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# CHARACTER ASSOCIATION IN MAIZE (*Zea mays* L.)

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Yield is quantitative character controlled by polygenes and it is the result of combined effect of several component characters and environment. Knowledge of interaction among the characters is very essential in plant breeding to determine the extent and nature of relationship between yield, yield components and physiological characters. Path Coefficient analysis enables a plant breeder to separate direct and their indirect effects through attributes by partitioning the correlations. Thus Correlation and Path coefficient analysis form a basis for selection and helps in understanding yield contributing characters affecting yield in Maize (*Zea mays* L.).

The experiment material for the present investigation comprised of forty nine genotypes obtained from Agricultural Research Station, Amberpet Hyderabad. These genotypes were diverse in nature both from the view of geographical distribution and yield contributing traits. The material was sown in Simple Lattice design with two replications at College Farm,College of Agriculture,Rajendranagar, Hyderabad. Data were recorded on five randomly selected plants in each entry in two replications and averages were cpomputed. Anthesis-Silking Interval (A.S.I) calculated as difference between days to 50 per cent silking and days to 50 per cent tasseling. Chlorophyll content recorded in the Ear leaf using SPAD-meter at 50 per cent silking. Flag Leaf Area ($m^2$) calculated as maximum width of leaf X length X 0.75. The data were subjected to statistical analysis to estimate genotypic and phenotypic correlation Coefficients (1) and path coefficient analysis (2).

The results or presented in Table-1. Ear girth exhibited direct effect on yield followed by 100 seed weight, Ear girth, Ear length. Direct effect of 100 seed weight, Ear length with yield. Similar reports reported by (3). Characters to days to 50 per cent silking, Plant height, Chlorophyll content and days to physiological maturity exhibited direct positive effects but of lower magnitude on grain yield per plant. Days to 50% per cent tasseling recorded negative direct effect on yield. From the present study it was inferred that 100-seed weight, Ear girth, Ear length had significant association and also positive high direct effect on grain yield per plant. Hence direct selection for these traits would be effective for achieving higher yields.

**Table 2:** Estimation of Path co efficient between Physiological, Grain yield and its components in Maize (*Zea mays* L.)

| Character | Days to 50% tasseling | Days to 50% silking | A.S.I | Plant height (cm) | Leaves above Ear | Chlroph yll content | Leaf area/pla nt ($cm^2$) | Days to phy. maturity | Ear length (cm) | Eargirth (cm) | 100 seed wt(g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Days to 50% tasseling | -0.4046 | -0.3861 | 0.2119 | 0.0282 | 0.0495 | 0.1372 | 0.0188 | -0.2886 | 0.1377 | 0.0243 | 0.1651 |
| Days to 50% silking | 0.1412 | 0.1479 | -0.0363 | -0.0106 | -0.0183 | -0.051 | -0.004 | 0.1017 | -0.0476 | -0.0096 | -0.0592 |
| A.S.I | 0.0798 | 0.0374 | -0.1524 | -0.0034 | -0.0066 | -0.0177 | -0.0111 | 0.0539 | -0.0284 | -0.0014 | -0.0278 |
| Plant height (cm) | -0.0053 | -0.0054 | 0.0017 | 0.076 | 0.0328 | 0.0137 | 0.0338 | -0.0044 | 0.041 | 0.0273 | 0.0171 |
| Leaves above Ear | -0.0334 | -0.0339 | 0.0118 | 0.1182 | 0.2735 | 0.0537 | 0.0869 | -0.0284 | 0.1294 | 0.1196 | 0.1365 |
| Chlrophyll content | -0.0245 | -0.0249 | 0.0084 | 0.013 | 0.0142 | 0.0722 | 0.0077 | -0.0251 | 0.0227 | 0.012 | 0.0173 |
| Leaf area/plant | 0.0039 | 0.0023 | -0.0061 | -0.037 | -0.0264 | -0.0089 | -0.083 | 0.0069 | -0.0253 | -0.0263 | -0.0301 |
| Days to phy.maturity | 0.0394 | 0.038 | -0.0195 | -0.0032 | -0.0057 | -0.0192 | -0.0046 | 0.0553 | -0.0115 | -0.0035 | -0.0108 |
| Ear length (cm) | -0.0214 | -0.0202 | 0.0117 | 0.0339 | 0.0297 | 0.0198 | 0.0192 | -0.0131 | 0.0628 | 0.0249 | 0.0318 |
| Eargirth (cm) | -0.0162 | -0.0175 | 0.0026 | 0.0971 | 0.1182 | 0.0451 | 0.0857 | -0.017 | 0.107 | 0.2704 | 0.1369 |
| 100 seed wt(g) | -0.1576 | -0.1546 | 0.0704 | 0.0871 | 0.1927 | 0.0925 | 0.1401 | -0.0756 | 0.1954 | 0.1954 | 0.3861 |
| Yield/plant (g) | -0.3987** | -0.4172** | 0.1043 | 0.3994** | 0.6536** | 0.3373* | 0.2895* | -0.2346 | 0.5832 | 0.6331** | 0.7629** |

RESIDUAL EFFECT = 0.4663 *- Significant at 5% level **- Significant at 5% level

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