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Correlation and path coefficient study in finger millet (*Eleusine coracana* (L.) *Gaertn.*)

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Abstract

The present investigation was conducted to assess correlation and perform path analysis in thirty finger millet (*Eleusine coracana* (L.) *Gaertn*.) genotypes, which were evaluated in a Randomized Block Design with two replications during *Kharif* 2023-24 at the College of Agriculture, Dapoli. Correlation analysis indicated that grain yield per plant had significant positive associations with number of tillers per plant, number of fingers, finger length, straw yield per plant, harvest index, and calcium content at both genotypic and phenotypic levels. Path coefficient analysis further revealed that days to maturity, number of productive tillers, finger length, straw yield per plant, harvest index, protein content, and iron content exerted positive direct effects on grain yield.

Keywords: Finger millet, correlation, path analysis

Introduction

Finger millet (*Eleusine coracana* (L.) *Gaertn.*) is a nutritionally rich and climate-resilient cereal that plays a significant role in sustaining agriculture across diverse agro-ecological zones of India. Globally, it ranks as the fourth most widely produced millet, following sorghum, pearl millet, and foxtail millet. This annual allotetraploid, self-pollinating crop possesses a chromosome number of $2n = 4x = 36$. Native to Africa (Abyssinia), it is commonly referred to as African millet and is classified under the family Poaceae (Gramineae) and subfamily Chloridoideae. The crop is highly adaptable, being grown from sea level in South India to high altitudes in the Himalayan region, and thrives under both poor hill soils and fertile plains. Combining resilience to harsh conditions, low input cultivation, and superior storage potential, finger millet stands out as a key crop ensuring food security for resource-limited farmers.

India is a major producer of finger millet, with Karnataka, Tamil Nadu, Uttarakhand, and Maharashtra being the leading states. In the Konkan region of Maharashtra, finger millet is the second most important *kharif* crop after rice, occupying about 30,200 hectares with an average productivity of 1100 kg/ha. Varieties like Dapoli-1, Dapoli-2, Dapoli-3, and Dapoli Safed, developed by Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, have boosted productivity and resilience in the region.

Finger millet is a versatile crop with a high nutritional profile and energy content (328 kcal), protein (7.3 g), calcium (344 mg), carbohydrate (72 g) crude fibres (2.6 g), iron (8.9 mg) per 100 g of finger millet. (Nutritive value of Indian food, NIN, ICMR 2018). Finger millet has superior keeping qualities than other millet since it has a lower fat content is between 1.3 and 1.8%, free lipids, bound lipid and structural lipids make up the total lipid in finger millet. It contains considerable amount of phosphorus, potassium, magnesium, sodium, zinc, manganese, and copper in finger millet are 130-283, 430-490, 78-201, 49, 2.3, 17.61-48.43, and 0.47 mg/100 g, respectively. Besides it contains vitamins A and B (Dhanushkodi *et al.* 2023) [4].

The present investigation was conducted to evaluate correlation and path analysis in finger millet germplasm. The study aimed to determine the extent of association between yield and its components and to elucidate the relative importance of their direct and indirect effects, thereby providing a clear understanding of their relationship with grain yield.

Materials and Methods

The investigation was undertaken during *Kharif* 2023-24 at the Educational and Research Farm of the Department of Agricultural Botany, College of Agriculture, Dapoli, Ratnagiri, Maharashtra. The study utilized a collection of 30 finger millet genotypes, comprising 26 germplasm lines and 4 standard checks, all maintained at the Department of Agricultural Botany, reflecting the rich germplasm diversity of the crop.

The experiment was implemented as a Randomized Block Design (RBD) with two replications. Each genotype was transplanted in plots of 3.0 × 1.0 m size, accommodating three rows per plot, with a spacing of 22.5 cm between rows and 10 cm between plants. Each row contained 20 plants, making a total of 60 plants per genotype. Recommended checks such as Dapoli-1, Dapoli-2, Dapoli-3, and Dapoli Safed were included for comparative evaluation.

Cultural Practices

The crop was raised under uniform agronomic conditions. Standard land preparation practices were followed to achieve a fine tilth. Fertilizers were applied at the rate of 80:40 kg $N:P_2O_5$ per hectare. Half of the nitrogen dose was applied as basal at sowing, and the remaining half was top-dressed 30 days after transplanting. Gap filling was done 10 days after transplanting to maintain uniform plant stand. Irrigation, weed control, and plant protection measures were carried out as per the recommended package of practices to ensure healthy crop growth.

