



SCIENTIFIC ACHIEVEMENTS & PROGRESS

SAURABH SACHAN
Botanical Assistant

Central National Herbarium
Botanical Survey of India



Joined as Preservation Asstt. on 04.12.2006 at CNH, Howrah
Promoted as Botanical Asstt. on 07.03.2016 at CNH, Howrah

Assignments

1.
Scientific

2.
Curatorial

3.
Technical

4.
Miscellaneous



Scientific

Annual action plan Projects: Four (4)

**I Palynological studies on Thymelaeaceae in India
(2008-2011), submitted**

**II. Palynotaxonomic study of Lauraceae in India
(2010-2014), submitted**

III. Family Asteraceae (34 spp.) under Flora of Bihar & Jharkhand, Vol. II (2014-17).

IV. Flora of Udaipur wildlife sanctuary, W. Champaran, Bihar (2017-19).



Ph.D thesis

**“Palyno-taxonomic Studies on selected
Indian taxa of Lauraceae”**

Supervisors:

Dr. P.V. Prassanna, Sci. ‘F’ & HoO &
Prof. S. B. Padal, Andhra University, Visakhapatnam.

Distribution of Lauraceae in India

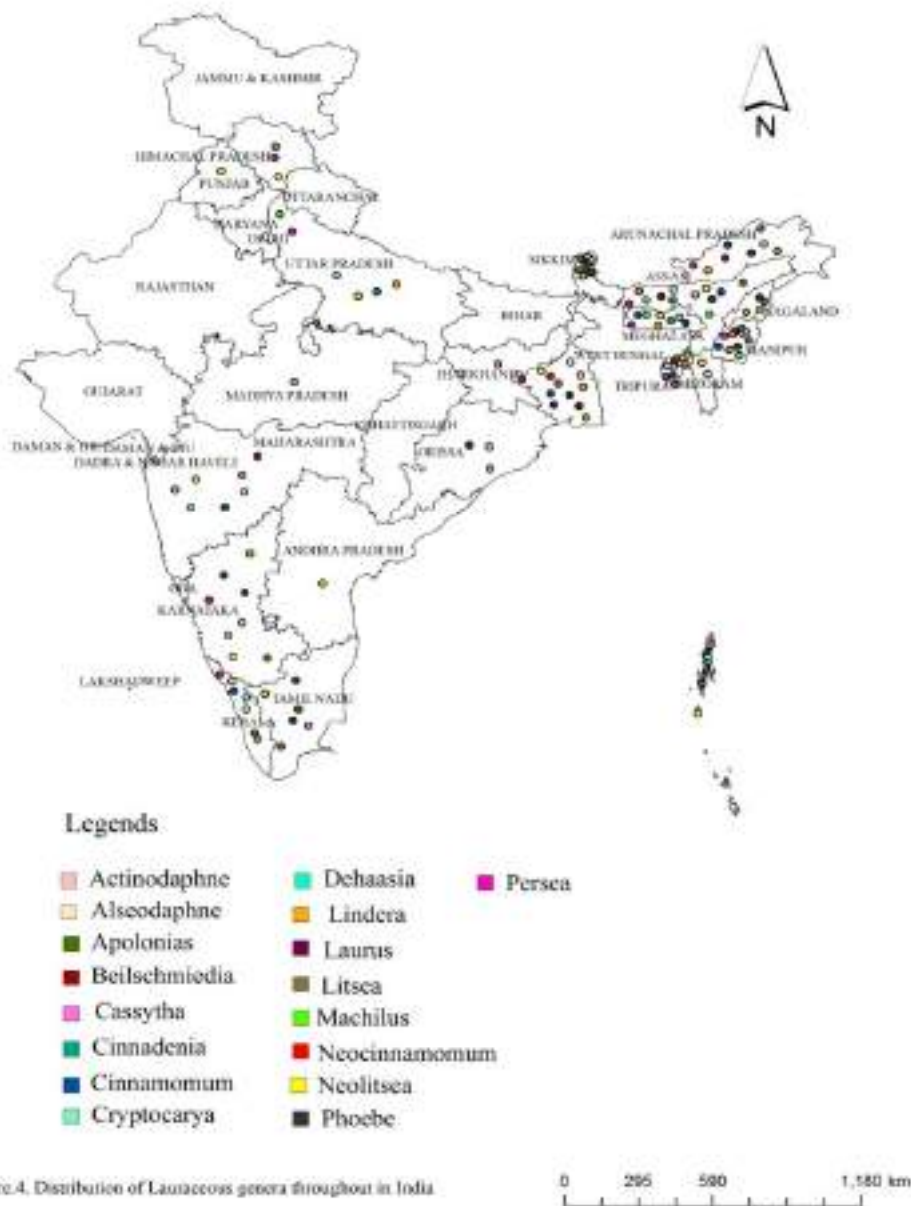


Figure 4. Distribution of Lauraceae genera throughout in India

The Avocado family

- The Lauraceae is a pantropical family and in India it is chiefly represented by 17 genera and 176 spp.
- The first monograph of the Lauraceae was presented by Nees (1836).
- For the study we have taken – up and procured polliniferous material of 110 spp.

-Pollen features of the family Lauraceae-

Species/Taxa	Grain size (µm)	Shape	AMB	Pattern	Grain type	Exine (µm)	Ecto-exine (µm)	Endo-exine (µm)	Spn-tip	STP shape	SU nature	Circumference (µm)	Surface area (µm ²)
<i>Cryptocarya amygdalina</i> Nees	25.7	Subspheroidal	Circular	Rugulose	Inapertu-rate	4.5	2.5	1.5	-	rounded	Irregularly Scattered	80.698	518.48
