

# A Sketch on the Family of Zingiberaceae of Bihar and Jharkhand States, India

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## Abstract

The present study includes the systematic study of the family of Zingiberaceae of Bihar and Jharkhand States. It is based on study of published literatures, herbarium specimens at Central National Herbarium, Calcutta (CAL) and herbaria of different Colleges and Universities in Bihar and Jharkhand States and the specimens collected by the author from the States. In total, 38 plant species and 2 varieties belonging to 9 genera of the family Zingiberaceae have been recorded. The dominant genera on the basis of number of species (mentioned in the parentheses) are Curcuma (11), Zingiber (6), Hedychium (5), Alpinia (4) and Globba (4). Out of 40 taxa, 13 are cultivated, 9 are common, 5 are rare and 13 are infrequent. Few species are ethnobotanically and medicinally important and few are ornamental garden plants.

**Key words:** Zingiberaceae, Systematic study, Flora, Bihar, Jharkhand

The state Bihar, situated between 24°15'N–27°31'N and 83°20'E - 88°18'E, covers a geographical area of 94,162 km<sup>2</sup> and it is surrounded by the states like Jharkhand, Uttar Pradesh, West Bengal and the country Nepal. Again, Jharkhand is located between 22°00'N–24°15'N and 83°20'E–87°55'E and it covers a geographical area of 79,714 km<sup>2</sup>. The state Jharkhand is surrounded by the states like Bihar, Uttar Pradesh, Chhattisgarh, Orissa and West Bengal. Bihar and Jharkhand geographically occupy parts of the Middle Ganga Plains and Chotanagpur Plateau regions respectively.

Geologically Bihar was formed mostly of deposits of Quaternary - Holocene Age. The chief constituting materials are alluvium mixed with soil separates like sand, silt and clay. The region experiences monsoon climate throughout the year with seasonal variation. The study area is characterized by alluvial soils mostly in Bihar while in Jharkhand there are extensive areas under red soils with pockets of laterite soils. The vegetation of the states is mainly tropophilous.

A number of botanists explored the erstwhile Bihar from time to time since 1848 owing to its rich vegetation and floristic diversity. Hooker [1] made collections in the Parasnath hills. Anderson [2] published an account of the Flora of Bihar based on the collections of his own. He was followed by other workers like Clarke [3], Wood [4], Haines [5-6], Burkill [7], Carter [8] and Thomson [9]. Haines [10] did a pioneering work by publishing a monumental work entitled, "The Botany of Bihar and Orissa". Later, a number of other botanists like Mooney [11-13], Bressers [14], and others extensively surveyed various areas of the state and made significant contributions on the flora of Bihar. Besides, a few workers also worked out the flora of some districts like Ranchi [14], West Champaran [15], Hazaribagh [16-17] and Palamau [18]. Several plant species were recorded from states by many authors from time to time

[19]. The present paper is an attempt to know the present status of plants under the family Zingiberaceae of Bihar and Jharkhand states.

## MATERIALS AND METHODS

The present work is based on careful scrutiny of published literatures and study of herbarium specimens deposited at Central National Herbarium, Calcutta (CAL) and herbaria of different colleges and universities in Bihar and Jharkhand States. While working on Monocot Flora of Bihar and Jharkhand states, the specimens collected by the author under different field numbers are also studied. For collection and preservation of collected specimens, we have followed the methodology as proposed by Lawrence [20], Jain and Rao [21]. The paper presents correct name of species with their respective families, phenological data, ecological status and the reported distributions. The flowering and fruiting seasons (Fl. and Fr.) are mentioned in months. Local uses in some cases are also stated. Local names and distribution are abbreviated as Loc. name and distrib. respectively in the text.

## RESULTS AND DISCUSSION

The following species under the family Zingiberaceae found in the area are presented:

Key to the genera

1. Ovary unilocular, placentation parietal ..... 6. Globba
1. Ovary trilocular, placentation axile
2. Inflorescence terminal on the leafy shoot

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3. Flowers in dense capitate spikes, lateral staminodes large and various.....7. *Hedychium*  
 3. Flowers in lax racemes or panicles,  
 Lateral staminodes small or absent .....1. *Alpinia*  
 2. Inflorescence on a separate leafless scape  
 4. Spike crowned with crest of coloured bracts  
 .....3. *Curcuma*  
 4. Spike not crowned with crest of coloured bracts  
 5. Style exerted beyond anther-thecae, another crest enfolding style producing a beak.....9. *Zingiber*  
 5. Style not exerted beyond anther-thecae, anther-crest not enfolding style  
 6. Inflorescence appearing before leaves .....8. *Kaempferia*  
 6. Inflorescence contemporaneous with leaves  
 7. Lateral staminodes broad, petaloid. 4. *Curcumorpha*  
 7. Lateral staminodes reduced to minute teeth or absent  
 8. Lip broad, anther crested.....2. *Amomum*  
 8. Lip narrow, anther not crested..... 5. *Etlingera*  
 1. *Alpinia* Roxb. in *Asiat. Res.* 11:350.1810, *nom. cons.*

