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# Path and correlation coefficient analysis for fourteen different morphological characters in Turmeric (*Curcuma longa* L.)

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**Abstract**
The present investigation planned to study thirty diverse genotypes of turmeric for fourteen different morphological traits and evaluated in randomized block design with two replications. Path coefficient analysis indicated that the traits like plant height, tillers per plant, secondary fingers per rhizome, rhizome width, green rhizome weight, dry rhizome weight recovery (%) and powder recovery (%) exhibited high and positive direct effects on green yield per plant. In majority of the cases the genotypic correlation was recorded higher than phenotypic correlations for all the studied characters, indicating little influence of environment and the presence of inherent association between various characters.

**Keywords:** Turmeric, correlation, path analysis, direct effect, indirect effect

## Introduction
Turmeric (*Curcuma longa* L.) is an age old herbaceous plant belonging to the family Zingiberaceae. It is a native to South East Asia and popularly cultivated in Tropical Africa and India. Besides India, it is also grown in China, Taiwan, Indonesia, Sri Lanka, Thailand and other tropical countries. Among them, highest diversity is concentrated in India and Thailand. Over eighty species are reported in the genus *Curcuma* from the Indo Malayan region, from which forty are indigenous species. India is the largest producer, consumer and exporter of turmeric in the world, which accounts for more than 50 per cent of the world trade. Andhra Pradesh is the highest turmeric producing state in India. Path coefficient analysis was used for analyzing the direct and indirect contribution of various independent characters on a dependent character. Correlation coefficient on the other hand indicates the degree and direction of relationship between two variables but does not provide an insight on the amount of contribution of a trait on another. In turmeric, rhizome yield cannot be improved by direct selection of high yielding genotypes alone but, it also requires a complete study of yield contributing traits and thus path and correlation coefficient are two major statistical techniques to quantify the relation between two traits and for improving rhizome yield.

## Materials and methods
Thirty different genotypes of turmeric were evaluated in two replications in a randomized block design during *Kharif* 2016-17. In the experiment, each plot consisted of twenty plants grown in a row at 45 x 30 $cm^2$ inter and intra row spacing. Five plants were randomly selected excluding the border one, from each plot of both the replications; they were tagged and used for recording observations. The average value of data from these plants was computed and used for statistical analysis. Observations were recorded for fourteen different characteristics, *viz.*, plant height (cm), leaf length (cm), leaf width (cm), tillers per plant, mother rhizomes per plant, primary fingers per rhizome, secondary fingers per rhizome, rhizome length (cm), rhizome width (cm), days to maturity, green rhizome weight (kg), dry rhizome weight recovery (%) and powder recovery (%). The mean values of different characters were subjected to phenotypic and genotypic correlation analysis and the estimated genotypic correlations were subjected for path analysis.
Analysis of covariance for all possible pairs of fourteen characters was carried out using the procedure of Panse and Sukhatme (1978) [14]. Path analysis suggested by Dewey and Lu (1959) [2] was adopted for each genotype separately in order to partition the genotypic

correlation between variables with seed yield into direct and indirect effects of those variables on yield. Genotypic correlation coefficients of fourteen variables with yield were used to estimate the path coefficients for the direct effect of various independent characters on dependent character rhizome yield per plant.

## Results and discussion

### Path coefficient analysis

Path coefficient analysis indicated that the traits like plant height, tillers per plant, secondary fingers per rhizome, rhizome width, green rhizome weight, dry rhizome weight recovery and powder recovery exhibited high and positive direct effects on green yield per plant which is in accordance with findings of Pathania *et al.* (1981) [15], Lal *et al.* (1986) [9], Mukhopadhyay and Roy (1986) [11], Jalgaonkar and Jamdagni (1989) [4], Jalgaonkar *et al.* (1990) [5], Nandi *et al.* (1994) [12], Singh and Tiwari (1995) [23], Shashidhar and Sulikeri (1997) [21], and Chandra *et al.* (1999) [1] in turmeric. These traits were identified as superior rhizome yield components and direct selection of these characters could be carried out for the future breeding programmes. The genotypes which exhibit better performance for these characters can be used in crop improvement of turmeric.

