.233 *	-0120	-0.243 *	-0.038	-0.123	-0.037
M													0.168	0.712 **	-0.064	0.095	0.109
N														0.183	0.033	0.142	0.152
O															0.134	0.169	0.197
P																-0278 *	-0.223
Q																	0.899 **

A=PLANT HEIGHT. %	G=TOTAL FLOWER NO.	M=FRUIT SET.	** SIGNIFICANT AT 5
B=PLANT GIRTH. 1 %	H=NUT YIELD.	N=FRUIT RETENED.	* SIGNIFICANT AT
C=LEAF AREA.	I=KERNEL WEIGHT.	O=POLLINATION INDEX.	
D=MALE FLOWER NO.	J=NUT WEIGHT.	P=SHELLING %.	
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