

**SCIENTIFIC CONTRIBUTION
&
ACHIEVEMENTS
(FROM 2002-2017)**

**DR. HARISH SINGH,
Scientist-'D' & HoO
CBL, BSI, Howrah**

A BRIEF BIO-DATA/INTRODUCTION

- Name & present post: **Dr. Harish Singh, Scientist-'D' & Head of Office**
- Title of Ph. D. Thesis: **Ethnobotanical study of Bhoxa tribe of Nainital district, U.P. (1992)**
- Name of Institute: **CSIR-National Botanical Research Institute, Lucknow** (September 1986- October, 1991)
- Worked in HETC, Ranikhet , Uttarakhand (19-11-1991 to 12-07-2002)
- Joining date and post in BSI: **15 July 2002 as Scientist- 'B'**
- Post held: **Scientist- 'B'** (15-07-2002 to 31-03-2003 in BSI, Hq (working place CNH Howrah)
- **Scientist-'B'** (01-04-2003 to 30-8-2009) in CBL, Howrah
- **Scientist-'C'** (31-8-2009 to 27-01-2015) in CBL, Howrah
- **Scientist-'D'** (28-01-2015 to continue) in CBL, Howrah

1. DATABASE OF CNH

(FROM 15 July 2002 to 31 March 2003)

- Worked as a executing official in the project.
- Collected 3,471 base line data from herbarium sheets of 19 genera of 8 families in the BRAHM'S Performa.
- After computerization and correction these sheets were submitted to the Joint Director, CNH.
- During this period, a CD of Database of the family Dilleniaceae has also submitted to CNH.

2.ETHNOBOTANICAL STUDY OF JHARKHAND

(April 2003- March 2006)

- Two-field tours to Ranchi and Dumka Districts (18 tribal villages) of Jharkhand were undertaken by executing members.
- Collected 154 plant species comprising 207 ethnobotanical information from Oraon, Munda, Bedia, Mahato and Santal tribes.
- A total number of 152 references pertaining to ethnobotany of Jharkhand were also collected from available literatures and made a Bibliography.
- Ethnobotanical uses of 387 plants were also collected from already published literature for comparative study point of view.
- 134 plant species were selected on the basis of their uses and availability, and recommended as a source of raw material for the establishment of small scale herbal drug collection and processing centre in the region for economic benefit of the tribes.
- Published 03 papers and 01 article on different aspects on Ethnobotany of Jharkhand.

SOME FIELD PHOTOGRAPHS OF RANCHI & DUMKA DISTRICTS, JHARKHAND



3. ETHNOBOTANICAL STUDY OF ODISHA (PHASE-I)

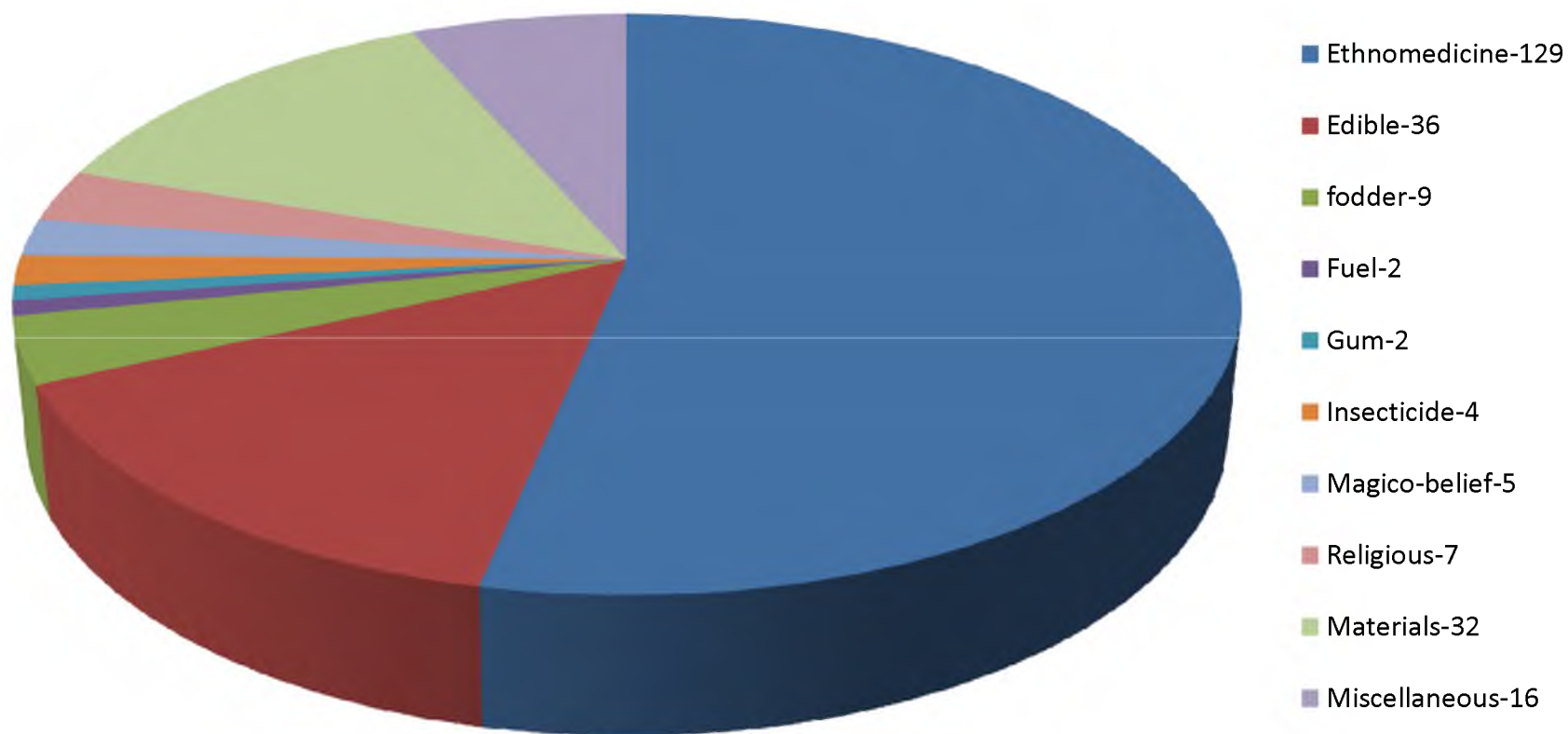
Detail of field tour & collection (April 2006 to March 2011)