<i>Cryptocarya andamanica</i> Hook.f.	29.8	Subspheroidal	subcircular	Rugulose	Inapertu-rate	2.0	1.7	0.3	-	rounded	Irregularly Scattered	91.2	608.9
<i>Cryptocarya insularis</i> Vasud. & T.Chakrab	22.6	Subspheroidal	Circular	Rugulose	Inapertu-rate	2.75	2.0	0.75	-	rounded	Free	70.964	400.94
<i>Cryptocarya balkrishnaii</i> M. Gangop. & T. Chakrb.	28.6	Subspheroidal	Circular	Minutely Perforate	Inapertu-rate	3.5	2.0	1.5	Triangular	rounded	Irregularly Scattered	89.804	642.09
<i>Cryptocarya bourdillonie</i> Gamble	27.2	Spheroidal	Circular	Rugulose	Inapertu-rate	3.4	2.14	1.26	Triangular	rounded	Irregularly Scattered	85.408	580.77
<i>Cryptocarya stocksii</i> Meisn.	30.6	Subspheroidal	Circular	Minutely Perforate	Inapertu-rate	5.19	3.25	1.94	Triangular	rounded	Irregularly Scattered	96.084	735.04
<i>Cryptocarya wightiana</i> Thwait	27.6	Subspheroidal	Circular	Rugulose	Inapertu-rate	2.05	1.75	0.35	Triangular	rounded	Scarcely Scattered	86.664	597.98
<i>Cryptocarya caesia</i> Blume	44.20	Subspheroidal	Circular	Scabrate	Inapertu-rate	2.5	2.0	0.5	Triangular	rounded	Irregularly Scattered	138.78	1397.95
<i>Apllonias arnottii</i> Nees	22.6	Subspheroidal	Circular	Granulate	Inapertu-rate	2.44	1.8	0.64	Triangular	warted	Densely scattered	70.964	400.94
<i>Beilschmiedia assamica</i> Meisn.	28.6	Spheroidal	Circular	Granulate	Inapertu-rate	3.5	2.0	1.5	Triangular	Granulose	Freely Scattered	89.804	642.09
<i>Beilschmiedia brandisii</i> Hook.f	27.2	Peroblatspheroidal	Circular	Granulate	Inapertu-rate	2.5	2.0	0.5	Traingular	Granulose	Freely scattered	85.408	580.77