**Table 1:** Genotypic path coefficient analysis depicting direct and indirect effects of thirteen different traits on green rhizome yield of turmeric

| Characters | PH | LL | LW | T/P | MR/P | PF/R | SF/R | RL | RW | GRW | DRWR | PR | DTM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PH | 0.0484 | 0.0369 | -0.0029 | -0.0167 | -0.0060 | -0.0069 | -0.0182 | 0.0186 | 0.0183 | 0.0221 | -0.0290 | -0.0056 | 0.0327 |
| LL | -0.0135 | -0.0177 | 0.0052 | 0.0099 | -0.0033 | -0.0055 | 0.0078 | -0.0009 | -0.0062 | -0.0024 | 0.0072 | 0.0125 | -0.0121 |
| LW | 0.0021 | 0.0101 | -0.0340 | -0.0021 | 0.0015 | -0.0014 | -0.0134 | 0.0063 | 0.0074 | 0.0000 | -0.0045 | -0.0218 | 0.0173 |
| T/P | -0.0050 | -0.0081 | 0.0009 | 0.0144 | 0.0034 | 0.0007 | 0.0032 | 0.0013 | 0.0023 | 0.0021 | -0.0010 | 0.0039 | -0.0040 |
| MR/P | 0.0007 | -0.0010 | 0.0002 | -0.0012 | -0.0053 | -0.0010 | -0.0023 | 0.0001 | -0.0047 | -0.0044 | 0.0025 | -0.0023 | -0.0016 |
| PF/R | 0.0000 | -0.0001 | 0.0000 | 0.0000 | 0.0000 | -0.0002 | -0.0001 | 0.0001 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| SF/R | -0.0055 | -0.0064 | 0.0057 | 0.0033 | 0.0062 | 0.0038 | 0.0145 | 0.0013 | 0.0053 | 0.0084 | -0.0057 | 0.0058 | -0.0066 |
| RL | -0.0086 | -0.0012 | 0.0041 | -0.0020 | 0.0004 | 0.0090 | -0.0020 | -0.0225 | -0.0086 | -0.0078 | 0.0094 | -0.0009 | -0.0025 |
| RW | 0.0119 | 0.0110 | -0.0068 | 0.0050 | 0.0274 | -0.0029 | 0.0115 | 0.0120 | 0.0314 | 0.0291 | -0.0240 | 0.0071 | 0.0091 |
| GRW | 0.4443 | 0.1320 | 0.0009 | 0.1414 | 0.8039 | -0.0891 | 0.5659 | 0.3382 | 0.9027 | 0.9735 | -0.7849 | 0.0811 | 0.2915 |
| DRWR | -0.0105 | -0.0071 | 0.0023 | -0.0012 | -0.0082 | 0.0008 | -0.0069 | -0.0073 | -0.0134 | -0.0141 | 0.0175 | 0.0040 | -0.0047 |
| PR | -0.0011 | -0.0070 | 0.0064 | 0.0027 | 0.0043 | 0.0009 | 0.0040 | 0.0004 | 0.0023 | 0.0008 | 0.0023 | 0.0100 | 0.0013 |
| DTM | -0.0164 | -0.0166 | 0.0124 | 0.0068 | -0.0073 | 0.0018 | 0.0111 | -0.0027 | -0.0070 | -0.0073 | 0.0065 | -0.0031 | -0.0243 |
| Correlation with GRY | 0.4467** | 0.1248 | -0.0056 | 0.1604 | 0.8170** | -0.0900 | 0.5752** | 0.3448** | 0.9298** | 1.0000** | -0.8038** | 0.0907 | 0.2960* |

*, ** Significant at 5.0 and 1.0 per cent level, respectively. Residual effect = 0.0233 (Bold figures show direct effect.)

PH: Plant height (cm) MR/P: Mother rhizomes per plant RW: Rhizome width (cm) GRY: Green rhizome yield (kg)
LL: Leaf length (cm) PF/R: Primary fingers per rhizome GRW: Green rhizome weight (kg) DTM: Days to maturity
LW: Leaf width (cm) SF/R: Secondary fingers per rhizome DRWR: Dry rhizome weight recovery (%)
T/P: Tillers per plant RL: Rhizome length (cm) PR: Powder recovery (%)

Plant height demonstrated highly significant and positive correlation with green rhizome yield along with positive direct effect. It has also exerted positive indirect effect for all characters except leaf length, tillers per plant, secondary fingers per rhizome, rhizome length, dry rhizome weight, powder recovery and days to maturity. Similar findings can be correlated with Hazra *et al.* (2002) [3].