Tour No.	District Name	Tour Date From	Tour Date To	Vill ages	Tri bal	Field nos Collected	Ethnob otanica l data collected	Photo	No of DV D rec ord ed
01	Sundargarh	04-02-2007	15-02-2007	18	09	158	242	130	2
02	Mayurbhanj	10-09-2007	24-09-2007	26	08	180	302	235	2
03	Mayurbhanj	15-09-2008	29-09-2008	32	06	200	340	250	2
04	Angul	24-06-2009	09-07-2009	23	14	175	235	200	3
05	Angul	29-09-2010	08-10-2010	32	13	195	248	241	3

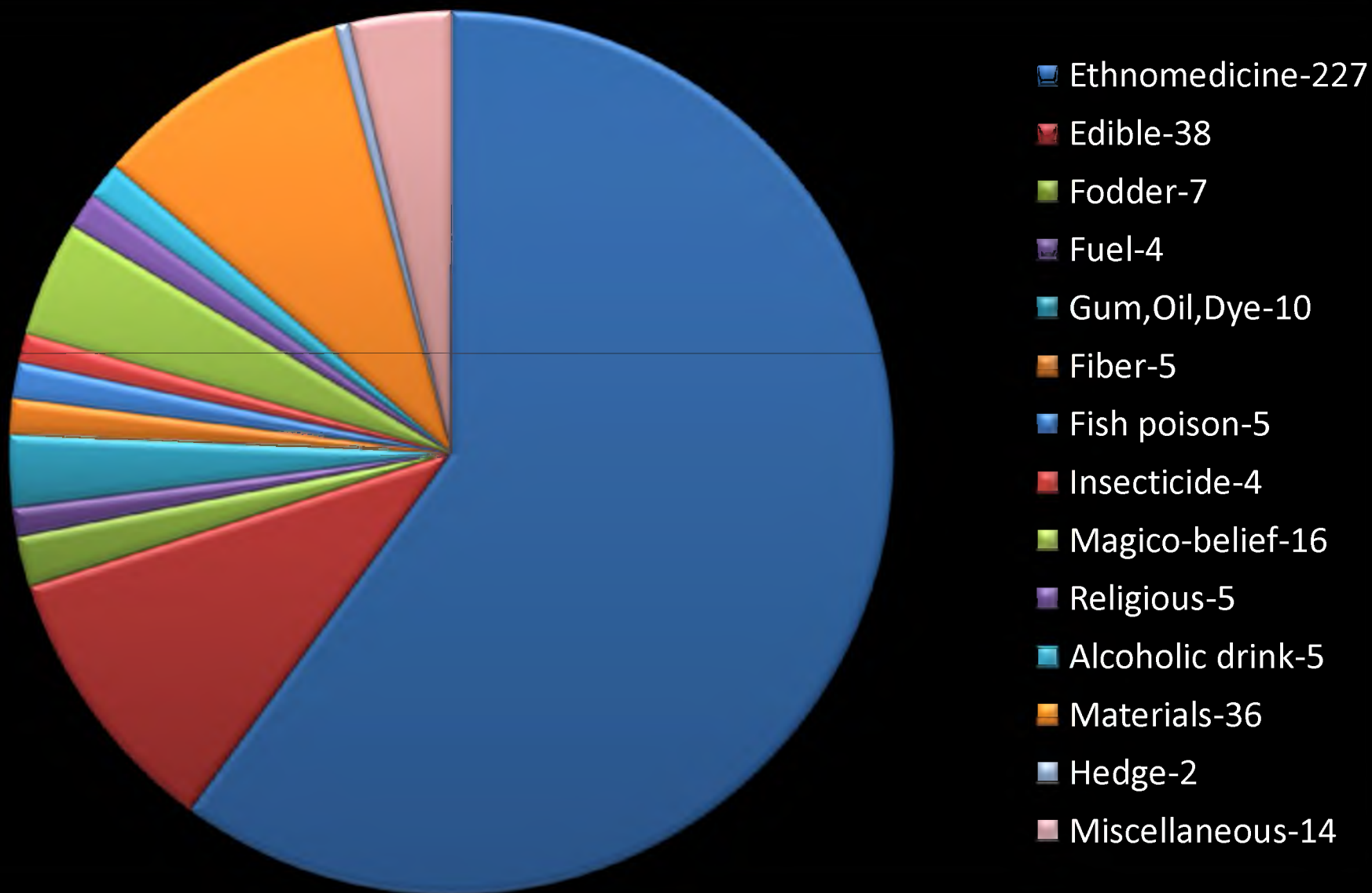
PREPARED DISTRICT WISE ETHNOBOTANICAL REPORT (IN PHASE-I)