-Pollen features of the family Lauraceae-

Cinnamomum burmanni Blume	29.2	Spheroidal	Sub circular	Granulate	Inapertu-rate	2.7	1.5	1.2	Conical traigonal	granulose	Freely scattered	91.68	669.32
Cinnamomum glanduliferum Meisn. = Camphora glanduliferum Nees	28.2	Spheroidal	Oblate spheroid	Spinulate	Inapertu-rate	3.5	2.0	1.5	rounded	Spinuloid	Densly scattered	88.548	624.26
Cinnamomum impressinervium Meisn.	32.6	Spheroidal	Circular	Spinulate	Inapertu-rate	3.8	2.0	1.8	Acute	Spinuloid	Scarcely scattered	102.36	834.26
Cinnamomum pauciflorum Nees	29.2	Spheroidal	Circular	Spinulate	Inapertu-rate	3.0	2.0	1.0	Conical traigonal	Spinuloid	Scarcely scattered	91.68	669.32
Cinnamomum tamala var. albiflorum Wall.	30.2	Spheroidal	Oblate spheroid	Spinulate	Inapertu-rate	2.0	1.8	0.2	Acute traigonal	Spinuloid	Densly scattered	94.82	715.95
Cinnamomum tamala var. intermedium Meisn.	30.2	Spheroidal	Circular	Spinulate	Inapertu-rate	2.0	1.6	0.4	Conical traigonal	Spinuloid	Scarcely scattered	94.828	715.95
Cinnamomum tamala var .genuinum Meisn.	31.2	Spheroidal	Sub circular	Spinulate	Inapertu-rate	1.59	1.1	0.58	Conical traigonal	Spinuloid	Randomly Scattered	97.968	764.15
Cinnamomum camphora Nees & Eberm.	22.6	Spheroidal	Oblate spheroid	Spinulate	Inapertu-rate	1.5	1.2	0.3	Globose	Spinuloid	Densly scattered	70.964	400.94
Cinnamomum verum Presl.	19.6	Spheroidal	Circular	granulate	Inapertu-rate	1.5	1.0	0.5	Conical trigonal	granuloid	Densely scattered	61.54	301.56
Cinnadenia paniculata = Dodecadania paniculata Nees	35.5	Oblate spheroidal	Circular	granulate	Inapertu-rate	4.8	3.0	1.8	rounded	granular	Randomly Scattered	111.47	989.29
Dehaasia candolleana (Meisn.) Kosterm.	29.0	Oblate spheroidal	Circular	spinulate	Inapertu-rate	3.5	2.0	1.5	-	granular	Densly scattered	91.06	660.18
Dodecadania griffithii Hook.f	33.5	Spheroidal	Circular	granulate	Inapertu-rate	3.5	2.0	1.5	rounded	granular	Randomly Scattered	105.19	880.96
Lindera nacusua (D. Don) Merr.	25.5	Spheroidal	Circular	granulate	Inapertu-rate	1.2	1.0	0.2	rounded	granular	Randomly Scattered	80.0	510.44
Lindera bifaria Hossens	29.9	Sub Spheroidal	Circular	granulate	Inapertu-rate	3.2	1.9	1.3	rounded	granular	Randomly Scattered	93.88	701.79
Lindera heterophylla Meisn.	42.5	Sub Spheroidal	Circular	Minutely Perforate	Inapertu-rate	3.5	2.0	1.5	rounded	granular	Randomly Scattered	133.35	1417.90