Statistical Analysis

- **Genotypic and phenotypic correlation coefficients** were calculated following Johnson *et al.* (1955) [6] to determine the degree of association between grain yield per plant and its component traits.
- **Path coefficient analysis** was carried out as per the method of Dewey and Lu (1959) [3] to partition correlation coefficients into direct and indirect effects, considering grain yield per plant as the dependent variable. The residual effect was computed to account for unexplained variation. For interpretation, the scale suggested by Lenka and Mishra (1973) [8] was followed:
- **Negligible:** 0.00 - 0.09
- **Low:** 0.10 - 0.19
- **Moderate:** 0.20 - 0.29
- **High:** 0.30 - 0.99
- **Very High:** >1.00

Results and Discussion

Correlation analysis: Phenotypic Correlation Coefficient

Grain yield per plant exhibited highly significant positive correlation with number of fingers (0.503) and straw yield per plant (0.914). It showed significant positive correlation with number of tillers per plant (0.262), number of productive tillers per plant (0.429), finger length (0.424), harvest index (0.395), calcium content (0.346) and iron content (0.149). Non-significant positive correlation was recorded with days to 50% flowering (0.164), days to maturity (0.158), plant height (0.146), test weight (0.132), protein content (0.209) and fibre content (0.039). Negative significant correlation was observed with scoring of blast disease (-0.949), while zinc content showed a negative non-significant correlation (-0.311) (Table 1). Fig. no.1 depicts the shaded correlation matrix showing the phenotypic correlations among the studied traits. Devaliya *et al.* (2017) [2] reported a positive highly significant association for straw yield per plant and Jadhav *et al.* (2015) [5] observed a positive highly significant association for number of fingers. Madhavilatha *et al.* (2021) [9] reported a positive significant correlation with number of productive tillers per plant and a positive but non- significant correlation with plant height. Suman *et al.* (2018) [12] also reported a similar finding for days to 50% flowering, number of productive tillers per plant and scoring of blast disease. Patel *et al.* (2023) [10] reported a positive but non-significant association for days to maturity, along with a significant positive correlation for finger length, calcium content, and iron content. Additionally, a negative non-significant correlation was observed with zinc content.

The number of tillers per plant exhibited a highly significant positive correlation with the number of productive tillers per plant (0.585). It also showed a significant positive association with straw yield per plant (0.380), protein content (0.262), calcium content (0.301), fibre content (0.346), and grain yield per plant (0.262). Number of productive tillers per plant exhibited a positive significant correlation with straw yield per plant (0.477) as well as with grain yield per plant (0.429). Number of fingers exhibited a highly significant positive correlation with finger length (0.708) and grain yield per plant (0.503), along with a significant positive association with straw yield per plant (0.459), protein content (0.454), and iron content (0.259). Finger length possessed a positive as well as significant correlation with straw yield per plant (0.362), protein content (0.257) and grain yield per plant (0.424). Harvest index (%) possessed a positive significant correlation with grain yield per plant (0.395). Protein content exhibited a positive significant correlation with zinc content (0.433). Calcium content revealed a positive significant correlation with grain yield per plant (0.346). Fibre content showed a positive non-significant association with zinc content (0.042), as well as with grain yield per plant (0.039). Iron content exhibited a positive and significant correlation with grain yield per plant (0.149). Zinc content had a negative non-significant correlation with grain yield per plant (-0.311).