S.N.	District	Species	Genera	Families	Ethobotanical data	year
01	Sundargarh	158	123	63	242	2006-07
02	Mayurbhanj	236	199	79	378	2007-09
03	Angul	231	195	79	507	2009-11

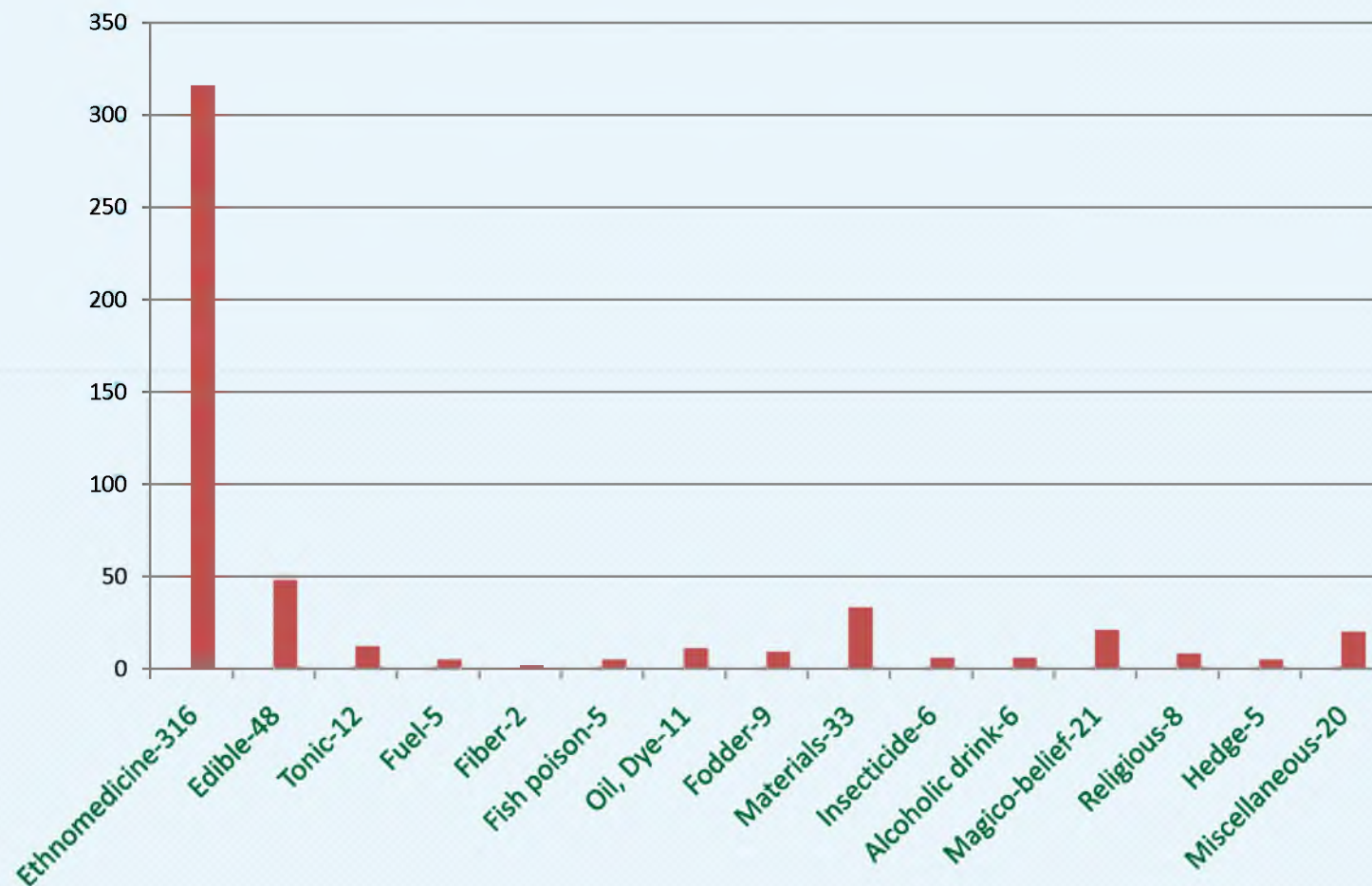
ETHNOBOTANICAL INFORMATIONS COLLECTED FROM **SUNDARGARH** DISTRICT, ODISHA (242)



