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CHARACTER ASSOCIATION AND PATH ANALYSIS FOR YIELD AND YIELD COMPONENTS IN MAIZE (*ZEA MAYS* L.)

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ABSTRACT

The present investigation was carried out with an objective to study the correlation between different traits and path coefficient analysis for yield and yield components in maize. Six lines were crossed with four testers in a Line × Tester design and the resultant 24 hybrids were evaluated along with three checks in a randomized block design with three replications during the *Rabi* 2022-2023. The data was collected on 13 quantitative characters. The results revealed that there is a significant variability in the material studied. The character association studied indicated that the trait, grain yield per plant had significant positive genotypic correlation with ear length, ear girth, plant height, number of kernel rows per ear, number of kernels per row and 100 kernel weight. Thus, selection for these traits could bring about an improvement in yield attributes of maize. The path analysis for the attributed traits revealed that kernel rows per ear was the major contributor for grain yield followed by kernels per row, 100 kernel weight and plant height. These characters showed direct positive effects for grain yield per plant. Hence these traits can be used directly as the selection criteria in maize yield improvement programs.
***Keywords*: Maize, correlation, path analysis.**

Introduction

Maize (*Zea mays* L.), the "Queen of cereals" is an important cereal crop which belongs to the tribe *Maydeae* of the grass family Poaceae. It is the third most important cereal crop after wheat and rice as it provides raw materials for agriculture based industries in most growing regions of the world (Anees, *et al.*, 2016). Maize is a reliable source of nutrition for humans, poultry and livestock. With growing demand, driven by its diverse industrial applications as it is a basic industrial raw material used in producing starch, dextrose, oil, sugar, syrup, enzymes, adhesives, paper, and plastic products (Yahaya *et al.*, 2021). Enhancing maize yield potential remains a central objective in crop improvement programs (Marak *et al.,* 2023). However, yield is a complex quantitative trait, influenced by a multitude of agronomic and physiological components that interact in intricate ways (Pranay *et al.*, 2022). To unravel these relationships, understanding the complex relationships among yield and its contributing characters is essential (Kumar *et al.*, 2024).

Correlation and path coefficient analyses emerge as crucial tools, offering insights into the direct and indirect effects of various agronomic traits on grain yield (Reddy *et al.*, 2022, Sharma *et al.*, 2024). By integrating correlation and path analysis, breeders can more effectively select for key yield-contributing traits, thereby accelerating genetic gains and the development of superior maize hybrids (Al-Rawi *et al.*, 2024). Significant positive correlations have been consistently observed between grain yield and traits such as number of kernel rows per cob, number of kernels per row and 100-kernel weight at both phenotypic and genotypic levels (Pranay *et al.*, 2022, Tejeswini *et al.*, 2022, Kandel *et al.*, 2023). Path analysis further refines this understanding by identifying which traits exert the most direct effects on yield. Traits like number of kernels per cob, number of kernel rows per cob and 100-kernel weight have been shown to contribute strongly and directly to grain yield, while other traits may influence yield indirectly (Pranay *et al*., 2022, Al-Rawi *et al*., 2024).

Hence, this study was undertaken to study the correlation and path coefficient in maize inbred lines.

Materials and Methods

Description of the study area

The study was carried out during *Rabi,* 2022. The experimental site was located between 18^{o} 50' 58" N latitude and 78^{o} 56' 97" E longitude at an altitude of 243.4 meters above mean sea level (MSL) in Northern Telangana Zone. The fields are fertile, with a consistent texture and topography. In addition, the fields are near to an irrigation channel to provide uniform, quick and timely irrigation.

Experimental material

The material used consists of six lines *viz*., PFSR 29, PFSR 51, PFSR 70, PFSR 76, PFSR 132, PFSR 135 and six testers designated as CML 286, CML 451, BML 6, BML 7. And their twenty-four hybrids generated through Line × Tester mating design introduced by Kempthorne 1957. Their 24 hybrids along with three checks i.e., DHM-117, PFSR 3 and karimnagar macca 2. The four testers are proven general combiners at earlier crosses in Maize Research Centre.