#### Key to the species

1. Inflorescence simple racemose.....3. *A. malaccensis*  
 1. Inflorescence paniced  
 2. Lamina 3-4 cm wide.....1. *A. calcarata*  
 2. Lamina 6-15 cm wide  
 3. Lip cuneate, pink.....4. *A. nigra*  
 3. Lip elliptic-obovate, white..... 2. *A. galanga*  
 1. *Alpinia calcarata* (Haw.) Roscoe in *Trans. Linn. Soc.* 8:347.1807; Baker in *Hook. f.*, *Fl. Brit. India* 6:254.1892; Prain, *Bengal Pl.* 2:1047.1903 (2:786.1963 Repr. ed); Haines, *Bot. Bihar Orissa* 1146.1924 (3:1197.1961 Repr. ed).  
*Renealmia calcarata* Haw. in *Andr., Bot. Rep. t.* 421. 1804.  
*Fl. & Fr.* : April – June  
*Distrib.* : China, Malaya Peninsula, Sri Lanka; throughout India; Patna.  
*Status* : Often cultivated

1. *Alpinia galanga* (L.) Swartz, *Obs. Bot.* 8.1791; Baker in *Hook. f.*, *Fl. Brit. India* 6:253.1892; Prain, *Bengal Pl.* 2:1047.1903 (2:787.1963 Repr.ed); Haines, *Bot. Bihar Orissa* 1146.1924 (3:1197.1961 Repr.ed).  
*Maranta galanga* L., *Sp. Pl. ed.* 2.3.1762.  
*Loc. name* : Taro, Ekanki  
*Fl. & Fr.* : April – June  
*Distrib.* : Malacca, Malay islands, Sri Lanka; throughout India; Purnia, Chotanagpur, Ranchi, Singhbhum.  
*Status* : Cultivated  
*Specimen Examined*: Godda, RPB 290.

1. *Alpinia malaccensis* (Burm.f.) Roscoe in *Trans. Linn. Soc.* 8:345.1807; Baker in *Hook. f.*, *Fl. Brit. India* 6:255.1892; Prain, *Bengal Pl.* 2:1046.1903 (2:786.1963 Repr.ed); Haines, *Bot. Bihar Orissa* 1147.1924 (3:1198.1961 Repr.ed).  
*Maranta malaccensis* Burm.f., *Fl. Ind.* 2.1768.  
*Fl. & Fr.* : April – June  
*Distrib.* : Bangladesh, Malayasia, Sri Lanka; Andhra Pradesh, Assam, Meghalaya, Orissa; Purnia, Saranda in Singhbhum.  
*Status* : Infrequent

2. *Alpinia nigra* (Gaertn.) Burt. in *Notes R.B.G. Edinb.* 35:213.1977.  
*Zingiber nigrum* Gaertn., *Fruct. Sem. Pl.* 1:35, *t.* 12.1788.  
*Heritiera allughas* Retz., *Obs. Bot.* 6:17, *t.* 1.1791.  
*Alpinia allughas* (Retz.) Roscoe in *Trans. Linn. Soc.* 8:346.1807; Baker in *Hook. f.*, *Fl. Brit. India* 6:253.1892; Prain,

*Bengal Pl.* 2:1047.1903 (2:787.1963 Repr.ed); Haines, *Bot. Bihar Orissa* 1146.1924 (3:1197.1961 Repr.ed).  
*Loc. name* : Taro  
*Fl. & Fr.* : June – December  
*Distrib.* : Bhutan, Malaysia; West Bengal; Purnia.  
*Status* : Frequent  
*Use* : The rhizome is used medicinally.  
*Specimen Examined* : East Champaran, RPB 578.  
 1. *Amomum* Roxb., *Pl. Coromandel* 3:75.1819, *nom. cons.*

#### Key to the species

1. Spike 2-4 cm long.....1. *A. aromaticum*  
 1. Spike 5-8 cm long  
 2. Sepals 1-3 cm long.....2. *A. maximum*  
 2. Sepals 4-5 cm long.....3. *A. subulatum*  
 1. *Amomum aromaticum* Roxb., *Fl. Ind. Carrey & Wall.* ed. 1:44.1820; Baker in *Hook. f.*, *Fl. Brit. India* 6:241.1892; Prain, *Bengal Pl.* 2:1043.1903 (2:784.1963 Repr.ed); Haines, *Bot. Bihar Orissa* 1140.1924 (3:1191.1961 Repr.ed).  
*Loc. name* : Morang-elaichi  
*Fl. & Fr.* : June – October  
*Distrib.* : Bangladesh, Myanmar; Arunachal Pradesh, Meghalaya, Orissa, Sikkim; Ranchi.  
*Status* : Cultivated  
*Use* : Seeds are used as spice and medicinally also.  
 2. *Amomum maximum* Roxb., *Fl. Ind.* 1:41.1820.  
*Amomum dealbatum* Roxb., *Fl. Ind.* 1:43.1820; Baker in *Hook. f.*, *Fl. Brit. India* 6:239.1892; Prain, *Bengal Pl.* 2:1043.1903 (2:784.1963 Repr.ed); Haines, *Bot. Bihar Orissa* 1140.1924 (3:1191.1961 Repr.ed).  
*Loc. name* : Paro  
*Fl. & Fr.* : May – September  
*Distrib.* : Bangladesh, Myanmar; Arunachal Pradesh, Meghalaya, Mizoram, Sikkim, West Bengal; Singhbhum, Purnia, Santal Pargana, Rajmahal Hills, Parasnath, Karampada.  
*Status* : Frequent  
*Specimen Examined* : Dumka, RPB 314.  
 3. *Amomum subulatum* Roxb., *Pl. Coromandel* 3:75, *t.* 277. 1819; Baker in *Hook. f.*, *Fl. Brit. India* 6:240.1892.