ETHNOBOTANICAL INFORMATION COLLECTED FROM **MAYURBHANJ** DISTRICT, ODISHA (378)



ETHNOBOTANICAL INFORMATION COLLECTED FROM **ANGUL** DISTRICT, ODISHA (507)



4. ETHNOBOTANICAL STUDY OF ODISHA (PHASE-II)

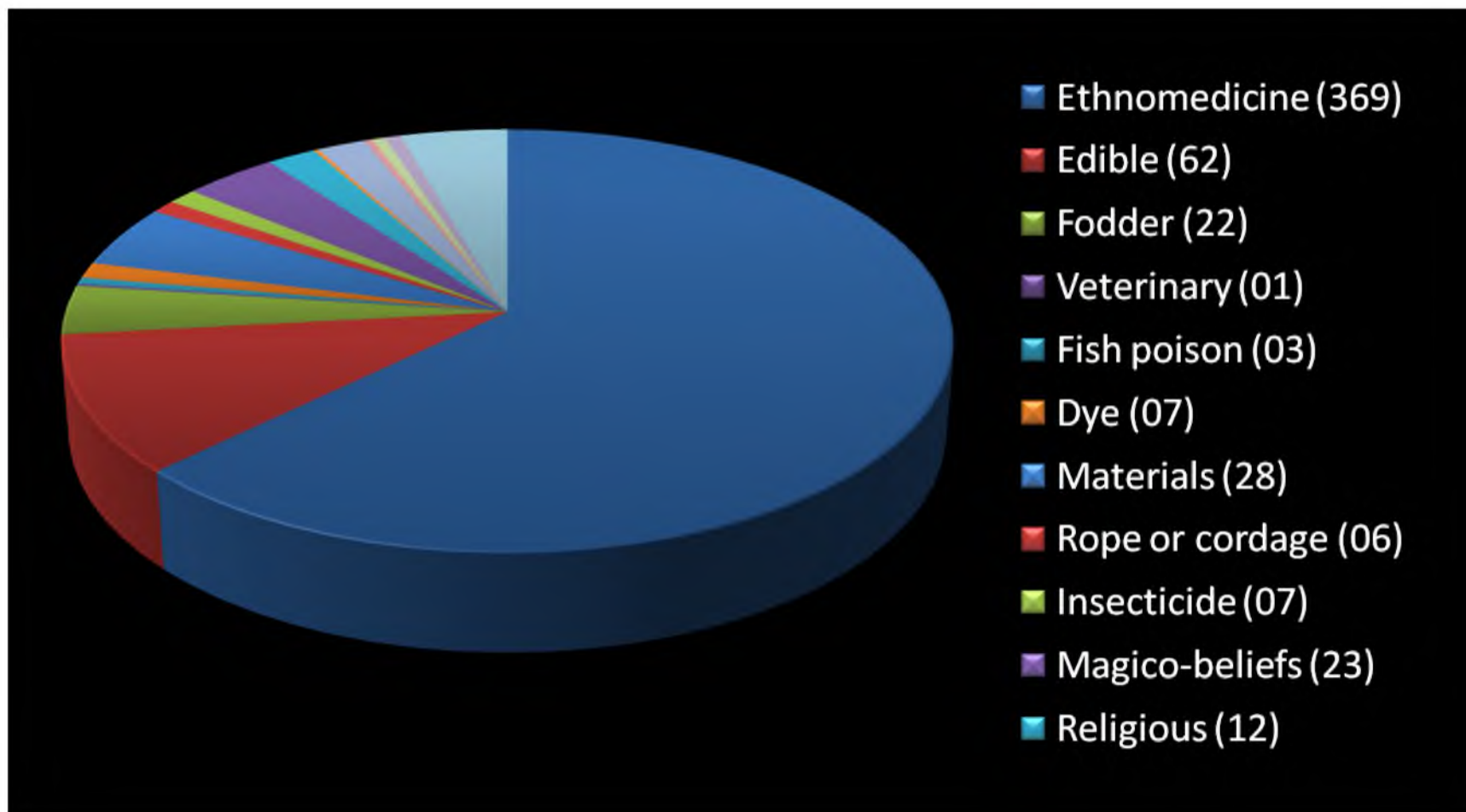
Detail of field tour & collections (April 2011 to March 2017)

Tour No.	District Name	Tour Date From	Tour Date To	Villages	Tribal Group	Field nos Collected	Ethnobotanical data collected	Photo taken	GPS data collected
06	Balangir	15-11-2011	29-11-2011	39	11	180	246	162	12
07	Balangir	29-08-2012	12-09-2012	46	11	205	284	187	23
08	Deogarh	24-11-2013	08-12-2013	36	10	300	530	247	34
09	Deogarh	11-08-2014	24-08-2014	47	12	286	343	430	28
10	Nuapada	08-12-2015	19-12-2015	43	06	178	215	320	22
11	Nuapada	12-09-2016	26-09-2016	62	07	368	516	650	32

