

VARIABILITY IN SOME EXOTIC ACCESSIONS OF COCOA IN INDIA

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Cocoa has been found to be a suitable mixed crop in coconut and arecanut gardens (Bhat and Bavappa, 1972). Presently it is cultivated in about 20,000 ha mainly in Kerala and Karnataka States, though potential areas for cultivation in several other States, especially in the North-Eastern region have been identified. With the increasing demand for cocoa products, production could be raised three to four times its present level.

Though cocoa was introduced into India in the early nineteen sixties, large scale cultivation has started only during late nineteen seventies. With the expansion of cocoa cultivation in the country, demand for seeds of high yielding varieties of cocoa is increasing. To meet this demand active programmes for varietal improvement are in progress. One of the important constraints in the varietal improvement of cocoa is the lack of genetic variability in the available collection in the country. Therefore efforts are being made to procure some of the important accessions from abroad.

The most valuable collection of cocoa germplasm in the country is the cocoa accessions introduced from Kew Garden, England and planted at Lalbagh gardens, Bangalore. These collections have been utilised at this Station for production of hybrids which are currently under multilocational yield tests. This report is a preliminary study of these accessions with regards to their variability for various plant and pod characteristics.

MATERIALS AND METHODS

The accessions reported in this study are four Imperial College (Trinidad) selections viz., ICSI, ICS6, ICS89 and ICS95 and five upper Amazon parents viz., IMC67, Na31, Na33, Sca6 and Sca12. These collections were planted as clones during 1968 at a spacing of 3m x 3m at Lalbagh gardens, Bangalore. Number of plants in this original collection at Lalbagh were limited at present and hence this study was based on observations on only two to four plants available in each accession. Growth characteristics such as plant height, canopy spread and stem girth were determined. Pod characteristics studied were pod size and shape, number and weight of pods, number of beans per pod, colour and dry bean weight. These observations were taken during March, 1987. Stem girth was calculated at 30 cm above the ground level. Plant height was determined by measuring from ground level to the maximum height of the plant. Canopy spread was measured in two opposite directions and average values were taken. Pod yield was determined for the year 1986-'87 (July to June). Bean yield and pod values (number of pods required to produce one kg dry beans) were estimated from yield attributes viz., no. of pods/trees/year, no. of beans/pod and dry bean weight.

RESULTS AND DISCUSSION

Details regarding the various plant and pod characteristics are given in Table 1. The accessions differed widely for all the characteristics studied.

Table—Performance of Cocos germplasm collection at Lalbagh, Bangalore

S.No. Accessions	Plant height (mts.)	Canopy spread (mean mts.)	Wt. of spode (kg.)	Pod shape	Pod colour (immature)	Pod surface	Stem girth (cm)	No. of pods/plant/year	No. of beans/pod	Single bean/wt. (gm.)	Bean yield (kg.)	Pod value
1. ICS 1	4.7	5.5	2.5	Elongated	Red	Smooth	61.0	71.3	36.8	1.3	3.5	20.3
2. IMC 67	3.1	3.3	1.7	"	Green	Rough	40.0	30.0	36.3	2.0	2.1	14.1
3. ICS 89	3.8	4.3	2.4	Oval	Green	Smooth	45.0	34.3	32.2	1.1	1.3	27.4
4. ICS 6	4.3	4.7	1.6	"	Green	Inter-mediate	46.0	69.0	35.8	0.9	2.2	30.7
5. ICS 95	2.1	3.4	1.9	Elongated	Red	Rough	50.0	24.0	34.5	1.1	0.9	26.4
6. Sea 6	2.0	2.8	1.7	"	Green	Smooth	25.0	8.7	33.8	0.7	0.2	41.7
7. Sea 12	2.0	2.1	1.5	Oval	Green	Smooth	29.0	6.0	41.0	0.7	0.2	35.4
8. Na 31	4.0	5.2	2.2	"	Green	Smooth	35.0	53.5	39.0	0.8	1.7	30.9
9. Na 33	2.3	3.0	2.0	"	Green	Smooth	40.0	31.3	43.0	0.8	1.0	28.7

It can be seen that ICS 1 followed by ICS 6 had the maximum bean yield, no. of pods, plant height and canopy spread indicating that these two accessions are the most promising and the best adapted among the accessions studied. Due to the promising yield attributes of ICS 1 and ICS 6, these have been introduced in various countries for use as parents in breeding programmes (Wood and Lee, 1985). It can be seen that accessions studied had distinct pod colour, and shape (Table). IMC 67 had the maximum single bean (dry) weight (2.0 gm) and lowest pod value (14.1). Sca 6 and Sca 12 are the least adapted in terms of plant height, canopy spread, stem girth as well as bean yield. However, these accessions are known to be resistant to vascular streak dieback disease and have good general combining abilities (Ang and Shepherd, 1978).

The value of these accessions assume considerable importance to plant breeders especially in view of the fact that hybrids between ICS clones and the upper Amazon parents are known to be high yielding in several cocoa growing countries, (Chalmers, 1972 and Lee, 1978). Fourteen hybrid combinations involving these upper Amazon parents and ICS clones are currently under replicated yield trial at this Institute.

SUMMARY

Variability of nine exotic accessions of cocoa for various plant and pod characteristics are included in this study. ICS-1 followed by ICS-6 had the maximum pod and bean yield per tree and growth characteristics such as plant height and canopy spread indicating that they are the best adapted among the accessions studied. Sca 6 and Sca 12 were the least adapted in terms of growth characteristics and bean yield. They also had the poorest pod values and single (dry) bean weight. IMC 67 produced beans with maximum weight and had the best pod value. The studies indicated high variability among these accessions for various plant and pod characteristics.

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LEAF BLIGHT IN ARECANUT

Areca palm (*Areca catechu*) is affected by diseases, chiefly leaf blight caused by *Phyllosticta arecae*. It is now a major threat in arecanut growing tracts of North Kanara district of Karnataka.

The disease starts as minute brown specks on the lower leaves. These slowly enlarge with a dirty ash brown centre surrounded by a light yellow margin.

Adjacent spots coalesce to form bigger irregular patches covering the surface of leaflets either partially or wholly. Black pycnidia can be seen on the ash brown spotted areas.

For effective control spraying 0.2 per cent Mancozeb (Dithane M-45, 75 per cent W.P.) or 0.05 per cent Carbendazim (Bavistin, 50 per cent W.P.) is suggested.

—The Hindu.