*Loc. name* : Bara Elachi  
*Fl. & Fr.* : April – August  
*Distrib.* : Eastern Himalayas; Ranchi.  
*Status* : Cultivated  
*Uses* : Seeds are used as spice and condiment for flavouring food-stuffs.  
*Specimen Examined*: Dumka, RPB 307.  
**Note** : The following plant is cultivated as garden plant in many areas.

*Catimbium speciosum* (Wendl.) Holtt. in *Gard. Bull. Singapore* 13:152.1950.  
*Zerumbet speciosum* Wendl. *Sert. Hannov.* *t.* 19.1798.  
*Alpinia nutans* (Andr.) Roscoe in *Smith, Exot. Bot.* 2:93, *t.* 106.1805; Baker in *Hook. f.*, *Fl. Brit. India* 6:256.1890.  
*Alpinia speciosa* (Wendl.) K. Schum., *Fl. Kais. Wilh. Land* 29.1889 & in *Engl., Pflanzenr.* 20:339.1904; Haines, *Bot. Bihar Orissa* 1146.1924 (3:1197.1961 Repr.ed).  
 1. *Curcuma* L., *Sp. Pl.* 2. 1753, *nom. cons.*

#### Key to the species

1. Spike arising centrally from the leafy-tuft, appearing after the leaves  
 2. Rhizome with the smell of green mango.....1. *C. amada*

2. Rhizome without the smell of green mango  
 3. Rhizome bright yellow-orange inside.....6. *C. longa*  
 3. Rhizome pale yellow inside  
 4. Spike 10-15 cm long.....10. *C. sulcata*  
 4. Spike less than 10 cm long  
 5. Coma bracts purplish.....7. *C. pseudomontana*  
 5. Coma bracts reddish.....8. *C. reclinata*  
 1. Spike arising laterally from the leafy-tuft, appearing before the leaves  
 6. Leaves with purple flush along the midrib.....11. *C. zedoaria*  
 6. Leaves without purple flush along the midrib  
 7. Leaf-sheath bright red.....9. *C. rubescens*  
 7. Leaf-sheath green  
 8. Labellum obscurely 3-lobed.....3. *C. aromatica*  
 8. Labellum bifid  
 9. Rhizome grayish-blue inside.....4. *C. caesia*  
 9. Rhizome pale yellow inside  
 10. Spike 6-12 cm long, labellum yellow...2. *C. angustifolia*  
 10. Spike 15-20 cm long, labellum white with purplish tinge.....5. *C. leucorrhiza*

1. *Curcuma amada* Roxb., in Asiat. Res. 11:341.1810; Baker in Hook.f., Fl. Brit. India 6:213.1890; Prain, Bengal Pl. 2:1042.1903 (2:783.1963 Repr.ed); Haines, Bot. Bihar Orissa 1135.1924 (3:1185.1961 Repr.ed).  
 Loc. name : Amada, Amhaldi  
 Fl. & Fr. : July – October  
 Distrib. : Malay Peninsula; Maharashtra, Orissa, Tamil Nadu, West Bengal; Chotanagpur, Singhbhum, West Champaran, Palamau, Ranchi, Hazaribagh.  
 Status : Common in forests and often cultivated  
 Uses : Rhizomes are used as a condiment and vegetable.  
 Specimen Examined : East Champaran, RPB 564.

2. *Curcuma angustifolia* Roxb. in Asiat. Res. 11:338, t.3.1810; Baker in Hook.f., Fl. Brit. India 6:210.1890; Prain, Bengal Pl. 2:1041.1903 (2:783.1963 Repr.ed); Haines, Bot. Bihar Orissa 1131.1924 (3:1182.1961 Repr.ed).  
 Loc. name : Paro, Tikari, Tikur  
 Fl. & Fr. : June – July  
 Distrib. : Nepal; Maharashtra, Orissa, West Bengal; Singhbhum, Parasnath, Chotanagpur, West Bihar, Ranchi, Palamau.  
 Status : Frequent  
 Use : Arrowroot is prepared from the tubers.  
 Specimen Examined : East Champaran, RPB 587.

3. *Curcuma aromatica* Salisb., Parad. 2:t.96.1807; Baker in Hook.f., Fl. Brit. India 6:210.1890; Prain, Bengal Pl. 2:1042.1903 (2:783.1963 Repr.ed); Haines, Bot. Bihar Orissa 1133.1924 (3:1184.1961 Repr.ed).  
*Curcuma zedoaria* Roxb. in Asiat. Res. 11:332.1810, non Roscoe, 1807.  
 Loc. name : Ban halud, Jangliada, Jangli haldi, Palo  
 Fl. & Fr. : June – July  
 Distrib. : Sri Lanka; throughout India; Singhbhum, Parasnath, Chotanagpur, Palamau, Ranchi.  
 Status : Often cultivated  
 Uses : Rhizomes yield arrowroot. Paste of root is applied or wounds once daily for 4 – 5 days for remedy by the santhals.  
 Specimen Examined : East Champaran, RPB 573.

