



Correlation Studies In Cashew (*Anacardium occidentale* L.)

Key words : Cashew, Correlation, Fruits, Nuts, Yield.

Cashew is one of the most important tropical nut crops of the world and is one of the leading foreign exchange earners of India. Although India is the number one producing country of cashew nut, the acre yield of cashew is quite low. Some of the reasons for the low yield include poor varieties, propagation by seed, poor management, poor fruit set and poor fruit retentions.

It is very important to identify yield attributes and their relative importance in contributing to the ultimate yield in cashew. Yield is a complex character, influenced by a number of variables. Each character is found to influence yield in a different fashion and in a differing magnitude. It is necessary to have knowledge about the relationship existing between yield and its components and their magnitude, before initiating a crop improvement programme.

The genotypic and phenotypic correlation coefficients between yield and seventeen yield contributing characters are presented in Table 1. The inter- correlation among the yield component characters indicate different magnitude both at phenotypic and genotypic levels in different direction.

Phenotypic and genotypic correlation among the yield attributing traits were found to be positive and significant with few exceptions of significant negative associations. Positive correlations were shown by characters namely viz, number of fruits set per panicle, number of nuts per panicle and weight of kernel (g). Manoj (1992) reported high degree of variation for nut yield per tree in a study of hybrid cashew. A positive good significant correlation was obtained between mean canopy spread, girth of tree, number of nuts per panicle, weight of kernel, duration of flowering, leaf area, height of tree and individual nut weight with yield.

Number of fruits set per panicle exerted significant positive correlation with number of branches per panicle (0.48, 0.67). It showed positive correlation with number of perfect flowers per panicle (0.81, 0.81), percentage of perfect flowers (0.60, 0.69) and total number of flowers per panicle (0.59, 0.68) as well.

Number of nuts per panicle showed positive correlation with number of fruits set per panicle (0.70, 0.93) and also with percentage of fruit set (0.62, 0.95). Anitha *et al*, (1991), reported that nut yield was found to be positively and significantly correlated with number of nuts per panicle that reached maturity and mean number of perfect flowers per panicle.

Weight of kernel showed several positive and negative correlations. It was positively correlated with length of nut (0.32, 0.97), breadth of nut (0.79, 0.82), thickness of nut (0.59, 0.65) and weight of nut (0.94, 0.95). It showed negative correlation with number of fruits set per panicle (0.59, -0.71), number of panicles per unit area (-0.35, -0.65) and number of nuts per panicle (-0.54, -0.92). In another study, Lenka *et al* (2001) found number of flowers per panicle, nut weight and number of nuts per panicle were the best contributors to nut yield. Similarly, in the correlation studies undertaken by Samal *et al* (2001), yield per plant showed positive and significant correlation with the number of nuts per panicle at the genotypic levels. The phenotypic and genotypic association between nut and apple weight, staminate flowers; number of flowering laterals and nuts per panicle; canopy spread (east – west) and staminate flowers; canopy spread and apple weight and plant height and canopy spread were significantly positive. Negative and significant relationships were observed between staminate flowers and apple weight. Path analysis revealed that the number of nuts per panicle has the highest positive direct effect on yield at genotypic and phenotypic levels. The number of nuts per panicle and apple weight showed positive direct effect on yield and high negative indirect effect on yield through each other. Similar relationship was observed between the number of nuts per panicle and perfect flowers. It was concluded that the number of nuts per panicle should be considered independently for improving cashew yield.

These findings indicate that simultaneous improvement of these two characters namely number of fruits set per panicle and number of nuts per panicle can be done.

Table 1. Genotypic and phenotypic correlation coefficients among traits Cashew (*Anacardium occidentale* L.)

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17
X1	1.00	-0.20	0.47	0.46	0.53	-0.33	0.33	0.03	0.32	0.59	0.02	-0.36	-0.38	-0.58	-0.65*	0.59	0.97**
X2	-0.25	1.00	0.47	0.12	-0.15	0.71*	0.16	-0.02	-0.07	-0.21	-0.01	0.29	0.74*	0.53	0.48	-0.13	-0.23
X3	0.08	0.49	1.00	0.71*	0.55	0.99**	0.67*	0.56	0.38	-0.54	-0.18	-0.39	0.20	-0.23	-0.36	0.56	0.44
X4	0.08	0.19	0.42	1.00	0.98**	0.36	0.81**	0.27	0.52	-0.22	-0.97**	-0.57	-0.19	-0.58	-0.54	0.97**	0.34
X5	0.05	-0.01	0.21	0.88**	1.00	0.20	0.69*	0.13	0.42	-0.12	-0.96**	-0.61	-0.39	-0.65*	-0.55	0.98**	0.34
X6	-0.15	0.45	0.61	0.42	0.07	1.00	0.68*	0.85**	0.58	-0.89**	-0.48	-0.34	0.39	-0.08	-0.26	0.16	-0.12
X7	0.04	0.21	0.48	0.81	0.60	0.59	1.00	0.76*	0.93**	-0.10	-0.99**	-0.55	-0.09	-0.61	-0.71*	0.68*	0.29
X8	0.05	0.03	0.39	0.29	0.14	0.53	0.73*	1.00	0.95**	-0.04	-0.68	-0.44	-0.09	-0.48	-0.68*	0.10	0.11
X9	-0.03	0.09	0.29	0.49	0.33	0.45	0.70*	0.62	1.00	-0.21	-0.96**	-0.77**	-0.47	-0.81**	-0.92**	0.33	0.01
X10	-0.05	-0.14	-0.34	-0.08	0.01	-0.18	-0.13	-0.18	0.05	1.00	-0.25	0.13	-0.12	-0.02	0.06	-0.05	0.09
X11	-0.03	-0.16	-0.33	-0.35	-0.26	-0.18	-0.34	-0.23	-0.19	0.05	1.00	0.96**	0.56	0.98**	0.97**	-0.96**	0.76*
X12	-0.16	0.20	-0.21	-0.48	-0.52	-0.16	-0.44	-0.40	0.41	0.11	0.32	1.00	0.79**	0.92**	0.82**	-0.48	0.30
X13	-0.10	0.48	0.05	-0.19	-0.31	0.11	-0.08	-0.08	-0.27	0.02	0.18	0.72*	1.00	0.81**	0.65*	-0.26	0.23
X14	-0.29	0.43	-0.11	-0.51	-0.57	-0.04	-0.49	-0.43	-0.49	0.00	0.27	0.90**	0.75*	1.00	0.95**	-0.59	0.01
X15	-0.35	0.41	-0.16	-0.47	-0.47	-0.13	0.59	-0.61	-0.54	0.06	0.32	0.29*	0.59	0.94**	1.00	-0.52	-0.18
X16	0.16	-0.04	0.21	0.86	0.95	-0.01	0.58	0.11	0.28	-0.04	-0.28	-0.42	-0.21	-0.52	-0.46	1.00	-0.18
X17	0.27	-0.16	0.11	0.09	0.16	0.18	0.02	-0.05	-0.17	0.18	-0.01	0.19	0.10	0.09	-0.12	-0.24	1.00

Upper diagonal indicates genotypic correlation
Lower diagonal indicates phenotypic correlation

* significant at 5%

** significant at 1%

X1 - Number of panicles per unit area

X2 - Length of panicle

X3 - Number of branches per panicle

X4 - Number of perfect flowers per panicle

X5 - Percentage of perfect flowers

X6 - Total Number of flowers per panicle

X7 - Number of fruits set per panicle

X8 - Percentage of fruits set

LITERATURE CITED

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