Experimental designs and procedure

The materials were sown in Randomized Block Design (RBD) in three replications in a 3 meters row plot with the spacing od 0.45 meters between rows and 0.20 meters between plants. All agronomic practices including land preparation, weeding and fertilization were applied as per the standard practices in maize. The data was gathered from five chosen healthy plants for every entry within each replication, focusing on 13 distinct attributes *viz.,* days to anthesis, days to silking, anthesis silking interval, days to maturity, plant height (cm), ear height (cm), ear length (cm), ear girth (cm), number of kernels per row, number of kernel rows per ear, 100 kernel weight (g) and grain yield per plant (g). The procedures for analysis were carried out following the guidelines presented by Singh and Chaudhary for correlation coefficient analysis and Dewey and Lu for path analysis.

The recommended dose N, P and K fertilizers were applied in the ratio of 200 : 80 : 80 kg ha^{-1}. The complete dose of P and K and one-third of nitrogen was applied as basal, while remaining of the nitrogen in two equal split doses at knee height and tasseling stages. Timely irrigation, weeding operations, as well as necessary plant protection measures were carried out in accordance with the recommendations to protect the crop from pests and diseases and also to ensure a healthy crop.

Results and Discussion

Analysis of variance for 13 quantitative characters showed that the experimental material have significant variation among the evaluated genotypes. Significant differences among the genotypes indicated the presence of sufficient genotypic differences thereby to provide better scope for selection (Ghimire *et al.,* 2015).

The character association studies (Table 1) revealed that grain yield per plant recorded significant negative correlation at genotypic level with days to 50% anthesis (-0.4770), days to 50% silking (-0.4377) and days to maturity (-0.4168) hence selection for these traits could not bring improvement in yield and yield attributes in maize. Similar results were reported by earlier workers viz., Ghimire *et al*. (2015) Chaurasia *et al.* (2020) Ahmed *et al.* (2020) and Damtie *et al.* (2021). But these traits could be used as efficient indicator of identifying the impact of yield on breeding for early maturing genotypes. While positive significant correlation with ear length (0.8933), ear girth (0.8577), ear height (0.7635), plant height (0.7457), number of kernel rows per ear (0.5537), and number of kernels per row (0.6245) and 100 kernel weight (0.5801). It was observed that among all the yield components number of kernels per row exhibited a highly significant positive association with grain yield The results were in accordance with the findings of Chaurasia *et al.* (2020), Dash *et al*. (2020), Singh *et al.* (2020) and Gokulakrishnan *et al.* (2021) for ear height, ear length, ear girth, number of kernel rows per ear and number of kernels per row. Significant positive correlation of plant height with ear height was reported by Ahmed *et al.* (2020). Damtie *et al*. (2021) reported significantly positive correlation of plant height with ear height. For ear length these results are in agreement with the findings of Kumawat *et al.* (2020) Singh *et al.* (2020) Khan and Mahmud (2021) for grain yield. The results were found similarity with the findings of Kandel *et al.* (2018), Raut *et al*. (2017) and Ahmed *et al.* (2020) for grain yield that reported significant positive association of ear girth. Krishna *et al.* (2021) reported significantly positive correlation with number of kernels per row and 100 kernel weight.

Character association among yield attributing traits with significantly positive correlation with grain yield is highly essential to formulate sound breeding strategy. The results from the character association studies revealed that the traits *viz.,* plant height, anthesis silking interval, ear height, ear length, ear girth, number of kernel rows per ear, number of kernels per row, 100 kernel weight exhibited significantly positive correlation with grain yield. Hence, improvement of these traits simultaneously results in the improved grain yield. Therefore, inbred lines with these traits could be considered during selection for improving the respective characters which simultaneously improves grain yield.

Path coefficient analysis offers a precise understanding of the relative significance of both direct and indirect effects of different traits on yield. It helps identify the underlying causes of the relationships between variables by utilizing all possible simple correlations among traits, based on the assumptions of linearity and additivity. This method reveals the true contribution of each trait to yield through direct and indirect effects, thereby assisting breeders in identifying the most influential traits for selection and improving yield outcomes. The direct and indirect effects of yield contributing traits on grain yield are given in Table 2.