4. *Curcuma caesia* Roxb. in Asiat. Res. 11:334.1810; Baker in Hook.f., Fl. Brit. India 6:212.1890; Prain, Bengal Pl. 2:1042.1903 (2:783.1963 Repr.ed); Haines, Bot. Bihar Orissa 1135.1924 (3:1185.1961 Repr.ed).  
 Loc. name : Kala-haldi, Nil-kuntha

Fl. & Fr. : May – June  
 Distrib. : West Bengal; Chotanagpur.  
 Status : Infrequent  
**Note** : *Curcuma ferruginea* Roxb. in Asiat. Res. 11:336.1810 & Fl. Ind. 1:27.1820; Baker in Hook.f., Fl. Brit. India 6:213.1890; Prain, Bengal Pl. 2:1042.1903 (2:783.1963 Repr.ed) was reported by some workers from Ranchi.  
 The author did not find it.

5. *Curcuma leucorrhiza* Roxb. in Asiat. Res. 11:337.1810; Baker in Hook.f., Fl. Brit. India 6:212.1890; Prain, Bengal Pl. 2:1042.1903 (2:783.1963 Repr.ed), “*leucorrhiza*”; Haines, Bot. Bihar Orissa 1133.1924 (3:1184.1961 Repr.ed).  
 Loc. name : Kharban, Tikur  
 Fl. & Fr. : June  
 Distrib. : Bhagalpur, Santal Paragana.  
 Status : Infrequent  
 Uses : Tubers yield arrowroot. The paste of the rhizome is given in enlargement of spleen & liver. It is also prescribed for ulceration in stomach.

6. *Curcuma longa* L., Sp. Pl. 2:1753, *pro max parte*; Baker in Hook.f., Fl. Brit. India 6:214.1890; Prain, Bengal Pl. 2:1042.1903 (2:783.1963 Repr.ed); Haines, Bot. Bihar Orissa 1135.1924 (3:1186.1961 Repr.ed).  
 Loc. name : Haldi, Hardi  
 Fl. & Fr. : August – October  
 Distrib. : Tropical regions of the world; throughout India; throughout the states.  
 Status : Cultivated  
 Uses : Rhizomes are used as spice and also in medicine. Paste of root is applied for eczema once daily for seven days by the Santhals.

7. *Curcuma pseudomontana* Graham, Cat. Bombay Pl. 210.1839.  
*Curcuma montana* Baker in Hook.f., Fl. Brit. India 6:214.1890, *p.p.*, non Roscoe, 1828.  
 Fl. & Fr. : July – October  
 Distrib. : Confined to India; Karnataka, Orissa; Palamau.  
 Status : Occasional

8. *Curcuma reclinata* Roxb. in Asiat. Res. 11 : 342.1810; Baker in Hook.f., Fl. Brit. India 6:214.1890; Prain, Bengal Pl. 2:1043.1903 (2:783.1963 Repr.ed); Haines, Bot. Bihar Orissa 1136.1924 (3:1187.1961 Repr.ed).  
 Loc. name : Bundu  
 Fl. & Fr. : September – March  
 Distrib. : Confined to India; Madhya Pradesh, Orissa, West Bengal; Singhbhum, Chotanagpur, Ranchi.  
 Status : Common  
 Use : Tubers are eaten by the tribals.  
 Specimen Examined : Samastipur, RPB 410.

9. *Curcuma rubescens* Roxb. in Asiat. Res. 11:336.1810; Baker in Hook.f., Fl. Brit. India 6:213.1890; Prain, Bengal Pl. 2:1042.1903 (2:783.1963 Repr.ed); Haines, Bot. Bihar Orissa 1132.1924 (3:1183.1961 Repr.ed).  
 Fl. & Fr. : June – July  
 Distrib. : West Bengal; Singhbhum, Chotanagpur.  
 Status : Infrequent  
 Specimen Examined : Sitamarhi, RPB 615.

10. *Curcuma sulcata* Haines in Kew Bull. 1923:119.1923 & Bot. Bihar Orissa 1132.1924 (3:1182.1961 Repr.ed).  
 Fl. & Fr. : June – August  
 Distrib. : Chotanagpur.  
 Status : Infrequent

11. *Curcuma zedoaria* (Bergius) Roscoe in Trans. Linn. Soc. 8:354.1807; Baker in Hook. f., Fl. Brit. India 6:210.1890; Prain, Bengal Pl. 2:1042.1903 (2:783.1963 Repr.ed); Haines, Bot. Bihar Orissa 1134.1924 (3:1185.1961 Repr.ed).  
*Amomum zedoaria* Bergius, Mater. Med. 41.1778.  
*Curcuma zerumbet* Roxb. in Asiat. Res. 11:332.1810 & Pl. Coromandel 3:1, t. 201.1819.  
 Loc. name : Kanchura, Shute  
 Fl. & Fr. : April – May  
 Distrib. : South East Asia; Arunachal Pradesh, Assam, Meghalaya, Orissa; West Champaran, Purnea, Manbhum, Santal Pargana.  
 Status : Often cultivated.  
 Use : Plants have stimulant and carminative properties and are used in flatulence, dyspepsia and as an expectorant.  
 Specimen Examined: Bhagalpur, RPB 508.