Negative direct effect was observed on green rhizome yield with leaf length, leaf width, mother rhizomes per plant, primary fingers per plant, rhizome length and days to maturity. Mother rhizomes per plant showed negative direct effect on green rhizome yield, which was similar to the results reported by Chandra *et al.* (1999) [1] in turmeric.

The correlation coefficient between leaf length and green rhizome yield was found positive and non significant with negative direct effect on green rhizome yield. It exerted positive indirect effect on green rhizome yield *via*. traits like plant height, leaf width, rhizome width and green rhizome weight. The correlation between leaf width and green rhizome yield was recorded negative and non significant along with negative direct effect of leaf width on green rhizome yield. The trait exhibited positive indirect effect on green rhizome yield through leaf length, tillers per plant, secondary fingers per rhizome, rhizome length, green rhizome weight, dry rhizome weight recovery, powder recovery and days to maturity. Tillers per plant manifested positive non significant correlation and positive direct effect with green rhizome yield. It has exhibited positive indirect effect on green rhizome yield through leaf length, secondary fingers per rhizome, rhizome width, green rhizome weight, powder recovery and days to maturity. The contribution of tillers per plant to yield is in accordance with findings by Kumar *et al.* (2007) [8] and Lal *et al.* (1986) [9].

Mother rhizomes per plant conveyed positive and highly significant correlation with green rhizome yield and negative direct effect on green rhizome yield, which was in agreement to the results reported by Chandra *et al.* (1999) [1]. Primary fingers per rhizome manifested negative non significant correlation and a negative direct effect with green rhizome yield; a significant positive indirect effect on green rhizome yield through tillers per plant, secondary fingers per rhizome, rhizome length, dry rhizome weight recovery, powder recovery and days to maturity. Secondary fingers per rhizome displayed highly significant positive correlation and a positive direct effect on green rhizome yield. The positive direct effect was exerted *via* leaf length, tillers per plant, rhizome width, green rhizome weight, powder recovery and days to maturity. Similar result was drawn by Lal *et al.* (1986) [9] Jalgaonkar *et al.* (1990) [5] and Singh and Tiwari (1995) [23].

The correlation between rhizome length and green rhizome yield unveiled to be highly significant and positive with a negative direct effect on green rhizome yield. The direct effect was produced *via* indirect effects of traits like plant height, leaf width, tillers per plant, mother rhizomes per plant, primary fingers per rhizome, secondary fingers per rhizome, rhizome width, green rhizome weight and powder recovery. Rhizome width displayed highly significant positive correlation and a positive direct effect on green rhizome yield. It has exerted positive indirect effect on green rhizome yield via all characters under study except for leaf length, mother rhizomes per plant, rhizome length, dry rhizome weight recovery and days to maturity.