Phenotypic correlation matrix

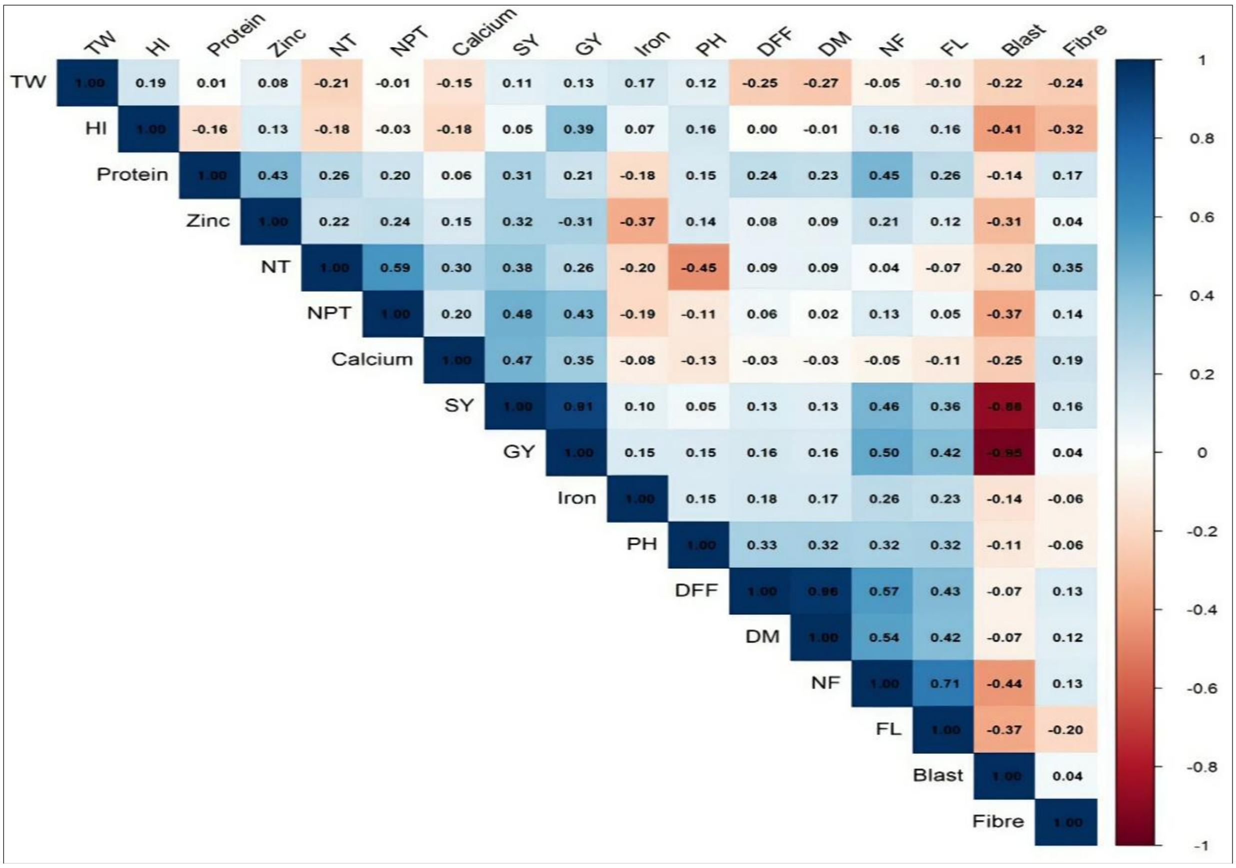

Fig 1: Shaded correlation matrix of phenotypic correlation

Table 1: Estimation of phenotypic correlation coefficient between different characters in finger millet.

Trait	DFF	DM	PH	NT	NPT	NF	FL	TW	SY	HI	BS	PC	CC	FC	IC	ZC	GY
DFF	1.000	0.964**	0.327*	0.086	0.057	0.565**	0.431**	-0.245	0.135	-0.003	-0.067	0.244	-0.029	0.131	0.176	0.084	0.164
DM		1.000	0.325*	0.092	0.018	0.538**	0.421**	-0.269*	0.128	-0.006	-0.068	0.230	-0.027	0.119	0.172	0.092	0.158
PH			1.000	-0.452**	-0.113	0.319*	0.320*	0.119	0.052	0.164	-0.111	0.150	-0.127	-0.061	0.146	0.144	0.146
NT				1.000	0.585**	0.039	-0.070	-0.213	0.380**	-0.184	-0.205	0.262*	0.301*	0.346**	-0.199	0.217	0.262*
NPT					1.000	0.131	0.054	-0.010	0.477**	-0.030	-0.372**	0.199	0.199	0.136	-0.194	0.235	0.429**
NF						1.000	0.708**	-0.052	0.459**	0.158	-0.440**	0.454**	-0.053	0.132	0.259*	0.209	0.503**
FL							1.000	-0.098	0.362**	0.158	-0.374**	0.257*	-0.109	-0.199	0.234	0.120	0.424**
TW								1.000	0.105	0.185	-0.221	0.009	-0.148	-0.240	0.165	0.080	0.132
SY									1.000	0.050	-0.879**	0.308*	0.467**	0.165	0.096	0.320*	0.914**
HI										1.000	-0.412**	-0.158	-0.181	-0.322*	0.067	0.131	0.395**
BS											1.000	-0.144	-0.249	0.040	-0.142	-0.312*	-0.949**
PC												1.000	0.059	0.171	-0.176	0.433**	0.209
CC													1.000	0.194	-0.084	0.154	0.346**
FC														1.000	-0.061	0.042	0.039
IC															1.000	-0.365**	0.149*
ZC																1.000	-0.311

*Significant at 5 per cent **Significant at 1 per cent

DFF- Days 50% Flowering	DM- Days to maturity	PH- Plant height	NT- Number of tillers per plant
NPT- Number of productive tillers per plant	NF-Number of fingers	FL-Finger length	TW- Test weight
SY- Straw yield per plant	HI- Harvest index	BS - Scoring of blast disease	PC-Protein content
CC- Calcium content	FC-Fibre content	IC- Iron content	ZC-Zinc content

Genotypic Correlation Coefficient

Grain yield per plant showed positive highly significant correlations with number of productive tillers per plant (0.811), number of fingers (0.536), straw yield per plant (0.926) while positive significant correlations were noted for number of tillers per plant (0.270), finger length (0.428), harvest index (0.433), protein content (0.21), and calcium content (0.350). However positive non- significant correlation was associated with days to 50% flowering (0.167), days to maturity (0.174), plant height (0.147), test weight (0.165), fibre content (0.037) and iron content (0.152) while negative significant correlation recorded for scoring of blast disease (-0.0956). It expressed a negative non-significant correlation with zinc content (-0.332) (Table 2). Fig.no.2 presents the shaded correlation matrix illustrating the genotypic correlations among the studied traits. Devaliya *et al.* (2017) [2] observed a highly significant positive correlation with the number of productive tillers per plant and straw yield per plant, and also reported a positive significant correlation with protein content and calcium content. Jadhav *et al.* (2015) [5] reported a positive highly significant association for number of productive tillers per plant and number of fingers. Chavan *et al.* (2020) [1] disclosed a positive but non-significant correlation with days to 50% flowering and test weight. Patel *et al.* (2023) [10] reported a positive but non-significant association for days to maturity, along with a positive significant association with finger length and calcium content. Simultaneously, a negative non-significant correlation was observed with zinc content.