1. *Curcumorpha* A.S. Rao & D.M. Verma in Bull. Bot. Surv. India 13: 339. 1971.

*Curcumorpha longiflora* (Wall.) A.S. Rao & D.M. Verma in Bull. Bot. Surv. India 13:339.1971.

*Gastrochilus longiflora* Wall., Pl. Asiat. Rar. 1:22,t.25.1829; Baker in Hook.f., Fl. Brit. India 6:217.1890; Prain, Bengal Pl. 2:1039.1903 (2:781.1963 Repr.ed); Haines, Bot. Bihar Orissa 1136.1924 (3:1187.1961 Repr.ed).

Fl. & Fr. : May – September

Distrib. : Malacca, Myanmar; Assam, Meghalaya, Orissa, Sikkim; Singhbhum, Hazaribagh, Parasnath, Chotanagpur.

Status : Occasional

Specimens Examined : Parasnath, Hazaribagh, 09.10.1884, C.B. Clarke 33778 (CAL); Chotanagpur, 13.09.1896, D. Prain Acc. No. 466399 (CAL); Singhbhum, August 1900, H.H. Haines 332 (CAL); Dumka, RPB 313.

1. *Etlingera* Giseke, Prael. Ord. Nat. ad 202,209,251.1792, “*Ettlingera*”.

*Etlingera linguiformis* (Roxb.) R.M. Smith in Notes R.B.G. Edinb. 43(2) : 246.1986.

*Alpinia linguiformis* Roxb., Pl. Coromandel 3 : 74, t. 276.1819.

*Amomum linguiforme* Benth. in Benth. et Hook.f., Gen. Plant. 3:644.1883; Baker in Hook.f., Fl. Brit. India 6:235.1892; Prain, Bengal Pl. 2:1043.1903 (2:784.1963 Repr.ed); Haines, Bot. Bihar Orissa 1141.1924 (3:1191.1961 Repr.ed).

Fl. & Fr. : May – September

Distrib. : West Bengal; Purnia, Godda.

Status : Occasional

Specimen Examined : Godda, RPB 284.

1. *Globba* L., Mant. Pl. 2:170.1771.

#### Key to the species

1. Bracts persistent, anthers with 2 lateral wings.....1. *G. marantina*

1. Bracts deciduous, anthers not winged

2. Capule oblong, labellum faintly bilobed.....2. *G. multiflora*

2. Capule globose, labellum deeply bifid

3. Corolla lobes shorter than staminodes .....3. *G. ophioglossa*

3. Corolla lobes longer than staminodes.....4. *G. racemosa*

1. *Globba marantina* L., Mant. Pl. 170.1771; Baker in Hook.f., Fl. Brit. India 6:206.

1890.

*Globba bulbifera* Roxb. in Asiat. Res. 11:358.1810; Baker in Hook. f., Fl. Brit. India 6:206.1890; Prain, Bengal Pl.

2:1037.1903 (2:779.1963 Repr.ed); Haines, Bot. Bihar Orissa 1130.1924 (3:1180.1961 Repr.ed).

Loc. name : Chhota rasna

Fl. & Fr. : June – September

Distrib. : Malayasia, Philippines, Sri Lanka, Timor; West Champaran, Chotanagpur, Hazaribagh, Parasnath, Palamau, Ranchi.

Status : Common in forests

Specimens Examined : Parasnath, 21.10.1934, K. Biswas 2137 (CAL); Parasnath, T. Thomas Acc. No. 465826 (CAL).

2. *Globba multiflora* Wall. Ex Baker in Hook.f., Fl. Brit. India 6:202.1890.

Fl. & Fr. : August – November

Distrib. : Bhutan; Sikkim, West Bengal; Santal Pargana.

Status : Infrequent

3. *Globba ophioglossa* Wight, Ic. T.2002.1853; Baker in Hook.f., Fl. Brit. India 6: 202.

1890; Prain, Bengal Pl. 2:1037.1903 (2:779.1963 Repr.ed); Haines, Bot. Bihar Orissa 1130.1924 (3:1180.1961 Repr.ed).

Fl. & Fr. : June – August

Distrib. : Tamil Nadu, Kerala, Orissa; Parasnath hill, Chotanagpur, Ranchi.

Status : Occasional

Specimen Examined : Chotanagpur, 12.09.1896, D. Prain Acc. No. 465630 (CAL).

4. *Globba racemosa* J.E. Sm., Exot. Bot. 2:115, t.117.1805; Baker in Hook.f., Fl. Brit.

India 6 :201.1890; Haines, Bot. Bihar Orissa 1129.1924 (3:1179.1961 Repr.ed).

*Globba orixensis* Roxb. in Asiat. Res. 11:358.1810; Baker in Hook.f., Fl. Brit. India 6:201.1890; Prain, Bengal Pl. 2:1037.1903 (2:779.1963 Repr.ed); Haines, Bot. Bihar Orissa 1129.1924 (3:1180.1961 Repr.ed).

Loc. name : Sulli

Fl. & Fr. : July – December

Distrib. : Arunachal Pradesh, Orissa, Sikkim, West Bengal; West Champaran, Chotanagpur, Parasnath, Ranchi, Rajmahal hills near Sahibganj, Manbhum.

