CORRELATION STUDIES IN DIFFERENT CULINARY CULTIVARS OF BANANA

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Abstract

An experiment was conducted at Horticultural Research Station, Kovvur to study the correlation between yield and growth characters. Over twelve characters were studied. Yield was observed highly significant and positively correlated with plant girth at shooting stage, leaf area at shooting, bunch weight, hands per bunch, fruits in 2nd hand and total fruits per bunch, whereas yield showed highly significant negative correlation with finger length and fruit girth.

Key words: Banana, fruit length, leaf area, positive correlation, culinary cultivars.

Introduction

Banana is one of the most important fruit crops majorly grown in India. It is considered as “poor man’s apple”. In India, major producing states are Tamil Nadu, Maharashtra, Karnataka, Gujarat, Andhra Pradesh, Assam and Madhya Pradesh. Andhra Pradesh being one of the important states in India growing banana harbors a wide diversity of crop in both culinary and dessert cultivars. Andhra Pradesh, farmers are cultivating Kovvur Bontha. Though, Kovvur Bontha is high yielder but of late, it has become susceptible to soil borne diseases like Fusarium wilt and as such yield is reduced. In Andhra Pradesh, the farmers are cultivating local cultivars, which are low yielders and the productivity of banana is also low i.e. 35 t/ha as against 65 t/ha in Maharashtra. Therefore, to improve productivity, a varietal trial in banana with culinary cultivars is proposed. Information on correlation between yield and yield attributing characters and the way each component character affects the yield is essential, when selection is made for improvement of yield.

Materials and Methods

The investigation on “Correlation studies in culinary cultivars of banana” was carried out during 2013-14 at Horticultural Research Station, Kovvur (West Godavari District), Andhra Pradesh, India; with eight culinary banana cultivars viz., Bangrier, FHIA-03, Kothia, Burro Cemsa, Booditha Bontha Batheesa, Saba, Cuba and Kovvur Bontha. The experiment was conducted in randomized block design with three replications. The suckers were planted at 2 × 2 m and biometrical observations on vegetative and yield attributing characters were recorded and correlation studies were determined for vegetative and yield attributing characters. The calculated value of ‘r’ value with n-1 degrees of freedom at 5% and 1% level of significance, where, n refers to the number of pairs of observations.

Results and Discussion

Yield was observed highly significant and positively correlated with plant girth at shooting stage (0.8564**), leaf area at shooting (0.6634**), bunch weight (1.0000**), hands per bunch (0.9638**), fruits in 2nd hand (0.9391**) and total fruits per bunch (0.8992**). Whereas, yield showed highly significant negative correlation with finger length (-0.7408**) and fruit girth (-0.7659**) (table 1).

Plant height at shooting registered significant positive correlation with days to shooting (0.3988*), highly significant positive correlation with fruit length (0.5694**) and significant negative correlation was observed with total fruits per bunch (-0.3689*) (table 1).

Pseudostem girth was observed highly significant positive correlation with number of leaves at shooting (0.5351**), leaf area at shooting (0.8035**), days to shooting (0.5395**), bunch weight (0.8564**), hands per bunch (0.7541**), fingers per 2nd hand (0.9015**) and total fruits per bunch (0.8196**). Whereas pseudostem

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Table 1: Correlation studies in growth and yield characters of banana.

<table>
<thead>
<tr>
<th>Characters</th>
<th>PHS</th>
<th>PCS</th>
<th>NOL</th>
<th>LAS</th>
<th>DTS</th>
<th>BW</th>
<th>HB</th>
<th>FH</th>
<th>FL</th>
<th>FG</th>
<th>TFB</th>
<th>Y</th>
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<td>0.0018</td>
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<td>0.2699</td>
<td>-0.1201</td>
<td>0.005</td>
<td>0.360</td>
<td>0.005</td>
<td>0.407</td>
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<td>0.8035**</td>
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<td>0.8531**</td>
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<td>0.1896**</td>
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<tr>
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<td>0.5364**</td>
<td>1.000</td>
<td>0.9638**</td>
<td>0.6634**</td>
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<td>0.5364**</td>
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<tr>
<td>TFB</td>
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<td>0.5364**</td>
<td>0.5364**</td>
<td>1.000</td>
</tr>
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</table>

