POSTER PRESENTATIONS

YIELD AND NUT CHARACTERISTICS OF OPEN—POLLINATED PROGENY OF WEST COAST TALL AND ITS HYBRIDS WITH CHOWGHAT DWARF ORANGE AND GANGABONDAM

G. VIJAYAKUMAR* and K. SATYABALAN
Central Plantation Crops Research Institute, Kasaragod-670 124, Kerala.

ABSTRACT

A comparative study was made of the performance of open-pollinated progency of West Coast Tall (WCT), and its hybrids with Chowghat Dwarf Orange (CDO) and Gangabondam (GB) planted in laterite soil and maintained under rainfed conditions with the usual recommended dose of fertilizers. The superiority of the hybrids over WCT, and among the hybrids, the superiority of CDO×WCT over the reciprocal hybrids WCT×CDO and WCT×GB in yield of nuts, copra and oil out-turn was observed. The study has also shown that CDO×WCT hybrids will be more suitable and will have to be preferred to the other two hybrids and the local WCT to increase coconut production under the laterite soil conditions in the country.

INTRODUCTION

In coconut, Tall×Dwarf and Dwarf×Tall hybrids are reported to be promising in the countries where coconut breeding has been undertaken for increasing coconut production. In India, besides Chowghat Dwarf, Gangabondam, another dwarf type from Andhra Pradesh, has also been used as pollen parent for T×D hybrid production. Earlier studies have shown that among the three Dwarf types namely, Chowghat Dwarf Orange (CDO), Chowghat Dwarf Green (CDG), and Gangabondam (GB), CDO and GB are preferable as male parents for the production of economic hybrids with West Coast Tall (Satyabalan *et al.*, 1968, 1970). In this paper we report the results of a comparative study made on the performance of WCT×CDO, CDO×WCT, and WCT×GB hybrids, and open-pollinated progenies of selected WCT the local cultivar, planted in laterite soil. As the dwarfs are not economic types, and hence not recommended for large-scale planting, the hybrids are compared with WCT, the local Tall cultivar.

* Deceased 17-7-1982

Materials and Methods

Open-pollinated seedlings of high yielding WCT plams and hybrid seedlings of WCT×CDO, CDO×WCT and WCT×GB were planted in 1966 in a block of laterite soil. The number of seedlings in the different groups varied from 10 in CDO×WCT to 19 in WCT. They were maintained under rainfed conditions with normal dosage of fertilizers (0.5 kg N+0.32 kg P+1.2 kg K). Observations were recorded on yield of nuts, yield attributes and nut and copra characters of these four groups of seedlings, from the time of their initial bearing.

Results and Discussion

The yield attributes like the number of inflorescences produced, the number of female flowers, setting percentage and yield of nuts of the four groups of seedlings during the year 1976–79 are presented in Table 1. The mean cumulative yield from the time of initial flowering upto 1979 is also given in the Table. The data indicate that there is not much difference in the mean number of inflorescences produced, but the hybrids have produced significantly more number of female flowers than the open-pollinated progenies of WCT.

Since the hybrids came into bearing and attained stabilized yields earlier than WCT, the cumulative yield from the time of initial flowering upto 1979 was more in the hybrids than in WCT. John and Venkatanarayana (1943) had reported manifestation of hybrid vigour for early flowering in Tall×Dwarf hybrids, larger number of female flowers and higher number of nuts, besides other vegetative growth characters. In the present study, hybrid vigour was observed for early flowering, larger number of female flowers and higher yield of nuts when compared to WCT. Data presented in Table-2 indicate a decrease in the weight of fruit (unhusked nut), but the weight of husked nut has increased, indicating a reduction in the husk content of the fruit, and an increase in the size of the husked nut in all the hybrids. The husk content in the fruit of WCT is 47 per cent of the weight of fruit, whereas it is 38 per cent in CDO×WCT, 40 per cent in WCT×CDO, and 42 per cent in WCT×G. Satyabalan *et al.* (1970) have reported that the decrease in weight of fruit was due to a decrease in husk content, and the increase