Status : Common in forests

Specimens Examined : Manbhum, 29.08.1885, A.Campbell 8702 (CAL); Chotanagpur, July 1895, J.J. Wood Acc. No. 465589 (CAL); Champaran, 11.08.1964, R.N. Banerjee 91 (CAL); Patna, RPB 388.

#### Key to the variety

1. Panicle 8-20 cm long, flower 3-4 cm long .....1. *G.*

*racemosa* var. *racemosa*

2. Panicle 25-40 cm long, flower 6-7.5 cm long.....2. *G.*

*racemosa* var. *hookeri*

1. *Globba racemosa* J.E. Sm. var. *racemosa*

2. *Globba racemosa* var. *hookeri* (C.B. Clarke ex Baker) S. Kumar

*Globba hookeri* C.B. Clarke ex Baker in Hook.f., Fl. Brit. India 6:202.1890.

Fl. & Fr. : June – September

Distrib. : Bhutan; Sikkim, West Bengal; Chotanagpur.

Status : Infrequent

Specimen Examined : Giridih, RPB 369.

7. *Hedychium* J. Koenig in Retz., Fasc. Obs. Bot. 3:61.1783.

#### Key to the species

1. Stamen as long as labellum.....2.

*H. coronarium*



1. Stamen twice as long as labellum
2. Spike lax
3. Flowers red, capsule elliptic.....1. *H. coccineum*
3. Flowers white, capsule globose.....4. *H. stenopetalum*
2. Spike dense
4. Flowers bright yellow.....3. *H. gardnerianum*
4. Flowers white.....5. *H. thyrsoforme*
  1. *Hedychium coccineum* Buch.-Ham. ex J.E. Sm. in Rees, Cyclop. 17:5.1811; Baker in Hook.f., Fl. Brit. India 6:231.1892; Haines, Bot. Bihar Orissa 1139.1924 (3:1190.1961 Repr.ed).  
*Hedychium angustifolium* Roxb., Pl. Coromandel 3:248, t. 251. 1819.  
*Hedychium coccineum* var. *angustifolium* (Roxb.) Baker in Hook. f., l.c.; Prain, Bengal Pl. 2:1040.1903 (2:781.1963 Repr.ed), "*angustifolia*".  
Fl. & Fr. : July – August  
Distrib. : Bangladesh, Sri Lanka; Arunachal Pradesh, Meghalaya, Orissa, Sikkim; Ranchi, West Champaran.  
Status : Occasional
  2. *Hedychium coronarium* J. Koenig in Retz., Fasc. Obs. Bot. 3:73.1783; Baker in Hook.f., Fl. Brit. India 6:225.1892; Prain, Bengal Pl. 1039.1903 (2:781.1963 Repr.ed); Haines, Bot. Bihar Orissa 1138.1924 (3:1189.1961 Repr.ed).  
Loc. name : Dulal-champa  
Fl. & Fr. : June – December  
Distrib. : Malay Islands, Myanmar, Nepal, Sri Lanka; throughout India; Chotanagpur, West Champaran, Palamau, Manbhum, Jonha, Santal Pargana, Purnia, Singhbhum, Tholkebad, Ranchi, Hazaribagh.  
Status : Common  
Specimens Examined : Tholkebad, 06.01.1961, G.V.S. Rao 23225 (CAL); Sitamarhi, RPB 614.
  3. *Hedychium gardnerianum* Sheppard ex Ker-Gawl. in Edwards, Bot. Reg. 9: t.774.  
1824; Baker in Hook.f., Fl. Brit. India 6:230.1892; Haines, Bot. Bihar Orissa 1139.1924 (3:1190.1961 Repr.ed).  
Fl. & Fr. : July – October  
Distrib. : Assam, Sikkim, Uttar Pradesh, West Bengal; throughout the states.  
Status : Frequently cultivated  
Specimen Examined : Koderma, RPB 344.
  4. *Hedychium stenopetalum* Lodd., Bot. Cab. t. 1902.1833; Baker in Hook. f., Fl. Brit. India 6:231.1892; Haines, Bot. Bihar Orissa 1139.1924 (3:1190.1961 Repr.ed).  
Fl. & Fr. : July – August  
Distrib. : Bhutan; West Bengal; Purnia, Santal Paragana.  
Status : Occasional  
Specimen Examined : East Champaran, RPB 554.
  5. *Hedychium thyrsoforme* Buch.-Ham. ex J.E. Sm. in Rees, Cyclop. 13: n. 4. 1809;  
Baker in Hook. f., Fl. Brit. India 6:230.1892; Prain, Bengal Pl. 2:1040.1903 (2:781.1963 Repr.ed); Haines, Bot. Bihar Orissa 1139.1924 (3:1189.1961 Repr.ed).  
Fl. & Fr. : July – August  
Distrib. : Bangladesh, Bhutan; Jammu & Kashmir, Sikkim, West Bengal; Ramnagar hill, West Champaran.  
Status : Rare
  6. *Kaempferia* L., Sp. Pl. 2. 1753.