Number of tillers per plant showed a highly significant positive correlation with number of productive tillers per plant (0.758), and also exhibited significant positive correlations with straw yield per plant (0.400), protein content (0.297), calcium content (0.312), fibre content (0.358), and grain yield per plant (0.270). Number of productive tillers per plant disclosed a highly significant positive association with straw yield per plant (0.941), zinc content (0.567), and grain yield per plant (0.811), while it also exhibited significant positive correlations with number of fingers (0.269), protein content (0.356), calcium content (0.398), and fibre content (0.277). Number of fingers revealed a highly significant positive correlation with finger length (0.735) and grain yield per plant (0.536), and also exhibited significant positive correlations with straw yield per plant (0.484), protein content (0.479), and iron content (0.273). Finger length possessed a positive as well as significant correlation with straw yield per plant (0.365), protein content (0.260) and grain yield per plant (0.428). Harvest index possessed a positive significant correlation with grain yield per plant (0.433). Protein content featured a positive significant correlation with zinc content (0.479) and grain yield per plant (0.216). Calcium content revealed a positive significant correlation with grain yield per plant (0.350). Fibre content showed a positive but non-significant association with zinc content (0.043), as well as with grain yield per plant (0.037). Iron content had a positive but non-significant correlation with grain yield per plant (0.152). Zinc content showed a negative and non-significant correlation with grain yield per plant (-0.332).

Genotypic correlation matrix

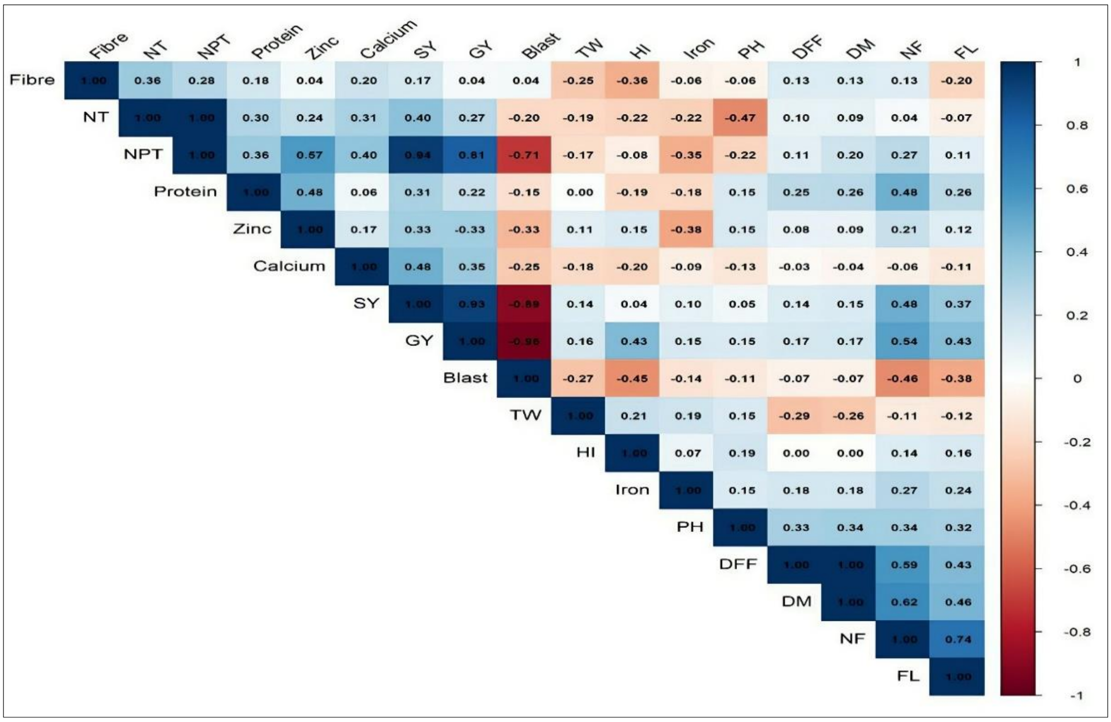

Fig 2: Shaded correlation matrix of genotypic correlation

Table 2: Estimation of genotypic correlation coefficient between different characters in finger millet genotypes.