-Pollen features of the family Lauraceae-

Litsea kurzii King ex.Hook.f	30.8	sub spheroidal	Sub circular	Spinulate	Inapertu- rate	2.0	1.8	0.2	Acute traigonal	Spinuloid	Randomly Scattered	96.71	744.68
Litsea laevigata (Nees)gamble	16.8	Oblate spheroidal	Sub circular	Scabrata	Inapertu- rate	1.5	1.0	0.5	-	Crystalline	Scarcely scattered	52.75	221.55
Litsea monopetala (Roxb.)Persl. = Litsea polyantha Juss	35.6	Oblate spheroidal	Circular	granulate	Inapertu- rate	<1.5	1.0	0.2	rounded	granular	Randomly Scattered	111.78	994.87
Litsea oblonga Blume = Litsea albescens (Hook.f) Long	21.9	Spheroidal	Circular	Spinulate	Inapertu- rate	1.6	1.0	0.6	Dimorphic conical & rounded	Spinuloid	Freely scattered	67.82	376.49
Cassytha filiformis L.	28.5	Oblate spheroidal	Sub circular	granulate	Inapertu- rate	2.7	2.0	0.7	Pointed & blunt	reticulate	Randomly Scattered	89.49	637.61
Machilus bombycina King ex Hook. f.	32.0	Spheroidal		scrabate	Inapertu- rate	2.5	2.0	0.5	-	Spinuloid	Freely scattered	118.0	783.8
Machilus gamblei King ex Hook. f.	29.0	Spheroidal	Circular	Spinulate	Inapertu- rate	2.5	2.0	0.5	conical	Spinuloid	Freely scattered	91.0	660.18
Neolitsea zelanica Merr.	22.7	Oblate spheroidal	Sub circular	rugulose	Inapertu- rate	2.0	1.8	0.2	-	-	-	71.27	404.50
Neolitsea lancifolia (flaw) Kosterm.	23.5	Sub Spheroidal	Circular	granulate	Inapertu- rate	3.9	2.7	1.2	rounded	granular	Irregularly scattered	73.79	433.51
Neolitsea foliosa(Nees) Gamble	27.6	Sub Spheroidal	Circular	granulate	Inapertu- rate	3.5	2.0	1.5	rounded	granular	Randomly Scattered	86.66	597.98
Neolitsea mannaii (Hook.f) Chakrab.	30.6	Oblate spheroidal	Circular	granulate	Inapertu- rate	3.5	2.0	1.5	rounded	granular	Randomly Scattered	96.0	735.0
Persea fructifera Kosterm. = Machilus edulis King	39.2	Spheroidal	Suboblat e spheroid al	Spinulate	Inapertu- rate	<1.5	1.0	0.5	Acute traigonal	Spinuloid	Irregularly scattered	123.0	7529.53
Persea americana Mill = P.gratissima Gaerthn.f	30.2	Spheroidal	Suboblat e spheroid al	Spinulate	Inapertu- rate	4.5	4.0	0.5	Dimorphic Pointed & blunt	Spinuloid	Dencely Scattered	94.82	715.95
Persea clarkeana (King ex Hook.f) Kosterm.	18.8	Spheroidal	circular	Spinulate	Inapertu- rate	2.8	2.0	0.8	Dimorphic Pointed & blunt	granular	Randomly Scattered	59.0	277.45