#### Key to the species

1. Flowers bluish.....3. *K. rotunda*
1. Flowers white

2. Leaves lanceolate, labellum lilac.....1. *K. angustifolia*
2. Leaves sub-orbicular, labellum with a purple spot....2. *K. galanga*
  1. *Kaempferia angustifolia* Roscoe in Trans. Linn. Soc. 8:351.1807; Baker in Hook. f., Fl. Brit. India 6:219.1890; Prain, Bengal Pl. 2:1038.1903 (2:780.1963 Repr.ed); Haines, Bot. Bihar Orissa 1138.1924 (3:1188.1961 Repr.ed).  
Loc. name : Kanjanbura, Mudnirbisha  
Fl. & Fr. : June – August  
Distrib. : Malay Islands; Arunachal Pradesh, Assam, Orissa, West Bengal; Purnia.  
Status : Infrequent  
Specimen Examined : Sitamarhi, RPB 620.
  2. *Kaempferia galanga* L., Sp. Pl. 2.1753; Baker in Hook.f., Fl. Brit. India 6:219. 1890; Prain, Bengal Pl. 2:1038.1903 (2:780.1963 Repr. ed); Haines, Bot. Bihar Orissa 1137.1924 (3:1188.1961 Repr.ed).  
Loc. name : Akangi  
Fl. : May - December  
Distrib. : Malay; throughout India; North Bihar, Koderma.  
Status : Cultivated  
Specimen Examined : Koderma, RPB 325.
  3. *Kaempferia rotunda* L., Sp. Pl. 3.1753; Baker in Hook. f., Fl. Brit. India 6:222.1890;  
Prain, Bengal Pl. 2:1038.1903 (2:780.1963 Repr.ed); Haines, Bot. Bihar Orissa 1137. 1924 (3:1188.1961 Repr.ed).  
Loc. name : Bhui champa  
Fl. & Fr. : April – June  
Distrib. : Malay Peninsula, Sri Lanka; throughout India; Chotanagpur, Parasnath, Koderma, Palamau (Netarhat), Ranchi.  
Status : Wild or sometimes cultivated  
Use : The roots yield dye.  
Specimens Examined : Parasnath, Kurz Acc. No. 466287 (CAL); Munger, RPB 525.  
9. Zingiber Mill., Gard. Dict. Abr., ed. 4:1545.1754, "*Zinziber*," orth. et nom.cons.

#### Key to the species

1. Inflorescence terminal on the leafy stem.....1. *Z. capitatum*
1. Inflorescence radical or basal
2. Peduncle 3-10 cm long
3. Lip spotted and streaked with reddish-purple, corolla lobes red.....5. *Z. rubens*
3. Lip unspotted, corolla lobes white.....4. *Z. roseum*
2. Peduncle 15-30 cm long
4. Leaves 1-2 cm wide, lip purple with yellow spots.....2. *Z. officinale*
4. Leaves 3-8 cm wide, lip yellow
5. Labellum bilobed, capsule globose.....3. *Z. purpureum*
5. Labellum emarginate, capsule oblong.....6. *Z. zerumbet*

1. *Zingiber capitatum* Roxb. in Asiat. Res. 11:348.1810; Baker in Hook. f., Fl. Brit. India 6:248.1892; Prain, Bengal Pl. 2:1045.1903 (2:785.1963 Repr.ed); Haines, Bot. Bihar Orissa 1144.1924 (3:1195.1961 Repr.ed).  
Loc. name : Jungle-ada  
Fl. & Fr. : June – October  
Distrib. : Bangladesh, Myanmar, Nepal; Assam, Madhya Pradesh, Orissa, Sikkim, Meghalaya; Chotanagpur, West Champaran, Rajmahal hills near Sahibgunj, Lohardagga, Palamau, Ranchi, Hazaribagh.  
Status : Common

Specimens Examined : Lohardagga, Chotanagpur, 08.11.1883, C.B. Clarke 34336 (CAL); Jonha, Chotanagpur, J. J. Wood Acc. No. 468081 (CAL); East Champaran, RPB 572.

#### Key to the varieties

1. Leafy culm 1-1.2 m high.....1. *Z. capitatum* var. *capitatum*  
1. Leafy culm 1.5-2 m high.....2. *Z. capitatum* var. *elatum*

1. *Zingiber capitatum* Roxb. var. *capitatum*
2. *Zingiber capitatum* Roxb. var. *elatum* (Roxb.) Baker in Hook. f., Fl. Brit. India

6:249.1892; Prain, Bengal Pl. 2:1045.1903 (2:785.1963 Repr. ed), “*elata*”.

*Zingiber elatum* Roxb., Fl. India 1:57.1820.

Fl. & Fr. : July – October

Distrib. : Tropical areas; Arunachal Pradesh, Meghalaya, Sikkim, West Bengal; Rajmahal hills near Sahibganj, Vikramshila, Chatra, Hazaribagh, Palamau.

Status : Rare

Specimen Examined: Rajmahal hills near Sahibganj, S. Kurz Acc. No. 468079 (CAL).

2. *Zingiber officinale* Roscoe in Trans. Linn. Soc. London 8:348.1807; Baker in Hook.

f., Fl. Brit. India 6:246.1892; Prain, Bengal Pl. 2:1045.1903 (2:785.1963 Repr.ed); Haines, Bot. Bihar Orissa 1143.1924. (3:1193.1961 Repr.ed).

Loc. name : Ada, Adrak

Fl. & Fr. : October – December

Distrib. : Pantropical; throughout India; throughout the states.

