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Correlation Studies Among Floral and Yield Characteristics in Coconut Variety Dwarf Green*

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ABSTRACT

Thirtyone correlation coefficients were worked out between floral and yield traits in coconut variety 'Dwarf Green'. The nut yield was found to be significantly and positively correlated with number of spadices and duration of female phase, whereas number of leaves produced and length of spadix exhibited significant positive correlation with number of spadices. It is therefore, suggested that number of spadices and duration of female phase should be considered as selection criteria for nut yield improvement in coconut variety 'Dwarf Green'.

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INTRODUCTION

Coconut (*Cocos nucifera* L.) is a highly cross pollinated crop, which results in a greater variation in its yield potential. Possibly desirable variation can be resorted by upgrading the genetic make up for better yield, which may be achieved through hybridization as well as selection. In the recent years, there has been a good progress in coconut improvement by exploiting the genetic potential of Tall x Dwarf and Dwarf x Tall hybrids. A knowledge of the associations among floral vegetative characters and yield of nuts is a prerequisite for any selection programme. A study was, therefore, initiated on coconut variety 'Dwarf Green' to estimate the extent of correlations between different quantitative characters and yield.

MATERIALS AND METHODS

The experiment was conducted at the Plantations Crops Research Station, Gujarat Agricultural University, Mahuva. Thirty palms of 'Dwarf Green' cultivar of coconut were randomly selected out of 192 palms during 1984-85. All these palms had uniform growth and age (10 years). Detailed observations were recorded on nineteen floral characters, vegetative characters and yield on individual palm. These characters were (i) Number of leaves produced, (ii) Interval between successive leave produced, (iii) Number of spadices produced, (iv) Interval between successive spadices produced, (v) Number of open spadices, (vi) days to opening of spadix i.e. interval between emergence to opening of spadix, (vii) Inter between leaf and spadix produced, (viii) length of spadix, (ix) duration of female phase, (x) duration of male phase, (xi) Number of female flowers, (xii) number of female flowers having spiklets, (xiii) number of female flowers per spadix, (xiv) total fruit drop, (xv) fruit setting percentage, (xvi) number of spikelets per spadix (xvii) length of spiklets (xviii) number of spikelets bearing female flowers and (xix) number of nuts per palms. Thirtyone correlation coefficients were worked out between floral/vegetative and yield

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characters as per standard statistical procedures (Panse and Sukhatme, 1961).

RESULTS AND DISCUSSION

Thirtyone correlation coefficients were workedout between floral and yield characteristics as well as among themselves to study the nature and extent of associations so as to findout a suitable selection criterion in coconut. Such type of studies are meagre in the literature (Nair and Satyabalan, 1968; Satyabalan *et al.*, 1972; Satyabalan and Mathew, 1984).

In the present studies, nut yield was found to be significantly and positively correlated with number of spadix produced (+0.400), and duration of female phase (+0.363). However, a significant negative correlation (-0.498) was apparent between yield and interval between leaf and spadix produced. The number of spadices exhibited a significant positive correlation with number of leaves produced (+0.503) and length of spadix (+0.476) while it had significant negative correlation with interval between spadix produced (-0.776). The number of leaves produced showed significant negative correlation with total periodical fruit drop. Number of female flowers per spadix had significant positive correlation with length of spadix (+0.641), number of open spadices (+0.586), spikelet bearing female flowers (+0.770). This character also had a weak positive correlation with nut yield (+0.289). Number of open spadices showed a significant positive association with fruitset (+0.546). Number of spikelets had a significant positive correlation with average length of spikelets (+0.538). Rest of the associations between different pairs of traits were statistically not significant.

The study, therefore, revealed that number of spadix and duration of female phase were important yield components in coconut variety 'Dwarf Green' while number of leaves produced and length of spadix had significant positive association with yield component i.e. number of spadix. Therefore, these characters should be considered as selection criterion for yield improvement in coconut variety 'Dwarf Green'.

TABLE 1

Correlations coefficients between pair of characters.

Sr. No.	*Characters*	*Correlation Coefficients*
1.	Number of leaves produced x Number of spadix produced	+ 0.570**
2.	Number of leaves produced x Total periodical fruit drop	0.470**
3.	Number of leaves produced x Number of open spadices.	+ 0.503**
4.	Number of leaves produced x Yield.	- 0.205
5.	Number of spadix produced x Length of spadix.	+ 0.476**

1	2	3
6.	Number of spadix produced x Interval between spadix produced	0.776**
7.	Number of spadix produced x Yield.	+ 0.400*
8.	Days to opening of spadix x Yield.	- 0.219
9.	Length of spadix x No. of female flowers/spadix.	+ 0.641**
10.	Length of spadix x Yield.	+ 0.275
11.	Duration of female phase x Yield.	+ 0.363*
12.	Duration of male phase x Yield.	+ 0.001
13.	No. of female flowers x Total periodical fruit drop.	-0.098
14.	Number of female flowers x Fruit set (%)	+ 0.124
15.	No. of female flowers x No. of open spadices	+ .586**
16.	No. of female flowers x Spiklets bearing female flowers.	+ 0.770**
17.	No. of female flowers x Yield.	+ 0.289
18.	Total periodical fruit drop x Yield.	- 0.016
19.	Fruit set (%) x Yield.	- 0.020
20.	No. of open spadices x Fruit set (%)	+ 0.546**
21.	No. of open spadices x Yield.	+ 0.319

1	2	3
22.	No. of spikeletes x Average length of spikelets	+ 0.538**
23.	No. of spikelets x Spikelets bearing female flowers	-0.869**
24.	No. of spikelets x Yield.	+ 0.315
25.	No. of female flowers x Yield.	+ 0.242
26.	Average length of spikelets x Yield.	+ 0.318
27.	Spikelets bearing female flowers x Yield	+ 0.151
28.	Percentage of female flowers/spadix x Yield.	- 0.159
29.	Interval between successive leave produced x Yield	+ 0.169
30.	Interval between successive spadix produced x Yield	- 0.333
31.	Interval between leaf and spadix produced x Yield	- 0.498**

* = Significant at P= 0.05.
** = Significant at P = 0.01.

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