Trait	DFF	DM	PH	NT	NPT	NF	FL	TW	SY	HI	BS	PC	CC	FC	IC	ZC	GY
DFF	1.000	0.841**	0.329*	0.100	0.111	0.586**	0.435**	-0.287*	0.137	-0.002	-0.069	0.253	-0.028	0.132	0.179	0.085	0.167
DM		1.000	0.339**	0.091	0.197	0.624**	0.458**	-0.263*	0.145	-0.001	-0.070	0.261*	-0.042	0.134	0.178	0.086	0.174
PH			1.000	-0.474**	-0.216	0.339**	0.323*	0.153	0.053	0.186	-0.111	0.153	-0.129	-0.059	0.147	0.152	0.147
NT				1.000	0.758**	0.037	-0.074	-0.192	0.400**	-0.216	-0.199	0.297*	0.312*	0.358**	-0.222	0.237	0.270*
NPT					1.000	0.269*	0.112	-0.173	0.941**	-0.080	-0.706**	0.356**	0.398**	0.277*	-0.354**	0.567**	0.811**
NF						1.000	0.735**	-0.109	0.484**	0.137	-0.462**	0.479**	-0.063	0.126	0.273*	0.215	0.536**
FL							1.000	-0.119	0.365**	0.159	-0.379**	0.260*	-0.110	-0.202	0.237	0.120	0.428**
TW								1.000	0.139	0.211	-0.273*	0.003	-0.184	-0.252	0.193	0.114	0.165
SY									1.000	0.040	-0.891**	0.311*	0.475**	0.167	0.098	0.332**	0.926**
HI										1.000	-0.451**	-0.190	-0.203	-0.359**	0.073	0.146	0.433**
BS											1.000	-0.151	-0.252	0.044	-0.141	-0.326*	-0.956**
PC												1.000	0.060	0.178	-0.180	0.479**	0.216*
CC													1.000	0.202	-0.088	0.165	0.350**
FC														1.000	-0.063	0.043	0.037
IC															1.000	-0.383**	0.152
ZC																1.000	-0.332

*Significant at 5 per cent **Significant at 1 per cent

DFF- Days 50% Flowering	DM- Days to maturity	PH- Plant height	NT- Number of tillers per plant
NPT- Number of productive tillers per plant	NF-Number of fingers	FL-Finger length	TW- Test weight
SY- Straw yield per plant	HI- Harvest index	BS - Scoring of blast disease	PC-Protein content
CC- Calcium content	FC-Fibre content	IC- Iron content	ZC-Zinc content

Path coefficient analysis

Phenotypic Path Coefficient Analysis: At the phenotypic level, straw yield per plant exerted the highest positive direct effect (0.6160) on grain yield per plant, indicating that this trait contributed substantially and directly to yield. Harvest index (0.2680), number of productive tillers per plant (0.0507), finger length (0.0429), calcium content (0.0410) and plant height (0.0302) also showed positive direct effects, though of relatively smaller magnitude (Table 3). Similar results were reported by Chavan *et al.* (2020) [1] for straw yield per plant, harvest index and plant height in finger millet. Days to maturity (0.0292), iron content (0.0280), and protein content (0.0028) exhibited negligible but positive direct effects on grain yield per plant.

Negative direct effects were observed for number of fingers (-0.0015), days to 50% flowering (-0.0049), number of tillers per plant (-0.0083), zinc content (-0.0188), test weight (-0.0240), fibre content (-0.0262) and scoring of blast disease (-0.2567). Negative direct effects of test weight and number of tillers per plant were earlier reported by Sapkal *et al.* (2019) [11].

Overall, straw yield per plant emerged as the most influential trait directly contributing to yield, while other traits largely contributed through indirect effects. Fig. no. 3 illustrates the phenotypic path diagram for grain yield per plant, depicting the direct and indirect effects of various contributing traits.

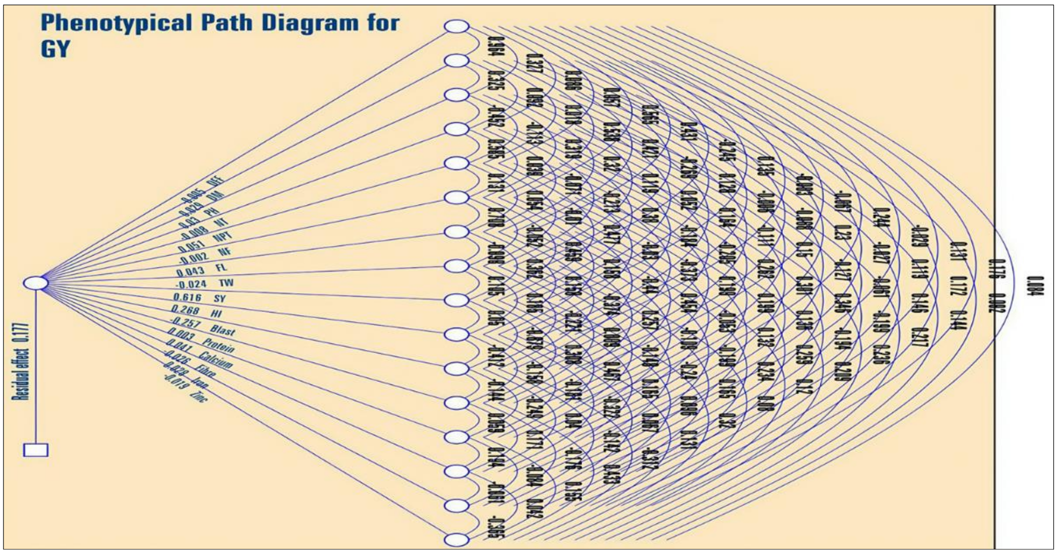

Fig 3: Phenotypical path diagram for grain yield per plant

Table 3: Path analysis for different characters at phenotypic levels in finger millet genotypes.