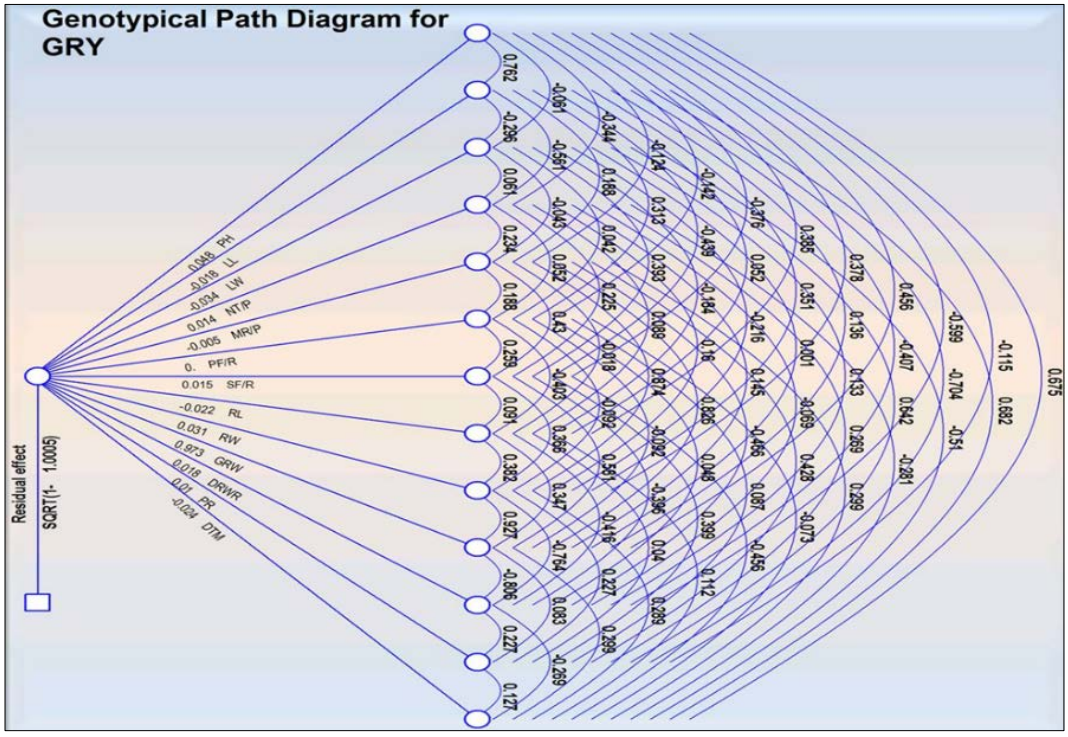


**Fig 1:** Genotypical path diagram for Green Rhizome Yield (GRY)

PH: Plant height (cm)
LL: Leaf length (cm)
LW: Leaf width (cm)
T/P: Tillers per plant
MR/P: Mother rhizomes per plant
PF/R: Primary fingers per rhizome
SF/R: Secondary fingers per rhizome
RL: Rhizome length (cm)
RW: Rhizome width (cm)
GRW: Green rhizome weight (kg)
DRWR: Dry rhizome weight recovery (%)
PR: Powder recovery (%)
GRY: Green rhizome yield (kg)
DTM: Days to maturity

Green rhizome weight was reported to have highly significant and positive correlation and a positive direct effect on green rhizome yield. The positive indirect effect on green rhizome yield was found to be by plant height, leaf width, tillers per plant, primary fingers per rhizome, secondary fingers per rhizome, rhizome width and powder recovery. Similar findings were obtained by Yadav *et al*. (2006) [29], Sharon *et al*. (2011) [20], Verma (2014) [28] and Sumit *et al*. (2015) [24]. The correlation coefficient between dry rhizome weight recovery and green rhizome yield was found negative and highly significant. The direct effect of dry rhizome weight recovery on green rhizome yield was found to be positive but negative indirect effect were exerted by plant height, leaf width, tillers per plant, secondary fingers per rhizome, rhizome width and green rhizome weight. Powder recovery and green rhizome yield showed non significant positive correlation and positive direct effect. The positive indirect effects were produced by leaf length, tillers per plant, primary fingers per rhizome, secondary fingers per rhizome, rhizome width, green rhizome weight and dry rhizome weight recovery. Days to maturity revealed positive correlation as well as direct effect with green rhizome yield and exerted positive indirect effect on green rhizome yield *via* plant height, leaf width, rhizome width, green rhizome weight and powder recovery.

**Correlation**

In the present investigation, in majority of the cases the genotypic correlation was recorded higher than phenotypic correlations for all the characters, indicating little influence of environment and the presence of inherent association between various characters. Similar results are reported by Rajyalakshmi *et al.* (2013) [17] in turmeric.