Significant levels: 0.05, 0.01

- Plant height at shooting (PHS)
- Pseudostem girth at shooting (PCS)
- Number of leaves (NOL)
- Leaf area at shooting (LAS)
- Days to shooting (DTS)
- Bunch weight (BW)
- Hands per bunch (HB)
- Fingers in 2nd hand (FH)
- Finger length (FL)
- Finger girth (FG)
- Total fruits per bunch (TFB)
- Yield (Y)

Significant correlation r: 0.363, 0.507

Number of leaves at shooting showed highly significant and positive correlation with leaf area at shooting (0.5646**) and days to shooting (0.7987**). Whereas significant positive correlation was observed between number of leaves at shooting and fingers per 2nd hand (0.5052*) (table 1).

Leaf area at shooting was registered highly significant and positive correlation with days to shooting (0.5488**), with bunch weight (0.6634**), hands per bunch (0.6290**), fruits per 2nd hand (0.7025**), total fruits per bunch (0.6751**). Whereas highly significant negative correlation was observed with fruit girth (-0.5760**) and significant negative correlation with fruit length (-0.4903*) (table 1).

Days to shooting showed significant and positive correlation with fingers per 2nd hands (0.4599*) (table 1).

Bunch weight registered highly significant positive correlation with hands per bunch (0.9638**), fingers in 2nd hand (0.9391**) and total fruits per bunch (0.8992**). Whereas highly significant negative correlation was observed with fruit length (-0.7408**) and fruit girth (-0.7659**) (table 1).

Hands per bunch showed highly significant positive correlation with fingers per 2nd hand (0.9359**) and total fruits per bunch (0.9229**). Whereas, highly significant negative correlation was observed with fruit girth (-0.8464**) and fruit length (-0.7616**) (table 1).

Fingers per 2nd hand recorded highly significant positive correlation with total fruits per bunch (0.9529**). Whereas it showed highly significant negative correlation with fruit length (-0.7872**) and fruit girth (-0.7720**) (table 1).

Fruit length recorded highly significant and positively correlated with fruit girth (0.9042**) and highly significant negative correlation with total fruits per bunch (-0.8955**) (table 1).

Fruit girth showed highly significant negative correlation with total fruits per bunch (-0.9113**) (table 1).

In any breeding programme improving yield is one of the major objectives, but yield is a complex character and is being influenced by number of components, hence direct selection for yield is not effective. The characters which are less influenced by environment could be useful for improving fruit yield, if they are correlated with yield. It has been generally accepted that the correlation...
between different characters represent coordination of physiological process, which is often achieved through gene linkage (Mather and Jinks, 1971). While formulating breeding programme, knowledge on the strength and type of such association between characters is very important prerequisite (Breese and Haywards, 1972) from this it would be possible to bring about genetic up gradation in one character by selection of the other.

Plant height at shooting registered significant positive correlation with days to shooting, highly significant positive correlation with fruit length. Pseudostem girth was observed highly significant positive correlation with number of leaves at shooting, leaf area at shooting, days to shooting, bunch weight, hands per bunch, fingers per 2nd hand and total fruits per bunch. Number of leaves at shooting showed highly significant and positive correlation with leaf area at shooting and days to shooting. Whereas significant positive correlation was observed between number of leaves at shooting and fingers per 2nd hand.

Leaf area at shooting was registered highly significant and positive correlation with days to shooting, with bunch weight, hands per bunch, fruits per 2nd hand, and total fruits per bunch. Bunch weight registered highly significant positive correlation with hands per bunch, fingers in 2nd hand, and total fruits per bunch.

Bunch weight, hands per bunch, total fruits per bunch and fingers per 2nd hand and showed highly significant positive correlation with yield. Therefore, improvement of these characters will improve yield per plant. In the present study there is a negative correlation was observed by fruit length and fruit girth with yield this might be due to variation in number of fruits per bunch. Fruit length and girth may be high but if number of fingers in bunch is less it shows negative correlation. This study confirmed the previous studies that total number of hands, number of fingers, bunch weight and fingers in 2nd hand are the major contribution to yield.

Similarly, the correlation studies in various banana cultivars were also reported by Nayar et al. (1980), Vijayaraghavakumar et al. (1984), Kurian et al. (1985) and Susamma et al. (1992), Shaibu et al. (2012).

**References**