Glimpses of the pollens of Lauraceae under LM

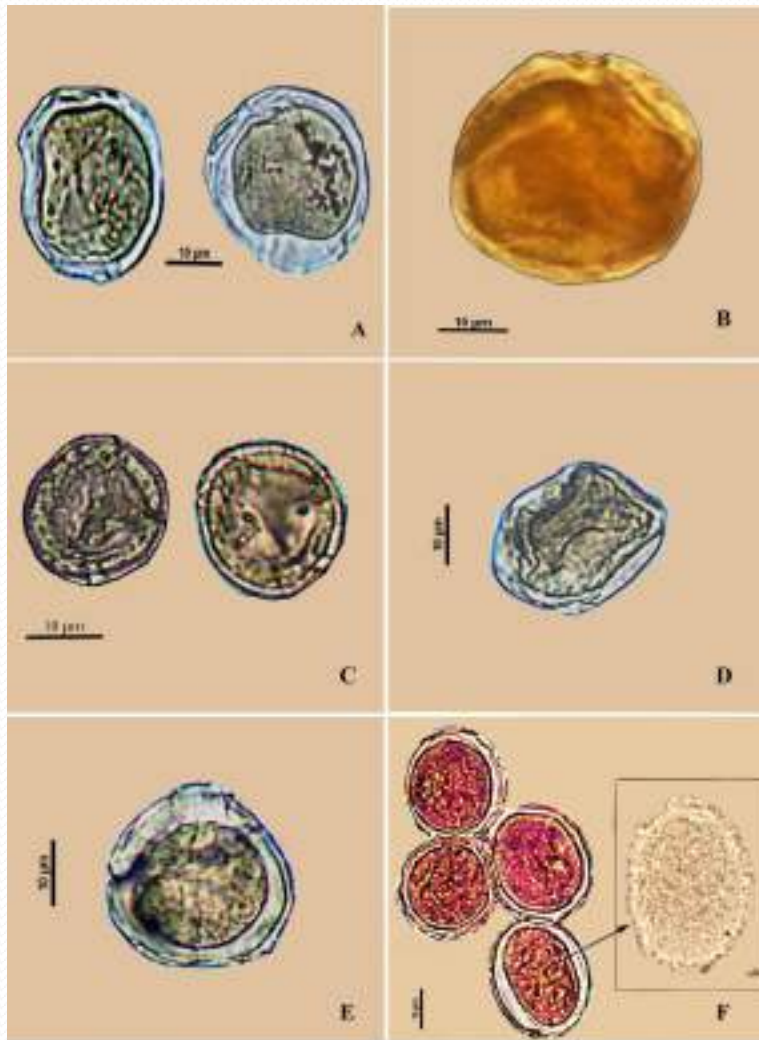


Figure.—: A. *Cryptocarya amygdalina* Nees; B. *Cryptocarya andamanica* Kosterm.; C. *Cryptocarya insularis* Vasudeva Rao & Chakrab.; D. *Cryptocarya balakrishnanii* M.Gangop. & Chakrab.; E. *Cryptocarya boardilonic* Gamble; F. *Cryptocarya stockii* Meisn.