Green rhizome yield showed positive and significant correlation with plant height, mother rhizomes per plant, secondary fingers per rhizome, rhizome length, rhizome width, green rhizome weight and days to maturity at both phenotypic and genotypic level. Since, these association characters are in the desirable direction, selection for these traits may improve the green rhizome yield. Analogous results in turmeric were obtained by Pathania *et al.* (1981) [15], Jalgaonkar *et al.* (1990) [5], Nandi *et al.* (1994) [12], Shashidhar and Sulikeri (1997) [21], Lynrah *et al.* (1998) [10], Venkatesha *et al.* (1998) [27], Chandra *et al.* (1999) [1], Jana *et al.* (2001) [6], Raveendra *et al.* (2001)[19], Panja *et al.* (2002) [13], Prasad *et al.* (2004) [16], Rao *et al.* (2004) [18], Tomar *et al.* (2005) [25], Kumar *et al.* (2006) [7], Yadav *et al.* (2006) [29], Kumar *et al.* (2007) [8], Velmurugan *et al.* (2008) [26], Sharon *et al.* (2011) [20] and Singh *et al.* (2012) [22] in turmeric.

Plant height has exhibited significant positive association with leaf length, green rhizome weight, days to maturity, green rhizome yield both at genotypic and phenotypic levels; rhizome length and rhizome width at phenotypic level. It depicted negative and significant association with dry rhizome weight recovery both at genotypic and phenotypic levels but with tillers per plant, secondary fingers per rhizome, rhizome length and rhizome width at genotypic level. Leaf length displayed significant positive association with primary fingers per rhizome and days to maturity at genotypic and phenotypic levels, with rhizome width at genotypic level. It has exhibited significant and negative correlation with leaf width at genotypic level and dry rhizome weight recovery at phenotypic level; significant negative correlation with tillers per plant, secondary fingers per rhizome, dry rhizome weight recovery and powder recovery at genotypic level. Leaf width recorded significant positive association with secondary fingers per rhizome and powder recovery at genotypic level. Similarly, it also depicted significant negative association with days to maturity both at genotypic and phenotypic levels.