Path coefficient analysis revealed that number of kernel rows per ear (0.8480), showed highest positive direct effect on grain yield followed by number of kernels per row (0.8406), 100 kernel weight (0.6843), plant height (0.3969) at genotypic level showing highest positive direct effects on grain yield per plant, implying that selecting for these characteristics would likely to result in an overall improvement in grain yield. Similar findings were reported by Matin *et al.* (2017), Dash *et al.* (2020), Shikha *et al.* (2020), Ramesh *et al.* (2021) and Muliadi *et al.* (2021) for plant height, Hadi *et al.* (2021) and Shahrokhi *et al.* (2021) for number of kernel rows per ear, Kumawat *et al.* (2020) and Krishna *et al.* (2021) for number of kernels per row, Chaurasia *et al.* (2020) for hundred kernel weight. As a result, it is advised that these traits should be prioritized in the yield improvement programme and are significant contributers

On the contrary, negative direct effect exhibited by some traits like days to 50 per cent anthesis (-0.4770), days to 50 per cent tasseling (-0.2271), Anthesis silking interval (-0.2668), Days to maturity (-0.0139) and ear length (-0.2938). The results are in accordance with the findings of Ghimire *et al.* (2015) Chaurasia *et al.* (2020) and Damtie *et al.* (2021) for days to 50 per cent anthesis. Muliadi *et al.* (2021) for days to 50 per cent tasseling. Matin *et al.* (2017) for Anthesis silking interval and Days to maturity. (2020), Kumawat *et al.* (2020), Gokulakrishnan *et al.* (2021) and) for ear length. As a result, these findings suggest that the indirect selection of these traits could be more effective.

In plant breeding, it is very difficult to have whole understanding of all component traits related to grain yield. This residual effect was 0.513 for phenotypic and 0.499 for genotypic path coefficients. This residual effect provides the information about contribution of component traits that are studied on yield was 48.70% at phenotypic level and 50.10% at genotypic level, the remaining 51.30% at phenotypic and 49.90 % at genotypic was the contribution of other traits which were not included in the study and its association with the dependent variable, yield.

Conclusion

The characters ear length, ear girth, ear height, plant height, number of kernel rows per ear, number of kernels per row ang 100 kernel weight showed significant positive genotypic correlation and would result in improvement of yield. The path analysis studies revealed that kernel rows per ear was the major contributor for grain yield per plant followed by kernels per row, hundred kernel weight and plant height. The characters listed above can be used directly as selection criteria in maize yield improvement programs.

Table 1 : Phenotypic and genotypic correlation coefficient for yield and yield attributing traits

Character		DA	DS	ASI	DM	PH	EH	EL	EG	KRE	KPR	100KW	GY
DA	P	**1.000**	0.9745**	-0.1279	0.9172**	-0.5457**	-0.4749**	-0.2765**	-0.2879**	-0.0783	0.0389	-0.5595**	-0.4244**
	G	**1.000**	0.9900**	-0.2227*	0.9748**	-0.6578**	0.6093**	-0.3841**	-0.3567**	-0.1145	0.0352	-0.6654**	-0.4770**
DS	P		**1.000**	0.0980	0.9503**	-0.5477**	-0.4380**	-0.2702**	-0.2463**	-0.0217	-0.0685	-0.5774**	-0.3847**
	G		**1.000**	-0.0828	1.0040**	-0.6613**	-0.5829**	-0.3696**	-0.3033**	-0.0226	0.0922	-0.6957**	-0.4377**
ASI	P			**1.000**	0.1325	-0.0008	0.1702	0.0317	0.1878*	0.2513**	0.1301	0.0706	0.1817
	G			**1.000**	0.0523	0.0767	0.2760**	0.1589	0.4234**	0.6523**	0.3886**	-0.1064	0.3444**
DM	P				**1.000**	-0.5192**	-0.3998**	-0.2533**	-0.1981*	0.0155	0.0929	-0.5621**	-0.3617**
	G				**1.000**	-0.6761**	-0.5823**	-0.3835**	-0.2643**	0.0613	0.1059	-0.6833**	-0.4168**
PH	P					**1.000**	0.8917**	0.5060**	0.6097**	0.4185**	0.2842**	0.4893**	0.6784**
	G					**1.000**	0.9347**	0.7559**	0.7734**	0.5434**	0.3462**	0.5686**	0.7457**
EH	P						**1.000**	0.4732**	0.6715**	0.5037**	0.3566**	0.3937**	0.6717**
	G						**1.000**	0.7087**	0.8493**	0.7226**	0.4368**	0.4693**	0.7635**