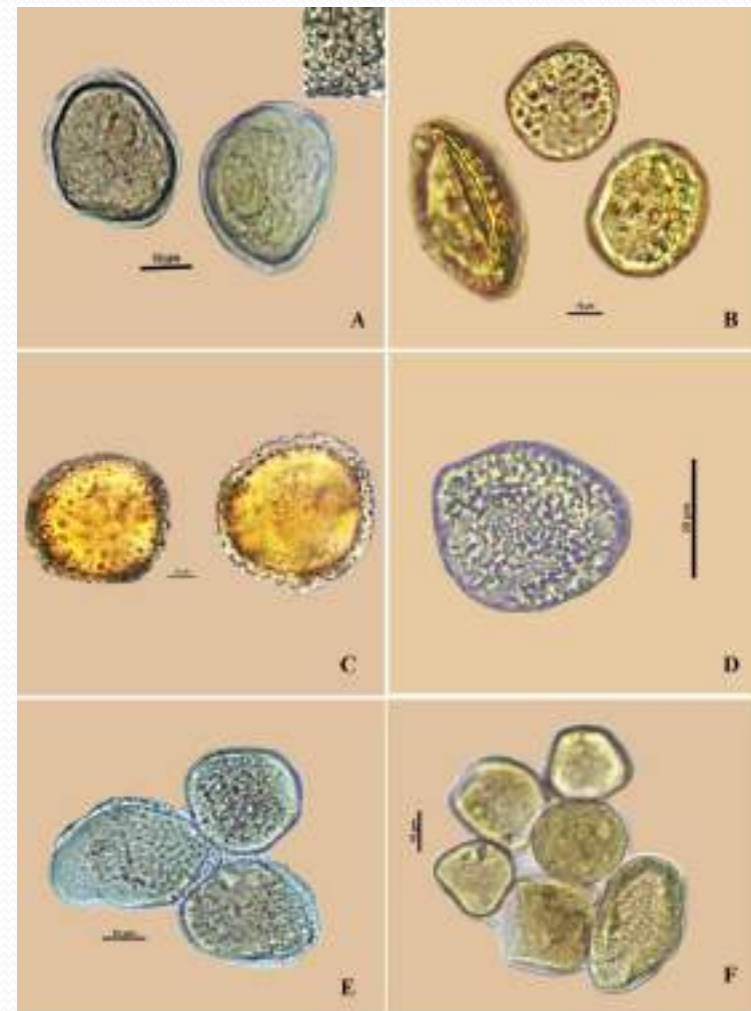


Figure.—: A. *Litsea laevigata* Gamble; B. *Litsea monopetala* (Roxb.)Pers. (= *Litsea polyantha* Juss.); C. *Litsea oblonga* Blume (= *Litsea albescens* (Hook. f.) D.G. Long); D. *Cassytha filiformis* L.; E. *Machilus bombycina* King ex Hook. f.; F. *Machilus gambiei* King ex Hook.f.

Glimpses of the pollens of Lauraceae under SEM

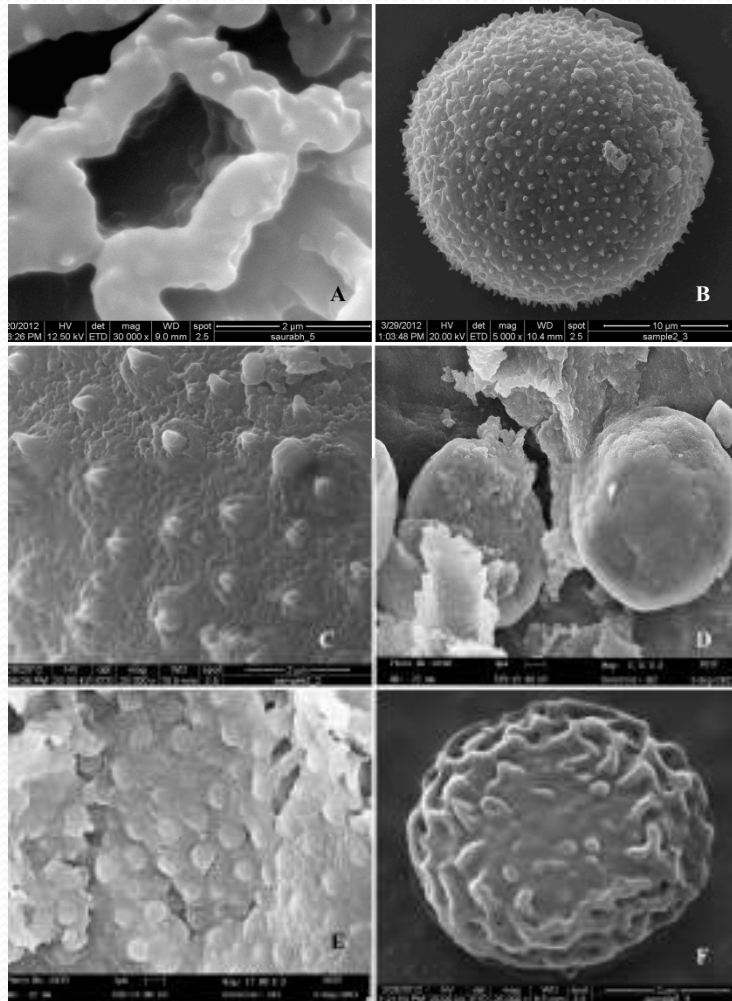


Figure 4. A. An enlarged portion of *Cassytha filiformis* L. at geographical mode; B. *Cinnamomum camphora* (L.) J. Presl.; C. An enlarged portion of the same; D. *Cinnamomum verum* Presl.; E. An enlarged portion of the same; F. *Cinnamomum paniculata* (Hook. f.) Kosterm. (= *Dusyclanthis paniculata* Nees).