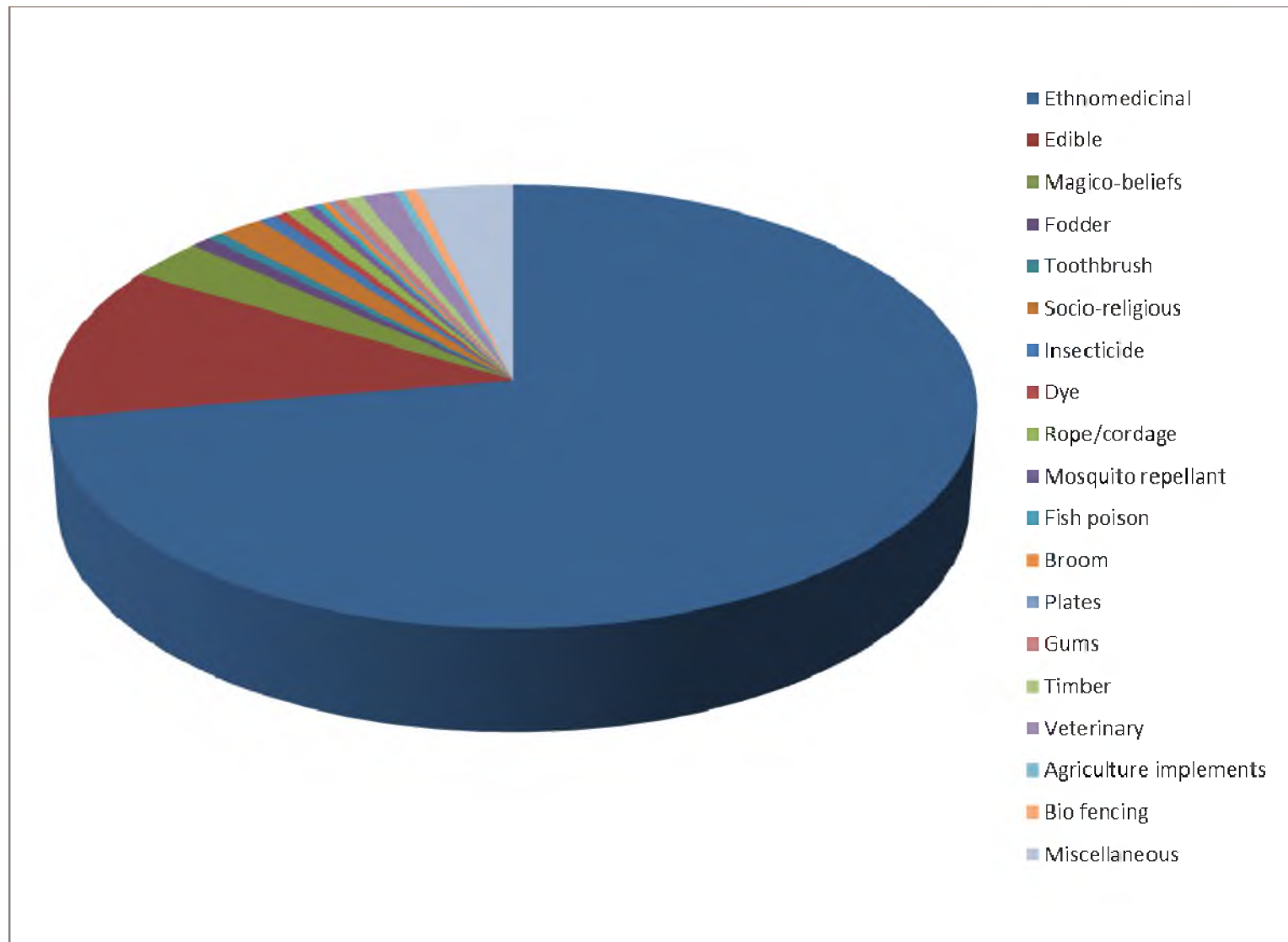
PREPARED DISTRICT WISE ETHNOBOTANICAL REPORT (IN PHASE-I I)

S.N.	District	Species	Genera	Families	Ethobotanic al data	year
04	Balangir	264	205	102	587	2011- 2013
05	Deogarh	393	305	110	1010	2013- 2015
06	Nuapada	Compilation work of both years report is going on				2015-17

ETHNOBOTANICAL INFORMATION COLLECTED FROM **BALANGIR** DISTRICT, ODISHA (587)



DIFFERENT ETHNOBOTANICAL INFORMATION (1010) COLLECTED FROM DEOGARH DISTRICT, ODISHA



DISCUSSION WITH FOREST ADMINISTRATION



COLLECTION OF ETHNOBOTANICAL DATA FROM INFORMERMANTS



DIFFERENT VIEW OF ETHNOBOTANICAL PLANT SPECIMENS COLLECTION



OUTCOME OF THE PROJECT (PUBLISHED)

- Papers published on Odisha: 24
- Articles published in Hindi: 06
- District wise : 05 (SMABD)
- Diseases wise: 04 (Joint ,Leucorrhoea, Dental, Hydrocele)
- Plant wise: 06 (*Indigofera*, *Chlorophytum*, *Dendrocalamus*, *Shorea*)
- Promising plants for cottage industries: 01
- Traditional conservation: 01
- Less known/unrecorded uses: 06
- Comparative study: 01
- Wild edible plants: 04
- Rice beer: 01
- Tribal markets-01

