

COLLECTION AND CONSERVATION OF PIPER NIGRUM AND RELATED SPECIES FROM KARNATAKA FORESTS

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The genus *Piper* is confined to humid tropical and sub tropical regions of the world receiving adequate rainfall. The hot and humid region of the slopes of Western Ghats is supposed to be the centre of distribution of the genus. Though the genus *Piper* consists of about 700—2000 species (Hutchinson, 1959, Usher, 1974), only 86 species have been reported so far from India (cf: Index Kewensis 1893-1963). Hooker (1890) described 45 species of *Piper* under five sections. About 14 species were described by Gamble (1957) from the Presidency of old Madras. According to Gamble, the seven species of *Piper* occurring in Karnataka are *P. argyrophyllum*, *P. brachystachyum*, *P. hookeri*, *P. hymenophyllum*, *P. longum*, *P. nigrum* and *P. trichostachyon*.

Berries from a number of wild species are being used as substitute or adulterants for the cultivated *Piper nigrum* and it is not improbable that some of them may prove equal if not better, to the existing cultivated type (Anonymous, 1969). In spite of the high genetic variability reported, crop improvement work in pepper so far has been confined to comparative yield trials of the available cultivars. High polyploid combined with heterozygosity and seed propagation as well as vegetative propagation, have helped to accumulate tremendous genetic variability in this species. However, these variabilities are yet to be exploited for breeding programme. One of the main diseases of pepper is the 'quick wilt' caused by *Phytophthora* for which effective control measures are not available. The only alternative seems to be, to collect extreme variability of *P. nigrum* and other species available in the forests and screen them against *Phytophthora* to locate tolerance/resistance and utilize them in breeding programme.

So far no systematic attempt has been made to collect the germplasm in pepper in this country and for that matter in any other pepper growing country also.

The Survey:

An extensive survey of the forests of Karnataka was organised by the Central Plantation Crops Research Institute, Kasaragod and a brief report on the survey undertaken by the authors is given below:

The survey was initiated in December 1973. The collection tours were of short duration, carried out periodically during flowering (June-July) and fruiting (December-January) seasons. Intensive surveys of the selected areas were undertaken during 1973-74 and 1975. Among the places surveyed, Kemmanagundi and Sargodu of Chikamagalur district, Bagamandala of Coorg, Setty Halli and Agumbe of Shimoga, Kumbarwada of North Kanara and Shankaranarayana, Sullia and Subramanya of Dakshina Kannada were found to have 'Micro centres' with great plant diversity. These areas were visited several times to collect extensively and also study the development of flowers and fruits. About 840 live specimens (accessions) were collected and raised in the nursery and about 450 of them were transferred to the germplasm collection plots of Central Plantation Crops Research Institute, Regional Station, Vittal and 192 accessions to the Regional Station, Calicut. Details of the survey are given in Table 1.

TABLE I
Details of the survey of forests of Karnataka for *Piper*

Forest Division	District	Duration of survey	Date of survey	No. of live collection	No. of herbarium collection
1	2	3	4	5	6
Mangalore	D. Kannada	3 days	Dec. 1973	85	..
Do.	Do.	2 days	Feb. 1974	4	..
Do.	Do.	3 days	Aug. 1975	..	14
Do.	Do.	2 days	Dec. 1975	..	14