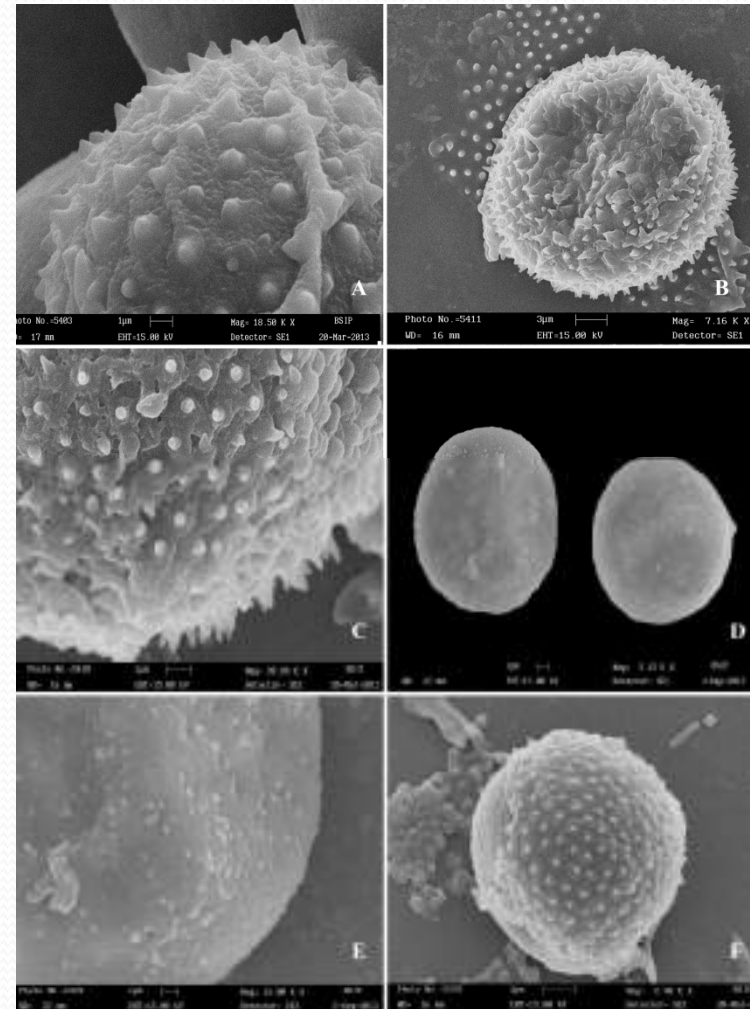


Figure 22. A. An enlarged portion of *Persea caribaea* (King ex Hook. f.) Kosterm.; B. *Persea glaucescens* (Nees) D. G. Long.; C. An enlarged portion of the same; D. *Persea kingii* (King ex Hook. f.) Kosterm.; E. An enlarged portion of the same; F. *Persea kurzii* (King ex Hook. f.) Kosterm. (= *Machilus kurzii* King ex Hook. f.)

SCIENTIFIC ACHIEVEMENTS



- Manuscript submitted : 02
- No. of papers published : 11
- Attended workshops: 05
- Attended Seminar/symposia: 05
- Species separated on the basis of Palynological features : 04
- *Ex situ* conservation of white squill; *Drimia indica* (Roxb.) Jessop in the garden premises.



Curatorial

- **Herbarium maintenance:** Re-arranging the student herbarium as per APG.III system, evacuation and re-incorporation during fumigation, Make mounted nearly 16 thousand badly brittle/fragile specimens.
- Family-wise incorporation of nearly 8900 specimens in general herbarium
- Make inserted naphthalene balls in entire pigeon holes situated in hall IV including Type section.
- Make pasted new computerized genus slips on relevant pigeon holes in the place of older ones.
- **Field book record:** Properly docketing the old field books and records submitted by the BSI officials.



Technical

- **Exchange of Loan:** ensuring the Sanction & processing of loan (issue & return) of specimens to various institutes including foreign as well as India, under section technical –I & III.
- **Assistance:** Audit reply, query pertaining to technical –I & III, docketing the record of old field books.
- Docketing & looking after the record of black and white phonographs, Kew negative, polyclaves and classical literature etc.

Miscellaneous

- Visitors attending : **7126**
- **Assistance:** Assisting to the scientists in terms of proper planning of calendar year/ instantly assigned programmes like oaths, sawach bharat mission, hindi pakhwara or some other scientific meet/seminar/symposium, exhibitions and workshops organized by BSI.



Thank you