NEW ETHNOMEDICINAL USES REPORTED

No of New uses	Diseases/disorders	Districts	Journal	year
15	Leucorrhoea	Mayurbhanj	<i>Ethnobotany</i>	2010
13	Joint diseases (rheumatism, arthritis, gout and lumbago)	Mayurbhanj	<i>Report & Opinion</i>	2010
40	Various diseases/disorders	Angul	<i>Ethnobotany</i>	2012
68	Various diseases/disorders	SMAB	<i>Nelumbo</i>	2012
15	Hydrocoel	SMAB	<i>Ancient science of Life</i>	2012
11	Dental care	SMAB	<i>Natural Prod. & Resources</i>	2013

TRADITIONAL USES OF FLOWERS ⁴⁴ IN ODISHA (Harish Singh 2011)



UNCOMMON WILD EDIBLE PLANTS AND THEIR TRADITIONAL USES

(ENVIS) News letter 10(1&2): 12-13.

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ENVIS Newsletter, 10(1&2), 2011

Chlorophytum arundinaceum (Asparagaceae) leaves used as vegetable in Angul district, Odisha

The tender leaves of *Chlorophytum arundinaceum* Baker are sold in the weekly markets of Boinda and Pallahara in Angul district, Odisha as a vegetable. The leaves are locally known as *Nigayee* or *Masuli*. The common people, as well as the tribals such as Konds, Gonds, Kharia, Suda, Chasa, Kisan, Dehuri, Shabar, Jaang and Santal collect the leaves from Ghat Tentuli, Majhikheli and Sarnala Gudapada forest areas of the district. They tie them into bundles weighing 200–300 gm and sell them at ₹ 3–5 per bundle during June–July.

About 200 gm of tender leaves are at first washed and cut into pieces. These pieces are then mixed with about 200 gm of cooked *Mosong dal* [seeds of *Vigna radiata* (L.) R. Wilczek] and boiled for another 10–15 minutes in low flame. Finally, it is fried in mustard oil with a mixture of 5 spices [seeds of fennel (*Meethi*), fennel (*Saunf*), cumin (*Zera*), garlic (*Lakum*), ginger (*Adarak*) and chilli (*Mirch*)] which is collectively known in Angul district as *Futaro* and served with rice. The preparation tastes like mutton.

Harish Singh & G. Krishna
 Central Botanical Laboratory
 Botanical Survey of India
 Howrah 711 103



Coffea bengalensis (Rubiaceae) in AJC Bose Indian Botanic Garden, Howrah

The plants of *Coffea bengalensis* B. Heyne ex Schult. (synonym: *Palumbus bengalensis* (B. Heyne ex Schult.) J.-F. Leroy) flower profusely in the AJC Bose Indian Botanic Garden of Botanical Survey of India at Howrah in the winter and the flowers have jasmine-like fragrance. The species is commonly known as *Bengal Coffee*.

This wild species of coffee is cultivated in the garden for its fragrant flowers and for making hedges. The germplasm can be used in commercial breeding programmes with economically important cultivated coffee species.

H.S. Mukhopadhyay, S.S. Banerjee & P.V. Sreelakshmi
 AJC Bose Indian Botanic Garden
 Botanical Survey of India
 Howrah 711 103



Coffea bengalensis; Inset: Flowers

Indigofera cassioides Rottler ex DC. – An uncommon wild edible plant

H. Singh, S.C. Srivastava,
 G. Krishna & A. Kumar
 Central Botanical Laboratory
 Botanical Survey of India
 Howrah – 711 103

During the course of an ethnobotanical survey in Orissa, it is observed that the flowers of the legume plant *Indigofera cassioides* Rottler ex DC. (syn. *I. pulchella* Roxb.) are being used as a vegetable in different parts of Orissa.

This plant is locally known as *Giri*, *Giri*, *Giri*, *Giri* phool in Oriya and *Dara* Huter, *Lilichhi* in Santal languages.

The pinkish-purple flowers are cooked and eaten as a vegetable by the tribal and poor people. Sometimes, this is also used along with other vegetables in a curry. The local people collect the flowers and sell them @ Rs. 20/Kg in the market.

The species is found throughout India in the slopes of the dry hills in deciduous forests, Savannas and scrub forests at elevations ranging from 100 – 1200 m.

In the Chamoli district of Uttarakhand the flowers are collected and sucked by village children for their sweet nectar. In Orissa the 'Saora' tribal community also takes it as 'Ulhal' which is a mixture of the flowers and green pigeon pea seeds.

The mixture is eaten with boiled rice and chapattis made out of *Caryota urens* L. in Andhra Pradesh, Bihar, Haryana, Madhya Pradesh, Maharashtra, Orissa, Uttarakhand, Uttar Pradesh and West Bengal the inflorescences together with flower buds and flowers are eaten by the different communities. In Andhra Pradesh, Madhya Pradesh and Orissa the tender leaves and in Haryana the pods are also eaten.