Table 1. Yield and yield attributes of of West Coast Tall and the hybrids (planted in 1966)

Material	No. of inflorescences	No. of female flowers (mean of 1976–79)	No. of nuts	Setting percentage	Mean cumulative yield from the time of flowering up to 1979	No. of palms
WCT	9.8 (6.8 to 12.3)	193.5 (103.8 to 269.8)	57.0 (33.0 to 92.3)	29.4	330.0 (158 to 586)	19
WCT×CDO	9.2 (7.3 to 12.3)	228.8 (103.8 to 344.5)	61.4 (33.5 to 105.0)	26.6	421.5 (177 to 734)	12
WCT×GB	9.8 (7.5 to 12.3)	228.3 (157.5 to 322.8)	62.3 (32.5 to 88.0)	27.2	370.8 (145 to 685)	11
CDO×WCT	9.3 (5.8 to 12.0)	232.7 (168.8 to 276.8)	90 (65.0 to 107.5)	38.7	552.5 (399 to 762)	10

Figures in parentheses indicate the range

Table 2. Nut and copra characters of West Coast Tall and the hybrids

Material	Fruit weight	Husked nut (g) weight	% husked nut in fruit	Kernel weight (g)	% Kernel in husked nut	Shell weight (g)	% shell in husked nut	Weight of water (g)	% nut water in husked nut	Copra (g)	% copra in husked nut	Oil content (%)
WCT	1062.7	561.1	52.7	305.7	54.5	147.3	26.2	108.1	19.2	160.6	28.7	69.3
WCT×CDO	940.9	568.6	60.4	320.2	56.2	149.6	26.3	98.8	17.4	186.5	32.9	68.8
WCT×GB	1021.3	589.8	57.7	314.7	53.4	145.6	24.7	129.5	22.0	181.3	30.7	68.7
CDO×WCT	959.4	596.9	62.2	312.8	52.4	153.4	25.6	130.7	21.9	186.3	31.2	68.5

in the weight of husked nut was the result of an increase in the size of husked nut in WCT×CDO and WCT×GB hybrids.

The weight of husked nut is the total of the weights of the kernel, shell and nut water. In kernel weight, a positive increase over the value of WCT has been recorded in all the three hybrids. In shell weight, CDO×WCT and WCT×CDO have recorded positive increase over that of WCT, whereas in WCT×GB there was a decrease in shell weight. In nut water weight, an increase was observed in CDO×WCT and WCT×GB hybrids only, whereas in WCT×CDO there was a decrease over the value of WCT. In weight of copra per nut, an increase was observed in all the hybrids, the increase being 20.7 g, 25.7 g and 25.9 g in WCT×GB, CDO×WCT and WCT×CDO respectively over that of WCT. Thus, there was a significant increase in the weight of husked nut, kernel weight and copra weight in the nuts of all the three hybrids, when compared to those of WCT. In oil content, there was not much difference among the hybrids and between the hybrids and WCT.

Data on mean annual yield of nuts per palm, average annual copra and oil out-turn are presented in Table 3. In mean yield of nuts, all the three hybrids were superior to WCT and among the hybrids CDO×WCT was superior to the other two hybrids, In copra and oil out-turn also, the hybrids were superior to WCT and among the hybrids, CDO×WCT is superior to the other two hybrids.

Table 3. Mean annual yield of nuts, copra, and oil out-turn

Material	Mean annual yield of nuts (1976–79)	Average annual copra out-turn (kg)	Average oil out-turn (kg)
WCT	57.0	9.2	5.7
WCT×CDO	61.4	11.4	7.9
WCT×GB	62.3	11.2	7.7
CDO×WCT	90.0	16.8	11.4

As all the seedlings are planted in laterite soil, and maintained under rainfed conditions with the usual recommended dose of fertilizers, the superior performance of CDO × WCT hybrids indicates that they can perform better under such conditions than the other two hybrids and WCT. Hence, for increasing coconut production under laterite soil conditions, CDO × WCT hybrids will be more suitable than the other two hybrids and the local WCT.

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