**Table 2:** Genotypic and phenotypic correlations of green rhizome yield with other characters of turmeric

| Characters | | PH | LL | LW | T/P | MR/P | PF/R | SF/R | RL | RW | GRW | DRWR | PR | DTM | GRY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PH | $r_g$ | 1.0000 | 0.7622** | -0.0607 $^{NS}$ | -0.3443** | -0.1239 $^{NS}$ | -0.1416 $^{NS}$ | -0.3761** | -0.3849** | -0.3784** | 0.4565** | -0.5991** | -0.1149 $^{NS}$ | 0.6750** | 0.4467** |
| | $r_p$ | 1.0000 | 0.6448** | -0.1091 $^{NS}$ | -0.0423 $^{NS}$ | 0.0625 $^{NS}$ | 0.0298 $^{NS}$ | -0.1526 $^{NS}$ | 0.2624* | 0.2762* | 0.3501** | -0.4455** | -0.0268 $^{NS}$ | 0.5061** | 0.3501** |
| LL | $r_g$ | | 1.0000 | -0.2964* | -0.5613** | 0.1881 $^{NS}$ | 0.3126* | -0.4392** | 0.0517 $^{NS}$ | 0.3508** | 0.1356 $^{NS}$ | -0.4069** | -0.7041** | 0.6820** | 0.1248 $^{NS}$ |
| | $r_p$ | | 1.0000 | -0.1771 $^{NS}$ | -0.1736 $^{NS}$ | 0.0019 $^{NS}$ | 0.2576* | -0.2233 $^{NS}$ | 0.0045 $^{NS}$ | 0.1604 $^{NS}$ | 0.1634 $^{NS}$ | -0.2848* | -0.0749 $^{NS}$ | 0.5140** | 0.1620 $^{NS}$ |
| LW | $r_g$ | | | 1.0000 | 0.0607 $^{NS}$ | -0.0434 $^{NS}$ | 0.0424 $^{NS}$ | 0.3927** | -0.1841 $^{NS}$ | -0.2162 $^{NS}$ | 0.0009 $^{NS}$ | 0.1334 $^{NS}$ | 0.6416** | -0.5097** | -0.0056 $^{NS}$ |
| | $r_p$ | | | 1.0000 | 0.0012 $^{NS}$ | 0.0641 $^{NS}$ | 0.0170 $^{NS}$ | 0.1489 $^{NS}$ | -0.0118 $^{NS}$ | 0.0220 $^{NS}$ | 0.0763 $^{NS}$ | 0.0536 $^{NS}$ | 0.1141 $^{NS}$ | -0.3571** | 0.0768 $^{NS}$ |
| T/P | $r_g$ | | | | 1.0000 | 0.2343 $^{NS}$ | 0.0516 $^{NS}$ | 0.2251 $^{NS}$ | 0.0887 $^{NS}$ | 0.1596 $^{NS}$ | 0.1453 $^{NS}$ | -0.0692 $^{NS}$ | 0.2693* | -0.2810* | 0.1604 $^{NS}$ |
| | $r_p$ | | | | 1.0000 | 0.2862* | 0.1395 $^{NS}$ | 0.4034** | -0.0503 $^{NS}$ | 0.1459 $^{NS}$ | 0.2636* | -0.1003 $^{NS}$ | 0.1681 $^{NS}$ | -0.1390 $^{NS}$ | 0.2748* |
| MR/P | $r_g$ | | | | | 1.0000 | 0.1878 $^{NS}$ | 0.4299** | -0.0175 $^{NS}$ | 0.8740** | 0.8258** | -0.4657** | 0.4279** | 0.2991* | 0.8170** |
| | $r_p$ | | | | | 1.0000 | 0.1648 $^{NS}$ | 0.3648** | -0.0173 $^{NS}$ | 0.4929** | 0.4962** | -0.2270 $^{NS}$ | 0.1602 $^{NS}$ | 0.2104 $^{NS}$ | 0.4998** |
| PF/R | $r_g$ | | | | | | 1.0000 | 0.2595* | -0.4027** | -0.0917 $^{NS}$ | -0.0916 $^{NS}$ | 0.0479 $^{NS}$ | 0.0871 $^{NS}$ | -0.0730 $^{NS}$ | -0.0900 $^{NS}$ |
| | $r_p$ | | | | | | 1.0000 | 0.2591* | -0.3500** | -0.0236 $^{NS}$ | -0.0129 $^{NS}$ | -0.0217 $^{NS}$ | 0.0408 $^{NS}$ | -0.0647 $^{NS}$ | -0.0091 $^{NS}$ |
| SF/R | $r_g$ | | | | | | | 1.0000 | 0.0910 $^{NS}$ | 0.3659** | 0.5814** | -0.3956** | 0.3993** | -0.4561** | 0.5752** |
| | $r_p$ | | | | | | | 1.0000 | -0.0428 $^{NS}$ | 0.2325 $^{NS}$ | 0.4757** | -0.3410** | 0.0632 $^{NS}$ | -0.2192 $^{NS}$ | 0.4803** |
| RL | $r_g$ | | | | | | | | 1.0000 | 0.3821** | 0.3474** | -0.4164** | 0.0403 $^{NS}$ | 0.1116 $^{NS}$ | 0.3448** |
| | $r_p$ | | | | | | | | 1.0000 | 0.3004* | 0.3274* | -0.3840** | -0.1054 $^{NS}$ | 0.0495 $^{NS}$ | 0.3246* |
| RW | $r_g$ | | | | | | | | | 1.0000 | 0.9273** | -0.7643** | 0.2275 $^{NS}$ | 0.2888* | 0.9298** |
| | $r_p$ | | | | | | | | | 1.0000 | 0.6768** | -0.6336** | 0.0842 $^{NS}$ | 0.2565* | 0.6779** |
| GRW | $r_g$ | | | | | | | | | | 1.0000 | -0.8062** | 0.0833 $^{NS}$ | 0.2995* | 1.0000** |
| | $r_p$ | | | | | | | | | | 1.0000 | -0.7600** | 0.1104 $^{NS}$ | 0.2726* | 0.9995** |
| DRWR | $r_g$ | | | | | | | | | | | 1.0000 | 0.2269 $^{NS}$ | -0.2687* | -0.8038** |
| | $r_p$ | | | | | | | | | | | 1.0000 | 0.0797 $^{NS}$ | -0.2617* | -0.7586** |
| PR | $r_g$ | | | | | | | | | | | | 1.0000 | 0.1267 $^{NS}$ | 0.0907 $^{NS}$ |
| | $r_p$ | | | | | | | | | | | | 1.0000 | 0.1516 $^{NS}$ | 0.1135 $^{NS}$ |
| DTM | $r_g$ | | | | | | | | | | | | | 1.0000 | 0.2960* |
| | $r_p$ | | | | | | | | | | | | | 1.0000 | 0.2691* |

*, ** Significant at 5.0 and 1.0 per cent level, respectively. NS- Non-significant.