In Nepal the flowers are consumed as pickle.

In spite of the aforementioned uses in the different parts of India and Nepal *I. cassioides* is still not well known as an edible plant. An attempt has been made here to draw the attention of the readers so that it can be tried by them too for its suitability as a subsidiary food. It can also be used as an emergency food in case of famine in the remote parts of our country. However, food value analysis of the edible parts of this wild plant is certainly necessary.

Selected Readings

Anonymous. 1956. Wealth of India - Raw Materials, 5: 181. Council of Scientific & Industrial Research, New Delhi.

Jain, S.K. 1991. Dictionary of Indian Folk Medicine and Ethnobotany, p. 107. Deep Publications, New Delhi.

Pat, D.C. & D.K. Banerjee. 1971. 1974. Some less known plant foods among the tribals of Andhra Pradesh and Orissa state. *Bull. Bot. Surv. India* 13(3&4): 221-223.

Rajbhandari, K.R. 2001. Ethnobotany of Nepal, p. 90. Ethnobotanical Society of Nepal, Kathmandu.

Rama Rao, N. & A.N. Henry. 1966. The Ethnobotany of Eastern Ghats in Andhra Pradesh, India, p. 97. Botanical Survey of India, Calcutta.

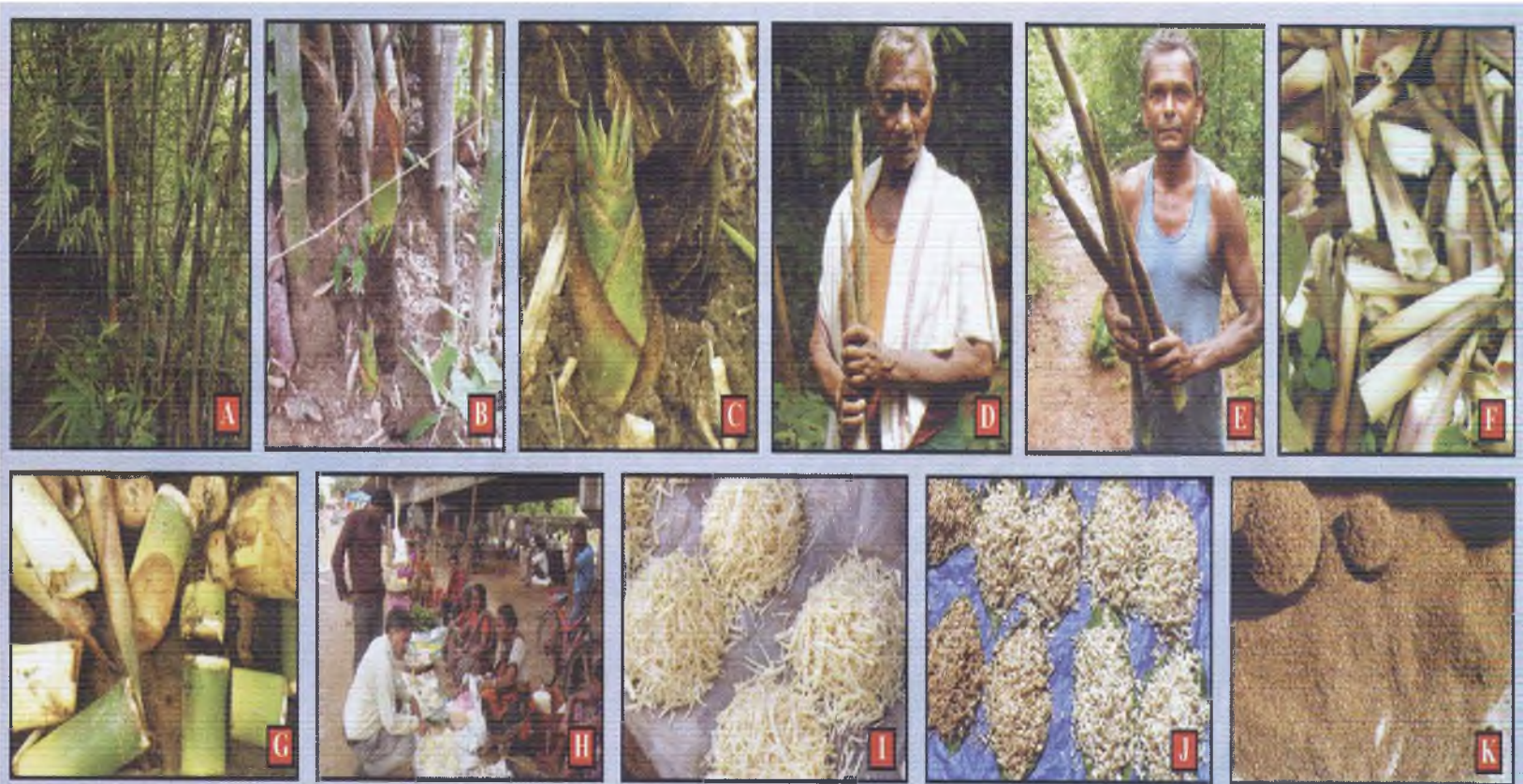
Sanjappa, M. 1995. Leguminosae-Papilionoideae. Tribe: Indigoferae. In Hajra, P.K. et al. (eds.), *Fascicles of Flora of India*, 21: 1-167. Botanical Survey of India, Calcutta.

