

EVALUATION OF *CINNAMOMUM CASSIA* BLUME FOR YIELD AND QUALITY

**B. Krishnamoorthy, J. Rema, N. K. Leela, P. A. Mathew,
T. John Zachariah, Minoo Divakaran and K. Jayarajan**
Indian Institute of Spices Research, Calicut- 673 012 (Kerala).

Abstract : Ten accessions of cassia were evaluated for morphological, yield and quality parameters at Indian Institute of Spices Research (IISR), Calicut, Kerala. Dry weight/plant ranged from 82.5 g to 475 g; bark oil: 3.0% to 5.0%; leaf oil: 0.09% to 3.09%; bark oleoresin: 6.77% to 10.70%. Among the accessions A-2 and C-5 were found to be high yielders with about 750 kg dry bark/ha. The quality attributes of C-5 was also superior to other accessions studied.

INTRODUCTION

Chinese cassia (*Cinnamomum cassia* Blume) belonging to the family Lauraceae is commercially grown for its dried aromatic bark (cassia) which is used as a spice. Besides cassia, cassia oil, cassia oleoresin and cassia buds are the important products of commerce obtained from this high valued evergreen tree species. The bark from the tree is extracted from the stem/shoots once in 4 to 5 years and shade dried to obtain Cassia. Bark and leaf oils have cinnamaldehyde as their major constituent. Indian consumers prefer Cassia bark over Cinnamon bark and hence identification of elite types in cassia would be beneficial for Indian markets. Chinese cassia is strongly aromatic in all its parts; and due to its delicate flavour, it is widely used in food, pharmaceutical, soap and cosmetic industries. Chinese cassia, a native of China, is mainly cultivated in China. In India, no large scale cultivation of this tree exists at present. A very few trees of cassia were located in a private estate in Anamalai Hills of Tamil Nadu by the first author and they were collected and conserved at IISR Experimental Farm, Peruvannamuzhi. The objective of the study is to evaluate the different accessions for morphological, yield and quality attributes.

MATERIALS AND METHODS

Ten accessions viz., A-2, B-1, B-2, B-4, B-6, C-4, C-5, D-2, D-6 and D-7 were propagated by soft wood

cuttings and were planted in the field at 2.5 m x 2.5 m spacing during July 1999 at IISR Experimental Farm, Chelavoor in a Completely Randomized Block Design with five replications and with one plant in each replication for evaluation. The package of practices recommended for Cinnamon (*Cinnamomum verum*), a closely related spice crop, was followed for Chinese cassia as there is no separate recommendation for this crop. First coppicing and bark extraction was done during September–October, 2004, after recording morphological and yield attributing characters viz., tree height, girth at 50 cm above ground level and number of harvestable branches/tree. The trees were coppiced at 50 cm above ground level. The fallen shoots were immediately taken to peeling shed. These shoots were gently scrapped with a knife; polished with a brass rod and ringed at 1 m interval for bark extraction. Longitudinal slits were made and bark was peeled off with the help of specifically designed knives. The extracted bark was shade dried for 4–6 hours and then sun dried for a day. Consequently they were shade dried for 3–4 days during which they curled and formed quills. Bark oil, leaf oil and bark oleoresin was estimated for each accession, based on standard procedures (Anon., 1968). The number of plants harvested per accession varied from 2-5 at the end of fifth year, hence mean, range and CV were calculated. Table -1 gives the data on various characters recorded for the accessions.

Contribution No. 359 of IISR, Calicut.

Table -1: Morphological, yield and quality characters of *C. cassia* accessions

S.No.	Acc. No	Height (m)	Girth (cm) at 20"	No. of harvestable branches	Fresh wt./plant (g)	Dry wt.(g)	Bark oleoresin (%)	Bark oil (%)	Leaf oil (%)
1.	A-2	4.04	20.00	5.50	1077.5	411.0	8.13	4.1	0.22
2.	B-1	2.67	11.50	1.50	207.5	82.5	10.28	4.0	0.33
3.	B-2	3.86	16.67	3.70	703.3	347.7	7.75	3.3	0.34
4.	B-4	2.25	12.00	1.00	385.0	151.0	6.70	3.5	0.39
5.	B-6	4.85	19.00	5.00	780.0	250.0	7.90	3.5	0.38
6.	C-4	4.01	18.80	4.20	802.0	351.0	8.43	3.0	0.30
7.	C-5	4.45	22.00	9.00	1075.0	475.0	10.70	5.0	0.09
8.	D-2	3.40	16.00	5.00	725.0	245.0	7.80	3.5	0.19
9.	D-6	3.31	15.70	2.50	660.0	240.0	8.10	3.0	0.25
10.	D-7	2.44	13.50	2.67	393.3	178.3	6.77	3.3	0.18
Mean		3.6	16.8	4.0	709.8	291.2	8.18	3.52	0.26
SE		0.22	0.92	0.50	88.24	37.20	0.32	0.23	0.03
Range		3.59	17.0	8.0	1680.0	625.0	5.7	4.0	0.43
CV%		29.92	26.89	61.65	60.90	62.57	19.43	31.75	48.76

RESULTS AND DISCUSSION

The number of harvestable shoots ranged from 1 to 9 per tree and dry weight of bark ranged from 82.5 g to 475 g/tree with C-5 recording the highest values in both the characters. Height of the tree and girth of the shoot harvested was also maximum for C-5. Height of the tree, girth of the stem, number of harvestable shoots and dry recovery are the factors contributing to higher yield. Fresh weight was highest for accessions A-2 (1077.5 g) and C-5 (1075.0 g) and their dry recovery was 38.14% and 44.19% respectively. The dry recovery ranged from 32.1% to 49.7% for various accessions studied. Bark oil of ten accessions ranged from 3% to 5% in the present study while it varied from 1.20% to 4.90% in the third year in a study on the evaluation of 25 accessions of cassia for quality at IISR Experimental Farm, Peruvannamuzhi (Krishnamoorthy *et al.*, 1999). Similarly bark oleoresin in the present study ranged from 6.70% to 10.70% while in the earlier study it was

6.0%- 9.7% for these accessions. Leaf oil in the present study ranged from 0.09–0.39% while in the earlier study it ranged from 0.04 % to 1.60%. The difference in quality parameters may be due to the age of tree at which it was coppiced. Older the tree is, higher the bark oil percentage. Among the accessions, A-2 and C-5 recorded comparatively higher yield (app. 750 kg dry bark/ha). Besides high bark yield accession C-5 had excellent quality attributes also (Table-1). The next harvesting of these trees would be done after 4 to 5 years for bark extraction after attaining sufficient growth.

REFERENCES

- Anon. (1968). *Official Analytical Methods*. 2nd Edition. American Spice Trade Association, New York.
- Krishnamoorthy, B., Zachariah, T. J., Rema, J. and Mathew, P. A. (1999). Evaluation of selected Chinese cassia (*Cinnamomum cassia* Blume) accessions for chemical quality. *J. Spices and Aromatic Crops*, 8(2): 193–195.