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**D Srikanth**
Department of Vegetable Science, College of Horticulture, Venkataramannagudem, Dr. Y. S. R. H. U, Andhra Pradesh, India

**C Venkata Ramana**
Horticultural Research Station, Lamfarm, Guntur, Dr. Y. S. R. H. U., Venkataramannagudem, Andhra Pradesh, India

**G Kranthi Rekha**
Department of Vegetable Science, College of Horticulture, Venkataramannagudem, Dr. Y. S. R. H. U, Andhra Pradesh, India

**D Ratna Babu**
Department of Genetics and Plant Breeding, Agricultural College, Bapatla, Guntur, Andhra Pradesh, India

**K Umakrishna**
Department of Statistics, College of Horticulture, Venkataramannagudem, Dr. Y. S. R. H. U, Andhra Pradesh, India

**L Naram Naidu**
Department of Vegetable Science, College of Horticulture, Venkataramannagudem, Dr. Y. S. R. H. U, Andhra Pradesh, India

# Correlation studies for growth and yield attributing traits in ridge gourd (*Luffa acutangula* (L.) Roxb.)

## D Srikanth, C Venkata Ramana, G Kranthi Rekha, D Ratna Babu, K Umakrishna and L Naram Naidu

### Abstract
An experiment was conducted with 57 genotypes by studying 14 different traits in ridge gurd (*Luffa acutangula* (L.) Roxb.) to study the correlation of different traits on fruit yield. The experiment was conducted in a randomized block design with two replications at college of horticulture, venkataramannagudem. The overall analysis reveals that fruit yield was positively and significant correlated with days to first fruit harvest, number of fruits per vine, fruit diameter, fruit length, fruit flesh thickness and average fruit weight while selecting a good hybrids for enhancing the yield of ridge gourd.

**Keywords:** ridge gourd, correlation, fruit yield, breeding programmes

## Introduction
Ridge gourd (*Luffa acutangula* (L.) Roxb.) belongs to the family Cucurbitaceae and genus *Luffa*. Its chromosome number is 2n=2x=26. It is also called as angled gourd, angled loofah, Chinese okra, silky gourd and ribbed gourd (Muthaiah *et al*., 2017) [6]. Gourds are the important items in the human diet especially in India. The tender green or immature fruits are cooked as vegetable and used in preparations of chutney and curries. It is considered to be the old world species and is native of tropical Africa and South-East Asian region including India. Genotypic correlation coefficient provides a measure of genotypic association between the characters and reveals the characters that might be useful as an index for selection. The degree of association between independent and dependent variables was first suggested by Galton (1888) [1], its theory was developed by Pearson (1904) [9] and their mathematical utilization at phenotypic, genotypic and environmental levels was described by Searle (1961) [12]. The phenotypic correlated were normally of genetic and environmental interaction which provided information about the association between the two characters. Genotypic correlated provided a measure of genetic association between the characters and normally used in selection while, environmental as well as genetic architecture of a genotype plays a great role in achieving higher yield combined with better quality.

## Materials and Methods
The experiment was carried out at the College of Horticulture, Department of vegetable science, Dr. YSR Horticultural University, Venkataramannagudem. The experiment was conducted in Randomized Block Design having fifty seven genotypes in two replications. The allocation of treatments to the individual plots using random number in each replication. The analysis of variance was done as suggested by Panse and Sukhatme [8]. The correlation coefficients among all possible character combinations at phenotypic (rp) and genotypic (rg) level was estimated employing formula by Johnson *et al*. (1955) [4].

## Results and Discussion
Data were recorded on 14 traits *viz*. days to first appearance of male flower, days to first appearance of female flower, node number at which first male flower appear, node number at which first female flower appear, sex ratio, intermodal length, days to first fruit harvest, number of fruits per vine, fruit diameter, fruit length, fruit flesh thickness, average fruit weight, number of seeds per fruit, fruit yield per vine were subjected to analysis of variance to test the significance of difference among the genotypes. As correlation coefficients are the index of association between two variables; these have been worked out in all possible combinations and presented in (Table 1).