EL	P							**1.000**	0.6983**	0.2488**	0.5105**	0.5478**	0.6627**
	G							**1.000**	0.7205**	0.3590**	0.7002**	0.7774**	0.8933**
EG	P								**1.000**	0.6443**	0.4995**	0.4828**	0.7001**
	G								**1.000**	0.7979**	0.6616**	0.5993**	0.8577**
KRE	P									**1.000**	0.2078*	0.0834	0.4093**
	G									**1.000**	0.3814**	0.0911	0.5537**
KPR	P										**1.000**	0.1760	0.5092**
	G										**1.000**	0.2259	0.6245**
100KW	P											**1.000**	0.6039**
	G											**1.000**	0.5801**

*Significant at 5% level, ** Significant at 1% level

DA: days to 50% anthesis, DS: days to 50% silking, ASI: anthesis silking interval, DM: days to maturity, PH: plant height, EH: ear height, EL: ear length, EG: ear girth, KRE: number of kernel rows per ear, KPR: number of kernels per row, 100KW: hundred kernel weight, GY: grain yield.

Table 2 : Path coefficient analysis for yield and yield attributing traits in maize

Character		DA	DS	ASI	DM	PH	EH	EL	EG	KRE	KPR	100KW	GY
DA	P	**-36.7062**	-35.7695	4.6944	-33.6662	20.0288	17.4327	10.1485	10.5663	2.8739	-1.4272	20.5385	-0.4244
	G	**-0.2271**	-0.2248	0.0506	-0.2213	0.1493	0.1384	0.0872	0.0810	0.0260	-0.0080	0.1511	-0.4770
DS	P	35.7760	**36.7128**	3.5976	34.8888	-20.1080	-16.0812	-9.9215	-9.0438	-0.7966	2.5130	-21.1994	-0.3847
	G	-0.3518	**-0.3553**	0.0294	-0.3567	0.2350	0.2071	0.1313	0.1078	0.0080	-0.0328	0.2472	-0.4377
ASI	P	1.0468	-0.8021	**-8.1850**	-1.0847	0.0069	-1.3933	-0.2597	-1.5373	-2.0565	-1.0645	0.5780	0.1817
	G	0.0594	0.0221	**-0.2668**	-0.0139	-0.0205	-0.0736	-0.0424	-0.1130	-0.1740	-0.1037	0.0284	0.3444
DM	P	-0.1166	-0.1208	-0.0169	**-0.1272**	0.0660	0.0508	0.0320	0.0252	-0.0020	-0.0118	0.0715	-0.3617
	G	0.0594	0.0221	-0.2668	**-0.0139**	-0.0205	-0.0736	-0.0424	-0.1130	-0.1740	-0.1037	0.0284	-0.4168
PH	P	-0.1002	-0.1006	-0.0002	-0.0954	**0.1837**	0.1638	0.0929	0.1120	0.0769	0.0522	0.0899	0.6784
	G	-0.2611	-0.2625	0.0304	-0.2684	**0.3969**	0.3702	0.3000	0.3070	0.2157	0.1374	0.2257	0.7457
EH	P	-0.0471	-0.0434	0.0169	-0.0396	0.0884	**0.0991**	0.0469	0.0665	0.0499	0.0353	0.0390	0.6717
	G	0.0513	0.0491	-0.0233	0.0491	-0.0786	**-0.0843**	-0.0597	-0.0715	-0.0609	-0.0368	-0.0395	0.7635
EL	P	-0.0298	-0.0291	0.0034	-0.0271	0.0545	0.0510	**0.1077**	0.0752	0.0268	0.0550	0.0590	0.6627
	G	0.1129	0.1086	-0.0467	0.1127	-0.2221	-0.2082	**-0.2938**	-0.2117	-0.1055	-0.2057	-0.2284	0.8933
EG	P	-0.0277	-0.0237	0.0181	-0.0191	0.0587	0.0647	0.0673	**0.0963**	0.0621	0.0481	0.0465	0.7001
	G	0.2969	0.2524	-0.3525	0.2200	-0.6438	-0.7069	-0.5997	**-0.8324**	-0.6642	-0.5507	-0.4989	0.8577
KRE	P	-0.0069	-0.0019	0.0221	0.0014	0.0367	0.0442	0.0218	0.0566	**0.0878**	0.0182	0.0073	0.4093
	G	-0.0971	-0.0191	0.5531	0.0520	0.4608	0.6128	0.3044	0.6767	**0.8480**	0.3235	0.0772	0.5537
KPR	P	0.0081	0.0142	0.0269	0.0192	0.0589	0.0739	0.1058	0.1035	0.0430	**0.2072**	0.0365	0.5092
	G	0.0296	0.0775	0.3266	0.0890	0.2910	0.3672	0.5886	0.5561	0.3206	**0.8406**	0.1899	0.6245
100KW	P	-0.1707	-0.1762	-0.0215	-0.1715	0.1493	0.1201	0.1671	0.1473	0.0255	0.0537	**0.3051**	0.6039
	G	-0.4553	-0.4760	-0.0728	-0.4676	0.3890	0.3211	0.5319	0.4101	0.0623	0.1546	**0.6843**	0.5801