Trait	DFF	DM	PH	NT	NPT	NF	FL	TW	SY	HI	BS	PC	CC	FC	IC	ZC	GY
DFF	-0.0049	-0.0047	-0.0016	-0.0004	-0.0003	-0.0028	-0.0021	0.0012	-0.0007	0.0001	0.0003	-0.0012	0.0001	-0.0006	-0.0009	-0.0004	0.1642
DM	0.0282	0.0292	0.0095	0.0027	0.0005	0.0157	0.0123	-0.0079	0.0037	-0.0002	-0.0020	0.0067	-0.0008	0.0035	0.0050	0.0027	0.1583
PH	0.0099	0.0098	0.0302	-0.0137	-0.0034	0.0096	0.0097	0.0036	0.0016	0.0050	-0.0033	0.0045	-0.0038	-0.0018	0.0044	0.0044	0.1463
NT	-0.0007	-0.0008	0.0038	-0.0083	-0.0049	-0.0003	0.0006	0.0018	-0.0032	0.0015	0.0017	-0.0022	-0.0025	-0.0029	0.0017	-0.0018	0.2619*
NPT	0.0029	0.0009	-0.0057	0.0297	0.0507	0.0066	0.0028	-0.0005	0.0242	-0.0015	-0.0189	0.0101	0.0101	0.0069	-0.0099	0.0119	0.4291**
NF	-0.0009	-0.0008	-0.0005	-0.0001	-0.0002	-0.0015	-0.0011	0.0001	-0.0007	-0.0002	0.0007	-0.0007	0.0001	-0.0002	-0.0004	-0.0003	0.5026**
FL	0.0185	0.0181	0.0137	-0.0030	0.0023	0.0304	0.0429	-0.0042	0.0155	0.0068	-0.0161	0.0110	-0.0047	-0.0085	0.0101	0.0052	0.4241**
TW	0.0059	0.0064	-0.0028	0.0051	0.0002	0.0013	0.0024	-0.0240	-0.0025	-0.0044	0.0053	-0.0002	0.0035	0.0058	-0.0040	-0.0019	0.1320
SY	0.0830	0.0786	0.0323	0.2342	0.2941	0.2825	0.2228	0.0647	0.6160	0.0307	-0.5418	0.1898	0.2878	0.1016	0.0590	0.1970	0.9141**
HI	-0.0009	-0.0016	0.0441	-0.0494	-0.0080	0.0423	0.0425	0.0496	0.0133	0.2680	-0.1104	-0.0424	-0.0484	-0.0863	0.0180	0.0351	0.3945**
BS	0.0171	0.0174	0.0284	0.0526	0.0956	0.1129	0.0961	0.0568	0.2258	0.1058	-0.2567	0.0369	0.0638	-0.0103	0.0365	0.0800	-0.9489**
PC	0.0007	0.0006	0.0004	0.0007	0.0005	0.0013	0.0007	0.0001	0.0009	-0.0004	-0.0004	0.0028	0.0002	0.0005	-0.0005	0.0012	0.2090
CC	-0.0012	-0.0011	-0.0052	0.0123	0.0081	-0.0022	-0.0045	-0.0061	0.0192	-0.0074	-0.0102	0.0024	0.0410	0.0080	-0.0034	0.0063	0.3463**
FC	0.0034	0.0031	-0.0016	0.0091	0.0036	0.0035	-0.0052	-0.0063	0.0043	-0.0084	0.0010	0.0045	0.0051	-0.0262	-0.0016	0.0011	0.0393
IC	0.0049	0.0048	0.0041	-0.0056	-0.0054	0.0072	0.0066	0.0046	0.0027	0.0019	-0.0040	-0.0049	-0.0023	-0.0017	0.0280	-0.0102	0.1489*
ZC	-0.0016	-0.0017	-0.0027	-0.0041	-0.0044	-0.0039	-0.0023	-0.0015	-0.0060	-0.0025	0.0059	-0.0081	-0.0029	-0.0008	0.0069	-0.0188	-0.3114

*Significant at 5 per cent **Significant at 1 per cent

DFF- Days 50% Flowering	DM- Days to maturity	PH- Plant height	NT- Number of tillers per plant
NPT- Number of productive tillers per plant	NF-Number of fingers	FL-Finger length	TW- Test weight
SY- Straw yield per plant	HI- Harvest index	BS - Scoring of blast disease	PC-Protein content
CC- Calcium content	FC-Fibre content	IC- Iron content	ZC-Zinc content

Genotypic Path Coefficient Analysis

At the genotypic level, straw yield per plant exerted the highest positive direct effect (2.5701) on grain yield per plant, followed by scoring of blast disease (1.7474). Harvest index (1.0698), days to maturity (0.2101), number of productive tillers per plant (0.0450), iron content (0.0653), protein content (0.0077) and finger length (0.0008) also exhibited positive direct effects (Table 4). Patel *et al.* (2023) [10] also observed similar findings in finger millet with respect to straw yield per plant, harvest index, and iron content. Likewise, Keerthana *et al.* (2019) [7] highlighted the positive direct effect of number of productive tillers per plant and finger length.

Test weight (-0.0136), zinc content (-0.0178), fibre content (-0.0311), number of fingers (-0.0732), plant height (-0.1207), calcium content (-0.1832), number of tillers per plant (-0.3094) and days to 50% flowering (-0.3378) recorded negligible negative direct effects on grain yield per plant. Patel *et al.* (2023) [10] further reported negative direct effects of days to 50% flowering, plant height, test weight, and zinc content in finger millet.