**Corresponding Author:**
**D Srikanth**
Department of Vegetable Science, College of Horticulture, Venkataramannagudem, Dr. Y. S. R. H. U, Andhra Pradesh, India

Days to first appearance of male and female flower had highly significant and positively associated with node number at which first male flower appear and days to first fruit harvest, fruit length respectively.

Node number at which first male and female flower appear had non-significant and positively associated with days to first fruit harvest, fruit diameter, fruit length and average fruit weight.

Sex ratio and days to first fruit harvest had non-significant and positively associated with fruit diameter, fruit flesh thickness and fruit diameter, fruit length, average fruit weight respectively. Internodal length had non-significant and positively associated with number of fruits per vine and number of seeds per fruit.

Number of fruits per vine and fruit diameter had non-significant and positively associated with number of seeds per fruit, fruit yield per vine and average fruit weight, fruit flesh thickness respectively.

Fruit length and fruit flesh thickness had highly significant and positively associated with average fruit weight and fruit yield per vine.

Average fruit weight had highly significant and positively associated with fruit yield per vine.

Fruit yield per vine had highly significant and positively associated with days to first fruit harvest, number of fruits per vine, fruit diameter, fruit length, fruit flesh thickness and average fruit weight. These results are in conformity with the findings of Prasanna *et al.,* (2002) [10], Hanumegowda *et al.,* (2011) [2], Narasannavar *et al.,* (2014) [7], Khatoon *et al.,* (2016) [5], Ramesh *et al*., (2018) [11] and Harshitha *et al*., (2019) [3] in ridge gourd.

**Table 1:** Correlation coefficients among growth, earliness and yield components in ridge gourd

|  | X1 | X2 | X3 | X4 | X5 | X6 | X7 | X8 | X9 | X10 | X11 | X12 | X13 | X14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X1 | 1 | 0.231 | 0.322* | 0.223 | -0.043 | 0.130 | -0.094 | 0.049 | -0.031 | 0.119 | 0.014 | 0.020 | 0.049 | -0.003 |
| X2 |  | 1 | 0.061 | -0.160 | -0.046 | 0.135 | 0.304* | 0.025 | -0.207 | 0.267* | -0.147 | -0.030 | 0.025 | -0.076 |
| X3 |  |  | 1 | 0.123 | 0.138 | -0.183 | 0.082 | -0.108 | 0.095 | 0.258 | -0.140 | 0.108 | -0.108 | 0.160 |
| X4 |  |  |  | 1 | -0.119 | -0.080 | 0.094 | -0.057 | 0.012 | 0.031 | -0.050 | 0.121 | -0.057 | 0.126 |
| X5 |  |  |  |  | 1 | -0.153 | -0.131 | -0.174 | 0.050 | -0.040 | 0.181 | -0.038 | -0.174 | 0.076 |
| X6 |  |  |  |  |  | 1 | -0.083 | 0.230 | -0.448** | -0.047 | -0.208 | -0.045 | 0.230 | -0.211 |
| X7 |  |  |  |  |  |  | 1 | -.100 | 0.145 | 0.090 | -0.186 | 0.016 | -0.100 | 0.059* |
| X8 |  |  |  |  |  |  |  | 1 | -0.181 | 0.146 | 0.040 | 0.124 | 1.000** | 0.466** |
| X9 |  |  |  |  |  |  |  |  | 1 | -0.032 | 0.159 | 0.165 | -0.181 | 0.236* |
| X10 |  |  |  |  |  |  |  |  |  | 1 | -0.542** | 0.658** | 0.146 | 0.565** |
| X11 |  |  |  |  |  |  |  |  |  |  | 1 | 0.336* | 0.040 | 0.378** |
| X12 |  |  |  |  |  |  |  |  |  |  |  | 1 | 0.124 | 0.735** |
| X13 |  |  |  |  |  |  |  |  |  |  |  |  | 1 | -0.466** |
| X14 |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |

X1= Days to first appearance of male flower, X2= Days to first appearance of female flower, X3= Node number at which first male flower appear, X4= Node number at which first female flower appear, X5= Sex ratio, X6= Internodal length, X7= Days to first fruit harvest, X8= Number of fruits per vine, X9= Fruit diameter, X10= Fruit length, X11= Fruit flesh thickness, X12= Average fruit weight, X13= Number of seeds per fruit, X14= Fruit yield per vine.

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