DA: days to 50% anthesis, DS: days to 50% silking, ASI: anthesis silking interval, DM: days to maturity, PH: plant height, EH: ear height, EL: ear length, EG: ear girth, KRE: number of kernel rows per ear, KPR: number of kernels per row, 100 KW: hundred kernel weight, GY: grain yield.

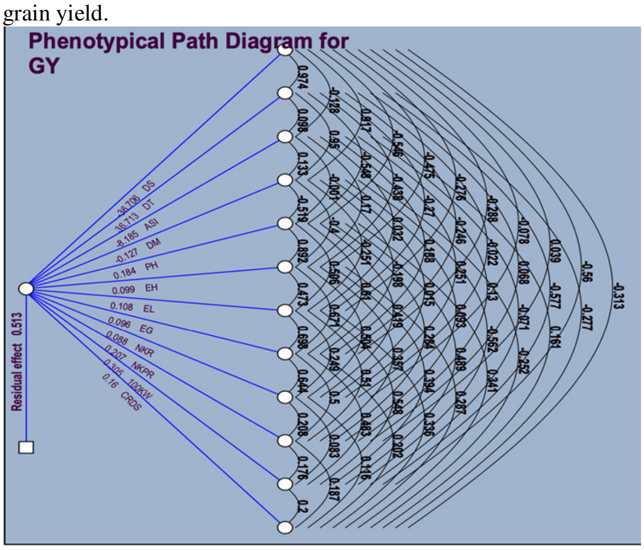

Fig. 1: Phenotypic path diagram for grain yield per plant.

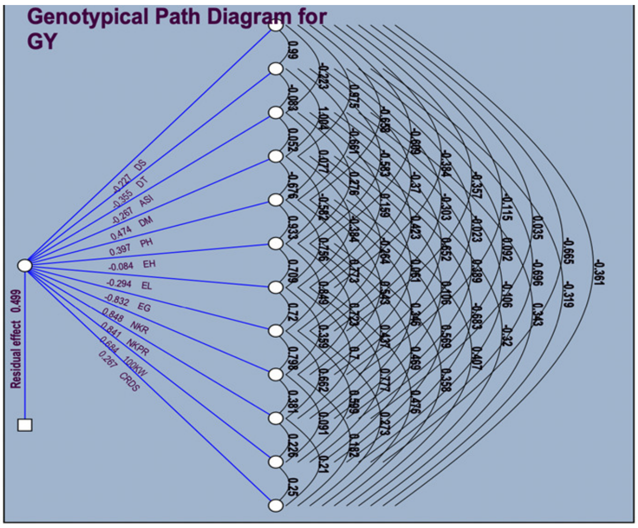

Fig. 2 : Genotypic path diagram for grain yield per plant

References

Ahmed, N., Chowdhury, A.K., Uddin, M.S and Rashad, M.M.I. (2020). Genetic variability, correlation and path analysis of exotic and local hybrid maize (*Zea mays* L.) genotypes. *Asian Journal of Medical and Biological Research*, **6**(1): 8-15. https://doi.org/10.3329/ajmbr.v6i1.46473