Status : Widely cultivated

Uses : Rhizomes are used as a spice and medicinally also.

Specimen Examined : Ranchi, RPB 097.

3. *Zingiber purpureum* Roscoe in Trans. Linn. Soc. London 8:348.1807.

*Zingiber casumunar* Roxb. in Asiat. Res. 11:347, t.5. 1810; Baker in Hook. f., Fl. Brit. India 6:248.1892; Prain, Bengal Pl. 2:1045.1903 (2:785.1963 Repr.ed); Haines, Bot. Bihar Orissa 1143.1924 (3:1194.1961 Repr.ed).

Loc. name : Ban-ada

Fl. & Fr. : July – October

Distrib. : Malay Peninsula, Sri Lanka, Tropical Asia; throughout India; Chotanagpur, Santal Pargana, Purnia, Mirzachowki (Sahibganj dist), Palamau, Singhbhum, Ranchi.

Status : Common

Uses : The tribal uses rhizome as a substitute of *Curcuma longa* (Termeric). It is also used in diabetes.

Specimens Examined : Palamau, Dec. 1880, J.S. Gamble 8841 (CAL); Singhbhum, August, 1900, H.H. Haines 317 (CAL); East Champaran, RPB 563.

#### Key to the varieties

1. Flower pale yellow, capsule globose.....1. *Z. purpureum* var. *purpureum*  
1. Flower white, capsule ovoid..... 2. *Z. purpureum* var. *palamaunsis*

1. *Zingiber purpureum* Roscoe var. *purpureum*
2. *Zingiber purpureum* Roscoe var. *palamaunsis* (Haines) K.K. Khanna in N.P. Singh

et al., Fl. Bihar Analysis 513. 2001.

*Zingiber cassumunar* Roxb. var. *palamaunsis* Haines, Bot. Bihar Orissa 1144.1924 (3:1195.1961 Repr.ed).

Fl. & Fr. : July – September

Distrib. : Palamau (Haines, l.c.).

Status : Endemic

4. *Zingiber roseum* (Roxb.) Roscoe in Trans. Linn. Soc. London 8: 348. 1807 &

Monandr. Pl. t. 87.1828; Baker in Hook. f., Fl. Brit. India 6:244.1892; Prain, Bengal Pl. 2:1044.1903 (2:785.1963 Repr.ed); Haines, Bot. Bihar Orissa 1142.1924 (3:1193.1961 Repr.ed).

*Amomum roseum* Roxb., Pl. Coromandel 2:15, t.126.1798.

Fl. & Fr. : July – September

Distrib. : Confined to India; Tamil Nadu, Uttar Pradesh; Singhbhum, Chotanagpur, Rajmahal hills, Sahibganj, Ranchi.

Status : Rare

Specimens Examined: Ranchi, Chotanagpur, 13.09.1896, D. Prain Acc. No. 467911 (CAL); Singhbhum, 22.08.1900, H.H. Haines 316 (CAL); East Champaran, RPB 583.

5. *Zingiber rubens* Roxb. in Asiat. Res. 11: 348. 1810 & Fl. Ind. 1: 53. 1820; Baker in

Hook.f., Fl. Brit. India 6:243.1892; Prain, Bengal Pl. 2:1044.1903 (2:785.1963 Repr.ed); Haines, Bot. Bihar Orissa 1142.1924 (3:1192.1961 Repr.ed).

Fl. & Fr. : July – October

Distrib. : Confined to India; Assam, Meghalaya, Orissa West Bengal; Ranchi, Sahibganj, Bhagalpur.

Status : Rare

Specimen Examined : Koderma, RPB 346.

6. *Zingiber zerumbet* (L.) Roscoe ex J.E. Sm., Exot. Bot. 2:105, t.112. 1805; Baker in

Hook. f., Fl. Brit. India 6:247.1892; Prain, Bengal Pl. 2:1045.1903 (2:785.1963 Repr.ed); Haines, Bot. Bihar Orissa 1143.1924 (3:1194.1961 Repr.ed).

*Amomum zerumbet* L., Sp. Pl. 1.1753.

Loc. name : Makabaribach, Narkachur, Pharo

Fl. & Fr. : July – October

Distrib. : Malay Peninsula, Sri Lanka, Pantropic; throughout India; Palamau, Ranchi, Chotanagpur, Bhagalpur, Sahibganj.

Status : Rare, often cultivated.

Uses : Rhizomes are used locally as an antidote to snake bite and also as a spice. The mucilage present in the spike is rubbed over forehead in headache by the tribals.

Specimens Examined : Chotanagpur, Sept. 1896, D. Prain Acc. No. 467993 (CAL); Ranchi, 08.09.1896, Mokim Acc. No. 467995 (CAL); Sitamarhi, RPB 607.

## CONCLUSION

A total number of 38 species and 2 varieties belonging to 9 genera under the family Zingiberaceae are encountered during the survey in the states. The dominant genera on the basis of number of species (mentioned in the parentheses) are *Curcuma* (11), *Zingiber* (6), *Hedychium* (5), *Alpinia* (4) and *Globba* (4). Out of 40 taxa, 13 are cultivated, 9 are common, 5 are rare and 13 are infrequent. Few species under the family Zingiberaceae presented here are ethnobotanically and medicinally important also. Few members are ornamental garden plants.

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