Overall, the findings revealed that straw yield per plant, harvest index and number of productive tillers per plant exerted the prominent positive direct effects on grain yield per plant at the genotypic level. Therefore, these traits emerge as key selection criteria for enhancing grain yield in finger millet breeding programmes. Fig. no. 4 demonstrates the genotypic path diagram for grain yield per plant, highlighting the direct and indirect effects of contributing traits.

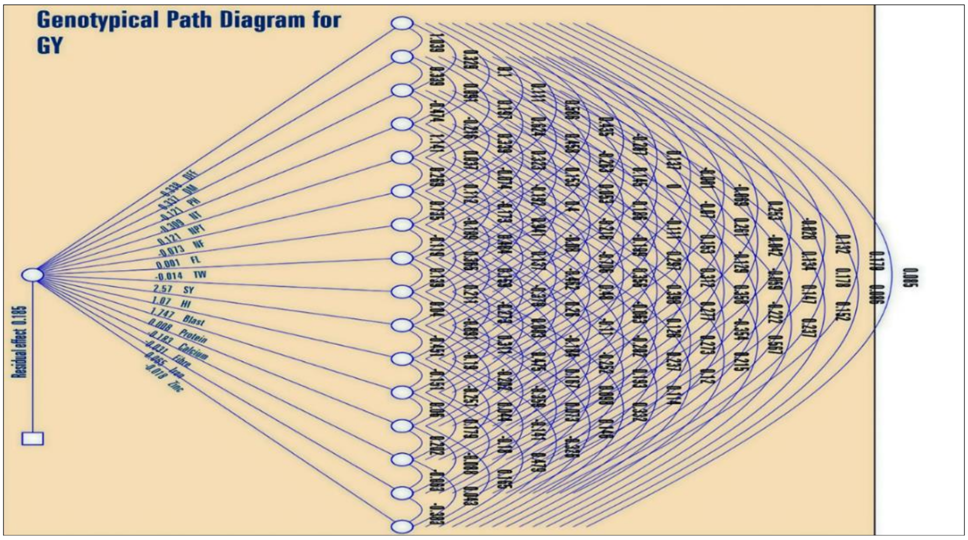

Fig 4: Genotypical path diagram for grain yield per plant

Table 4: Path analysis for different characters at genotypic levels in finger millet genotypes.

Trait	DFF	DM	PH	NT	NPT	NF	FL	TW	SY	HI	BS	PC	CC	FC	IC	ZC	GY
DFF	-0.3378	-0.3510	-0.1111	-0.0337	-0.0375	-0.1980	-0.1468	0.0971	-0.0462	0.0005	0.0233	-0.0856	0.0096	-0.0445	-0.0604	-0.0286	0.1668
DM	0.3500	0.3368	0.1142	0.0307	0.0665	0.2101	0.1542	-0.0887	0.0489	-0.0001	-0.0235	0.0880	-0.0141	0.0450	0.0600	0.0289	0.1739
PH	-0.0397	-0.0409	-0.1207	0.0572	0.0260	-0.0409	-0.0390	-0.0184	-0.0064	-0.0224	0.0134	-0.0185	0.0155	0.0072	-0.0177	-0.0184	0.1474
NT	-0.0309	-0.0282	0.1467	-0.3094	-0.3531	-0.0114	0.0228	0.0595	-0.1239	0.0670	0.0615	-0.0919	-0.0965	-0.1107	0.0686	-0.0734	0.2698*
NPT	0.0134	0.0238	-0.0260	0.1378	0.1207	0.0324	0.0135	-0.0209	0.1137	-0.0097	-0.0853	0.0430	0.0480	0.0334	-0.0428	0.0684	0.8106**
NF	-0.0429	-0.0456	-0.0248	-0.0027	-0.0197	-0.0732	-0.0538	0.0080	-0.0354	-0.0100	0.0338	-0.0351	0.0046	-0.0092	-0.0200	-0.0157	0.5364**
FL	0.0004	0.0004	0.0003	-0.0001	0.0001	0.0006	0.0008	-0.0001	0.0003	0.0001	-0.0003	0.0002	-0.0001	-0.0002	0.0002	0.0001	0.4284**
TW	0.0039	0.0036	-0.0021	0.0026	0.0023	0.0015	0.0016	-0.0136	-0.0019	-0.0029	0.0037	0.0001	0.0025	0.0034	-0.0026	-0.0015	0.1647
SY	0.3512	0.3735	0.1367	1.0287	2.4194	1.2430	0.9384	0.3562	2.5701	0.1021	-2.2901	0.8006	1.2217	0.4291	0.2508	0.8525	0.9259**
HI	-0.0016	-0.0003	0.1985	-0.2315	-0.0858	0.1466	0.1701	0.2260	0.0425	1.0698	-0.4824	-0.2031	-0.2166	-0.3839	0.0777	0.1564	0.4331**
BS	-0.1207	-0.1220	-0.1941	-0.3475	-1.2338	-0.8076	-0.6630	-0.4769	-1.5570	-0.7879	1.7474	-0.2638	-0.4394	0.0766	-0.2466	-0.5689	-0.9555**
PC	0.0020	0.0020	0.0012	0.0023	0.0028	0.0037	0.0020	0.0001	0.0024	-0.0015	-0.0012	0.0077	0.0005	0.0014	-0.0014	0.0037	0.2157*
CC	0.0052	0.0077	0.0236	-0.0571	-0.0728	0.0116	0.0202	0.0337	-0.0871	0.0371	0.0461	-0.0110	-0.1832	-0.0370	0.0162	-0.0302	0.3501**
FC	0.0041	0.0042	-0.0018	0.0111	0.0086	0.0039	-0.0063	-0.0078	0.0052	-0.0111	0.0014	0.0055	0.0063	-0.0311	-0.0020	0.0013	0.0368
IC	0.0117	0.0116	0.0096	-0.0145	-0.0231	0.0178	0.0155	0.0126	0.0064	0.0047	-0.0092	-0.0118	-0.0058	-0.0041	0.0653	-0.0250	0.1522
ZC	-0.0015	-0.0015	-0.0027	-0.0042	-0.0101	-0.0038	-0.0021	-0.0020	-0.0059	-0.0026	0.0058	-0.0086	-0.0029	-0.0008	0.0068	-0.0178	- 0.3318