Al-Rawi, O.H., Bedn, A.A. and Hamed, M.A. (2024). Genetic variability and path coefficient analysis for three-way cross in maize. *SABRAO J. Breed. Genet.*, **56**(1), pp.204-210. http://doi.org/10.54910/sabrao2024.56.1.18

Anees, M. U., Khan, H. Z., Ahmad, Z., Akhtar, M. J., Ahmad, A., Choudhary, F. A. and Ahmad, N (2016). Role of organic amendments and micronutrients in aize (*Zea mays* L.) sown on calcareous soils. *American-Eurasian Journal of Agriculture and Environmental Science*, **16**(4):795-800. https://www.researchgate.net/profile/Zahoor-Ahmad 30/publication/327466119_Role_of_Organic_Amendments_and_Micronutrients_in_Maize_Zea_mays_L_Sown_on_Calcareous_Soils/links/5b90bdd192851c6b7ec76f65/Role-of-Organic-Amendments-and-Micronutrients-in-Maize-Zea

Chaurasia, N.K., Nirala, R.B.P., Singh, B and Mandal, S.S. (2020). Trait association and path coefficient analysis in maize (*Zea mays* L.) for grain yield and its attributes. *Journal of Pharmacognosy and Phytochemistry*, **9**(6): 527-531. https://d1wqtxts1xzle7.cloudfront.net/85183235/9-6-13-443-libre.pdf? 1651252429=&response-content-disposition=inline%3B+filename%3DTrait_Association_and_Path_Coefficient_a.pdf&Expires=1749286339&Signature=QSwe-ksRKuvH9uSkhm MHr3covSXo~c3uVV0jIEc1aoeECMEni6L

Damtie, Y., Assefa, G. and Mulualem, T. (2021). Genetic variability, heritability, trait associations and path coefficient analysis of maize (*Zea mays* L.) inbreed lines. *Journal of Current Opinion in Crop Science*, **2**(1): 86-94. https://doi.org/10.62773/jcocs.v2i1.22

Dash, A.P., Lenka, D., Tripathy, S.K., Swain, D. and Lenka, D. (2020). Character association and path analysis of grain yield and its components in maize (*Zea mays* L.) under Heat Stress. *International Journal of Current Microbiology and Applied Sciences*, **9**(3): 2750-2758. https://doi.org/10.20546/ijcmas.2020.903.315

Dewey, D.R. and Lu, K.H. (1959). A correlation and path coefficient analysis of components of crested wheat grass seed production. *Agronomy Journal*, **51**: 515-518. https://doi.org/10.2134/agronj1959.00021962005100090002x

Ghimire, B. and Timsina, D. (2015). Analysis of yield and yield attributing traits of maize genotypes in Chitwan, Nepal. *World Journal of Agricultural Research*, **3**(5): 153-162. https://d1wqtxts1xzle7.cloudfront.net/92887434/wjar-3-5-2-libre.pdf?1666512325=&response-content-disposition=inline%3B+filename%3DAnalysis_of_Yield_and_Yield_Attributing.pdf&Expires=1749286475&Signature=El5Wv3w7hEw-IDlvAXXEViv7qsO1ZW7r8t3tjnb0QFnTVg4CR~

Gokulakrishnan, M., Patel, J.M., Patel, R.M., Chaudhary, D.R and Vaghela, G.K. (2021). Genetic variability of quantitative characters over diverse environments in maize inbred lines. *Electronic Journal of Plant Breeding*. **12**(4): 1236-1243. https://www.ejplantbreeding.org /index.php/EJPB/article/view/3717