1	2	3	4	5	6
Mangalore	D. Kannada	2 days	April 1976	4	5
Do.	Do.	2 days	Dec. 1976	..	4
Do.	Do.	1 day	July 1977	..	4
Do.	Do.	2 days	Dec. 1977	..	14
Do.	Do.	1 day	May 1978	..	6
Do.	Do.	2 days	Jan. 1979	..	10
Do.	Do.	1 day	Aug. 1979	..	6
Coondapur	Do.	6 days	Dec. 1974	36	14
Do.	Do.	3 days	Jan. 1975	10	12
Do.	Do.	2 days	July 1975	12	6
Do.	Do.	2 days	June 1976	..	16
Do.	Do.	2 days	May 1978	..	4
Chikmagalur	Chikmagalur	5 days	Feb. 1974	34	..
Do.	Do.	3 days	Aug. 1974	..	13
Do.	Do.	3 days	Aug. 1975	26	18
Do.	Do.	3 days	Aug. 1976	8	4
Koppa	Chikmagalur	4 days	Mar. 1974	30	6
Do.	Do.	3 days	Aug. 1975	5	8
Do.	Do.	3 days	Dec. 1976	..	16
Do.	Do.	2 days	Aug. 1977	..	4
Do.	Do.	2 days	Dec. 1977	4	..
Do.	Do.	2 days	May 1978	..	14
Do.	Do.	2 days	Aug. 1978	..	26
Do.	Do.	3 days	Dec. 1976	..	14
Do.	Do.	2 days	Aug. 1979	2	..
Shimoga	Shimoga	8 days	Mar. 1974	60	..
Do.	Do.	3 days	Aug. 1975	24	18
Do.	Do.	3 days	April 1976	9	..
Bhadravati	Shimoga	4 days	March 1974	20	..
Do.	Do.	3 days	Aug. 1974	..	7
Do.	Do.	3 days	Aug. 1975	5	6
Do.	Do.	2 days	Dec. 1975	3	2
Do.	Do.	2 days	May 1976	..	24
Do.	Do.	2 days	Dec. 1976	..	14
Do.	Do.	2 days	Dec. 1977	..	10
Do.	Do.	2 days	Dec. 1978	..	12
Do.	Do.	2 days	June 1979	..	4
Sagar	Shimoga	3 days	March 1974	12	..
Do.	Do.	2 days	Dec. 1975	6	5
Karwar	N. Kanara	6 days	Dec. 1974	66	10
Do.	Do.	3 days	Jan. 1975	9	..
Do.	Do.	2 days	Dec. 1975	..	10
Do.	Do.	3 days	May 1976	..	12
Do.	Do.	2 days	Jan. 1977	..	4
Haliyal	Do.	4 days	Jan. 1975	49	..
Yellapur	Do.	3 days	Jan. 1975	45	..
Sirsi	Do.	4 days	Jan. 1975	74	6
Honavara	Do.	4 days	Jan. 1975	69	5
Do.	Do.	2 days	Jan. 1976	..	10
Hassan	Hassan	6 days	Mar. 1976	47	17
Mercara	Coorg	6 days	April 1976	53	28
Do.	Do.	6 days	Dec. 1976	6	..
Do.	Do.	2 days	Dec. 1977	..	6
Do.	Do.	2 days	May 1978	..	5
Kunsur	Do.	4 days	May 1976	31	10

Two species viz. *P. nigrum* and *P. attenuatum* were found in the forests of Dakshina Kannada district where the survey was initiated. *P. nigrum* was quite similar to cultivated black pepper. However, unlike the cultivated types, which were bisexual, these wild types were unisexual and dioecious. The spike length in the female vines were smaller than in the male and the berries were pungent like the cultivated types. *P. attenuatum*, had long spikes with small and slightly bitter berries.

Five species viz. *P. nigrum*, *P. argyrophyllum*, *P. hymenophyllum*, *P. trichostachyon* and *P. brachystachyum* were collected from Chikamagalur District. *P. argyrophyllum* and *P. hymenophyllum* had smaller berries, similar to that of *P. attenuatum* in size and pungency. Some of the fruiting spikes of *P. hymenophyllum* were found to be more than 25 cm in length. The berries of *P. trichostachyon* were bigger than the cultivated types and less pungent. *P. brachystachyum* was having very small spikes and berries. The fruiting spikes were small in size and globose or oval in shape. The berries were very small and highly pungent.

During 1974-75 the survey was extended to Shimoga, Coorg, Hassan and Uttara Kannada districts. From Shimoga district, four species viz. *P. nigrum*, *P. argyrophyllum*, *P. hymenophyllum* and *P. trichostachyon* were collected. All the five species collected from Chikamagalur were found in Coorg district also. In Hassan only *P. nigrum* and *P. trichostachyon* were seen. In Uttara Kannada *P. nigrum*, *P. attenuatum*, *P. trichostachyon*, *P. hymenophyllum* and *P. galeatum* were found to occur. *P. galeatum* was found to resemble *P. trichostachyon* in habit and morphological characteristics except for the absence of hairs on the spikes. In Mysore district, wild piper was found only in the Biligiri Bangana Betta. Only *P. hymenophyllum* was col-

lected from this area. Wild types of *Piper* have not been reported from the other districts of Karnataka.


The present survey of *Piper* spp. has indicated rich genetic variability with respect to economic characteristics like the size, number and length of spike, setting percentage, berry size and pungency, available in the forests of Karnataka. Studies on cataloguing, classification and evaluation of the germplasm assembled are in progress at the CPCRI Regional Station, Calicut. It is hoped that some of these materials will form invaluable genetic stocks for the crop improvement programme being carried out at this station.

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