*Significant at 5 per cent **Significant at 1 per cent

DFF- Days 50% Flowering	**DM- Days to maturity**	**PH- Plant height**	**NT- Number of tillers per plant**
NPT- Number of productive tillers per plant	NF-Number of fingers	FL-Finger length	TW- Test weight
SY- Straw yield per plant	HI- Harvest index	BS - Scoring of blast disease	PC-Protein content
CC- Calcium content	FC-Fibre content	IC- Iron content	ZC-Zinc content

Conclusion

On the basis of correlation and path analysis, grain yield per plant in finger millet can be enhanced through simultaneous selection for traits such as number of tillers per plant, number of productive tillers per plant, number of fingers, finger length, test weight, straw yield per plant, harvest index, protein content, calcium content, and iron content. These traits exhibited significant positive correlations and direct effects with grain yield per plant, indicating their potential utility in yield improvement breeding programmes. It is desirable to give more magnitude of weightage to these characters during selection programme.

References

1. Chavan B, Jawale LN, Shinde AV. Correlation and path analysis studies in finger millet for yield and yield contributing traits (*Eleusine coracana* L. Gaertn.). International Journal of Chemical Studies. 2020;8(1):2911-2914.
2. Devaliya SD, Manju S, Visat ML. Character association and path analysis in finger millet (*Eleusine coracana* (L.) Gaertn.). Trends in Biosciences. 2017;10(31):6690-6694.
3. Dewey DR, Lu KH. A correlation and path coefficient analysis of components of crested wheatgrass seed production. Agronomy Journal. 1959;57(1):515-518.
4. Dhanushkodi V, Hemavathy AT, Shenbagavalli S, Sangeetha S, Anitha R, UmaMaheshwari T. A review on nutritional properties and health benefits of finger millet. International Journal of Plant & Soil Science. 2023;35(18):753-761.
5. Jadhav R, Babu DR, Rao VS. Character association and path coefficient analysis for grain yield and yield components in finger millet (*Eleusine coracana* (L.) Gaertn.). Electronic Journal of Plant Breeding. 2015;6(2):535-539.
6. Johnson HW, Robinson HF, Comstock RE. Estimates of genetic and environmental variability in soybean. Agronomy Journal. 1955;47:314-318.
7. Keerthana K, Chitra S, Subramanian A, Elangovan M. Character association and path coefficient analysis in finger millet (*Eleusine coracana* (L.) Gaertn.) genotypes under sodic condition. The Pharma Innovation Journal. 2019;8(6):556-559.
8. Lenka D, Mishra B. Path coefficient analysis of yield in rice varieties. Indian Journal of Agricultural Sciences. 1973;43(7):376-379.
9. Madhavilatha L, Sudhakar P, Latha P, Shanthi Priya M, Hemanth Kumar M. Studies on genetic variability, correlation and path analysis for quantitative traits in finger millet. The Pharma Innovation Journal. 2021;10(6):709-712.
10. Patel U, Patil HE, Ray P. Correlation and path analysis for grain yield and its component traits in finger millet (*Eleusine coracana* L.). Biological Forum - International Journal. 2023;15(9):660-664.
11. Sapkal SR, Bhavsar VV, Barhate KK, Sarika NK. Correlation and path analysis for different characteristics in germplasm of finger millet (*Eleusine coracana* (L.) Gaertn.). International Journal of Current Microbiology and Applied Sciences. 2019;8(1):2319-2324.
12. Suman A, Surin S, Ahmad E, Haider ZA, Ekka S, Tuti A, *et al.* Study of correlation and path analysis of elite finger millet germplasm (*Eleusine coracana* (L.) Gaertn.). Journal of Pharmacognosy and Phytochemistry. 2018;7(1S):2256-2258.