Hadi, B.H., Hassan, W.A and Hamdalla, M.S. (2021). November. Some Genetic Parameters and Path Coefficient of Three-Way Crosses in Maize. In *IOP Conference Series: Earth and Environmental Science*. **910**(1): 1-6. https://iopscience.iop.org/article/10.1088/1755-1315/910/1/012099/meta

Kandel, M., Ghimire, S.K., Ojha, B.R and Shrestha, J. (2018). Correlation and path coefficient analysis for grain yield and its attributing traits of maize inbred lines (*Zea mays* L.) under heat stress condition. *International Journal of Agriculture Environment and Food Sciences*, **2**(4): 124-130. https://doi.org/10.31015/jaefs.18021

Kempthorne, O. (1957). An introduction to genetic statistics. John Wiley and Sons Inc., New York. Chapman and Hall, London. https://psycnet.apa.org/record/1958-01083-000

Khan, S. and Mahmud, F. (2021). Genetic Variability and Character Association of Yield Components in Maize (*Zea mays* L.). *American Journal of Plant Sciences*, **12**(11): 1691-1704. https://doi.org/10.4236/ajps.2021.1211118

Krishna, B., Singh, B., Mandal, S.S., Rashmi, K and Ranjan, T. (2021). Association and path coefficient analysis among grain yield and related traits in kharif maize (*Zea mays* L.). *The Pharma Innovation Journal,* **10**(7): 1062-1067. https://krishikosh.egranth.ac.in/server/api/core/bitstreams/1e66f0ed-451a-49e7-9c5d-efb174004ecb/content

Kumar, G.P., Sunil, N., Sekhar, J.C. and Chary, D.S. (2024). Character association and path coefficient analysis to determine interrelationships among grain yield and its components in maize genotypes (Zea mays L.). *Journal of Scientific Research and Reports*, **30**(3), pp.275-283. https://hal.science/hal-05070794/#:~:text=DOI%20%3A-,10.9734/jsrr/2024/v30i31878,-Cite

Kumawat, G., Shahi, J.P and Choudhary, M.K. (2020). Studies on genetic parameters, correlation and path coefficient analysis in maize (*Zea mays* L.) hybrids under waterlogging condition. *Range Management and Agroforestry*, **41**(2): 227-234. https://www.indianjournals.com/ijor.aspx?target=ijor:rma&volume=41&issue=2&article=005

Marak, D.K., Marker, S. and Lal, K. (2023). Evaluation on Genetic Variation, Correlation and Path Analysis in Zaid Maize (*Zea mays* L.) for Quantitative Characters. *Int. J. Environ. Clim. Change*, **13**(12), pp.225-239. https://www.researchgate.net/profile/Daryl-Marak/publication/376644646_Evaluation_on_Genetic_Variation_Correlation_and_Path_Analysis_in_Zaid_Maize_Zea_mays_L_for_Quantitative_Characters

Matin, M.Q.I., Uddin, M.S., Rohman, M.M., Amiruzzaman, M., Azad, A.K and Banik, B.R. (2017). Genetic variability and path analysis studies in hybrid maize (*Zea mays* L.). *American Journal of Plant Sciences*, **8**(12): 3101-3109. https://doi.org/10.4236/ajps.2017.812209

Muliadi, A., Effendi, R and Azrai, M. (2021). Genetic variability, heritability and yield components of waterlogging-tolerant hybrid maize. In *IOP Conference Series: Earth and Environmental Science,* **648**(1): 012084. https://iopscience.iop.org/article/10.1088/1755-1315/648/1/012084/pdf

Pranay, G., Shashibhushan, D., Rani, K.J., Bhadru, D. and Kumar, C.S. (2022). Correlation and path analysis in elite maize (*Zea mays* L.) Lines. *International Journal of Plant & Soil Science*, **34**(24), 414-422. https://www.research gate. net/profile/Kaparthi-Rani/publication/367000899