PH: Plant height (cm)
LL: Leaf length (cm)
LW: Leaf width (cm)
T/P: Tillers per plant
MR/P: Mother rhizomes per plant
PF/R: Primary fingers per rhizome
SF/R: Secondary fingers per rhizome
RL: Rhizome length (cm)
RW: Rhizome width (cm)
GRW: Green rhizome weight (kg)
DRWR: Dry rhizome weight recovery (%)
PR: Powder recovery (%)
GRY: Green rhizome yield (kg)
DTM: Days to maturity

Tillers per plant exhibited significant positive correlation with powder recovery at genotypic level, and mother rhizomes per plant, secondary fingers per rhizome and green rhizome weight at phenotypic level while significant negative correlation with days to maturity.

Mother rhizome per plant was found significantly and positively correlated with secondary fingers per rhizome, rhizome width, green rhizome weight and green rhizome yield at genotypic and phenotypic levels and; powder recovery and days to maturity at genotypic level. It showed negative significant correlation with dry rhizome weight recovery at genotypic level. All other traits showed non significant association. Primary fingers per rhizome exhibited significant positive correlation with secondary fingers per rhizome at genotypic and phenotypic levels. However, highly significant negative association was observed with rhizome length (both at genotypic and phenotypic levels). Secondary fingers per rhizome recorded significant positive association with green rhizome weight and green rhizome yield at genotypic and phenotypic levels and with rhizome width and powder recovery at genotypic level. Whereas, it has exhibited significant negative association with dry rhizome weight recovery at both levels and with days to maturity at genotypic level. Rhizome length recorded significant positive association with rhizome width, green rhizome weight and green rhizome yield at genotypic levels and with rhizome width, green rhizome weight and green rhizome yield at phenotypic level. However, it displayed significant negative association with dry rhizome weight recovery at genotypic and phenotypic levels. Similarly, rhizome width recorded significant positive association with days to maturity, green rhizome weight and green rhizome yield at genotypic and phenotypic levels. It displayed negative significant correlation with dry rhizome weight recovery at both levels.

Dry rhizome weight recovery was found significantly negatively correlated with days to maturity but significant and positively correlated with green rhizome yield at genotypic and phenotypic level. Powder recovery unveiled highly significant positive association with leaf width, mother rhizomes per plant, secondary fingers per rhizome, significant positive association with tillers per plant, and highly significant negative association with leaf length at genotypic level. Days to maturity showed significant positive correlation with plant height, leaf length, mother rhizome width and green rhizome weight at genotypic and phenotypic levels and with mother rhizomes per plant at genotypic level. It showed significant negative correlation with leaf width, dry rhizome weight recovery at genotypic and phenotypic levels and secondary fingers per rhizome at genotypic level.

Green rhizome yield per plant exhibited positive significant correlation with plant height, mother rhizomes per plant, secondary fingers per rhizome, rhizome length, rhizome width, green rhizome weight and days to maturity at genotypic and phenotypic levels. It exhibited significant positive association with tillers per plant and at phenotypic level. However, it recorded negative significant association with dry rhizome weight recovery at genotypic level and phenotypic levels.

## Conclusion

Improvement of green rhizome yield in turmeric can be achieved by establishing emphasis on all yield contributing characters which influence it directly or indirectly. The residual effect at genotypic level was 0.0223 which suggested that there might be few more component traits responsible to influence the green rhizome yield per plant than those studied. Overall picture of path analysis revealed that, for improving rhizome yield in turmeric, selection priority should be given for characters like plant height, tillers per plant, secondary fingers per rhizome, rhizome width, green rhizome weight, dry rhizome weight recovery and powder recovery due to their substantial positive effect on the main trait, *i.e* green rhizome yield.

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