Watt, G. 1972. A Dictionary of the Economic Products of India (2nd Repr.), 4: 367. Cosmo publications, Delhi.

The flowers of *Indigofera cassioides* Rottler ex DC. are being sold in a market at Panskura, Sundargarh district, Orissa



LESS KNOWN EDIBLE RECIPES MADE FROM THE TENDER SHOOTS OF BAMBOO (Harish Singh *et al.* 2012)



A. *Dendrocalamus strictus* growing in the forest; B. Young shoots sprouting adjacent to old shoots; C. Single young shoot; D. A Kandha tribal man with young shoots; E. A Gond tribal man with young shoots; F. Discarded culm sheaths of young bamboo; G. Removed green hard parts of shoots; H. 'Kardi', being sold in market; I. Juliennes; J. Juliennes of 2 – 3-day old; K. 'Handuwa', being sold in market

**PLANTS AND PLANT PRODUCTS ₄₀ ARE BEING SOLD IN
DIFFERENT TRIBAL MARKET (HAT) IN ODISHA (Harish Singh *et al.* 2013)**



PLANTS USED IN THE PREPARATION OF LOCAL RICE BEER (*HANDIA*) IN ODISHA (Harish Singh *et al.* 2013) 7



A-Different plant parts and catalyst (*Bakaro*) used for the preparation of local rice beer (*Handia*) are being sold in a weekly market at Udala, Mayurbhanj; B- An author negotiating the plant produce from herbal vendor; C- Roots of *Ruellia* *suffruticosa*; D- Roots of *Cissampelos* *pareira*; E- Root powder of *Cissampelos* *pareira*; F- Stem bark powder of *Holarrhena* *pubescens*; G- A pile of catalyst (*Bakaro*) made from rice powder and roots of *Ruellia*, *Cissampelos* and stem barks of *Holarrhena*; H- Local rice beer are being sold in a weekly market at Badam Pahad, Mayurbhanj; I- Local rice beer are being sold at Khajuridihi, Sundargarh; J- A tribal man drinking local rice beer (*Handia*); K- A tribal woman drinking local rice beer (*Handia*)

OTHER TECHNICAL TASK CARRIED OUT

ASSIGNMENTS	ACHIEVEMENTS
Seminar/Conferences attended as speaker	09
Training courses/Workshop attended	05
Ph. D. Thesis evaluated	03
Research papers reviewed	21
Ph.D. Co-guide	03
Project proposal evaluated	02
Advisory service rendered	12
Ethnobotanical museum exhibits Demonstrated/Disseminated	More than 2000 students
Parliamentary Question replied	04
Scientific /Technical reports prepared	All monthly , quarterly, annual reports and other S/T reports of CBL prepared.

PAPER PRESENTATION AT GWALIOR, BHAGALPUR, IBRAD, IM, KOLKATA



OTHER ADMINISTRATIVE DUTIES

1. Head of office (February 2014 to continue)
2. Drawing & Disbursing Officer of CBL (2003-2011)
3. Official Language officer of CBL (2003-2016)
4. Chairman, Purchase committee of CBL (2010-2014)
5. Chairman, Auction committee of CBL (2010-2014)
6. Chairman, Physical verification committee of CBL (2010-2014)
7. Reporting Officer, APAR of All Gr. D,C & B staff (2003-2014)
8. Reviewing Officer, APAR of All Gr. D,C & B staff (2003-2014)
9. APPO of RTI (2014 onwards)
10. Members of various scientific/administrative committees (2003 onwards)

PARTICIPATION IN DIFFERENT DEPARTMENTAL PROGRAMME/MEETING/VISIT OF VIPs IN BSI



MEDAL//FELLOW CONFERED

- Received an international J.W. Harshberger Medal awarded by the Society of Ethnobotanists (SEB) for 2013-14 for 29 years long and distinguished services, research and promotion of Ethnobotany at Indian Museum, Kolkata on 19-06-2014.
- Awarded Fellow of Society of Ethnobotanists (FES) by the SEB, Lucknow on 01-01-1998.



SUMMARY

- No. of Project carried out: 04
- No. of Papers published: 88 (70 papers +18 articles in Hindi)
- Individually: $19 + 14 = 33$
- First author as well as jointly : $27+1 = 28$
- Co-author: $24 + 3 = 27$
- No. of rediscoveries: 03 (*Dicranostigma lactuoides* (after 150 years), *Dipcadi serotinum* (after 100 years), *Gentiana saginoides* (after 155 years) from Uttarakhand)
- No. of new Reports: 01 (*Physalis pruinosa* for Odisha)

FUTURE PLAN OF RESEARCH

- Ethnobotanical study of Jharkhand (district/ tribe wise)
- Digitization & Database of ethnobotanical specimens
- Phytochemical and nutraceutical analysis of selected plants