Ramesh, K.M., Barman, H., Sivasankarreddy, K., Gogoi, D., Rao, T. and Sarma B.N. (2021). Validation of Maize (*Zea mays* L.) Hybrids for the Study on Variability, Trait Association, and Path Analysis. *International Journal of Plant & Soil Science*. **33**(23): 298-308. https://d1wqtxts 1xzle7.cloudfront.net/98080892/57697-libre.pdf?1675235 420=&response-content-disposition=inline%3B+ filename %3DValidation_of_Maize_Zea_mays_L_Hybrids_f.pdf& Expires=1749289367&Signature=LUjWHAMbCQfppXE f8yGFcXyyVQdpmwP7CFfY6EEuFxWTmOBEv2O39jm s

Reddy, S.G.M., Lal, G.M., Krishna, T.V., Reddy, Y.V.S. and Sandeep, N. (2022). Correlation and path coefficient analysis for grain yield components in maize (Zea mays L.). *International Journal of Plant & Soil Science*, **34**(23), pp.24-36. https://www.researchgate.net/profile/Sandeep-Nalla-2/publication/363644448_Correlation_and_Path_ Coefficient_Analysis_for_Grain_Yield_Components_in_ Maize_Zea_mays_L/links/6333d1aa5d1e2d53d9a3cfe4/C orrelation-and-Path-Coefficient-Analysis-for-Grain-Yield-Co

Raut, S.K., Ghimire, S.K., Kharel, R., Kuwar, C.B., Sapkota, M and Kushwaha, U.K.S. (2017). Study of yield and yield attributing traits of maize. *American Journal of Food Science and Health*. **3**(6):12 3-129. https://www.research gate.net/profile/Ujjawal-Kushwaha/publication/3211932 01_Study_of_Yield_and_Yield_Attributing_Traits_of_M aize/links/5a14375e0f7e9b12ab1002d4/Study-of-Yield-and-Yield-Attributing-Traits-of-Maize.pdf

Sharma, R., Kumar, B., Sandhu, S.K. and Singh, J. (2024). Correlation and path analysis studies in specialty corn genotypes for yield and nutritional quality traits. *Cereal Research Communications*, **52**(1), 123-135.

Shikha, K., Shahi, J.P and Singh, S. (2020). Path coefficient analysis in maize (*Zea mays* L.) hybrids. *Journal of Pharmacognosy and Phytochemistry*. **9**(2): 278-282. https://d1wqtxts1xzle7.cloudfront.net/102102901/9-1-323-195-libre.pdf?1683802939=&response-content-disposition=inline%3B+filename%3DPath_coefficient_an alysis_in_maize_Zea_m.pdf&Expires=1749289768&Sign ature=W7MsogBwHm1kEDjKvcJ9ewwPdb~MYLCBNG sPyV4619evbQIhW

Shahrokhi, M., Khavari, K.S., Ebrahimi, A., Majidi, H.E. and Kermani, M. (2021). Path analysis of yield and yield components in super-sweet maize (*Zea mays* L. *var. Saccarata*) inbred lines at drought-stress and normal conditions. *Journal of Plant Physiology and Breeding*, **11**(2): 87-96. https://journals.tabrizu.ac.ir/article _14560.html

Singh, D., Kumar, A., Kumar, R., Singh, S.K., Kushwaha, N and Mohanty, T.A. (2020). Correlation and path coefficient analysis for 'yield contributing' traits in quality protein Maize (*Zea mays* L.). *Current Journal of Applied Science and Technology*, **39**(25): 91-99. https://doi.org/10.9734/cjast/2020/v39i2530889

Singh, R.K. and Chaudhary, B.D. (1985). Biometrical methods in quantitative genetic analysis. Kalyani Publishers, New Delhi, 308. https://www.cabidigitallibrary.org/doi/full/ 10.5555/19801689021

Tejaswini, N., Sukumar, K., Srikanth, T. and Mallaiah, B. (2022). Correlation and Path Coefficient Analysis in Maize (*Zea mays* L.), *International Journal of Environment and Climate Change*, **12**(10), 780–787. doi: 10.9734/ijecc/2022/v12i1030864. https://doi.org/10.9734 /ijecc/2022/v12i1030864

Yahaya, M.S., Bello, I. and Unguwanrimi, A.Y. (2021). Correlation and path-coefficient analysis for grain yield and agronomic traits of maize (*Zea mays* L.). *Science World Journal*, **16**(1), 10-13. https://www.ajol.info/index. php/swj/article/view/207339