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A Spectrum of Biodiversity And Economy In India Disclosed From The Ain-I-Akbari

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Abstract:

The lexicon *viz.*, Ain-I-Akbari authored by Abul Fazal Allami (16th Century) is examined to disclose biodiversity and its potentials during the ruin of Emperor Akbar. This study will serve as a gateway to explore the multifaceted tapestry of Emperor Akbar. This century has illuminating impact on the landscape of India and even culture. The legacy of this period endures in modern Indian culinary and horticultural traditions, apart from the arena of perfumery. This study encompassed diverse potentialities. As many as 17 plant species were used as source of food grains, 38 species for edible fruits, 19 species for vegetable and salad, 17 species for spices and condiments, 06 species for perfumery and 22 plant species as horticultural ones. Totally 116 plant species pertaining to 95 genera and 79 families were integral part of Indian economy in this period of domain. It is notable that 68 exotic plant species belonging to 67 genera and 42 families were also under cultivation. This account mirrors a tapestry of useful plant world of 16th century in India in historical perspective.

Keywords: Ain-I-Akbari, Biodiversity, Ethnobotany, India.

Introduction:

The Ain-I-Akbari (16th Century) is authored by Abul Fazal Allami. He was Prime Minister of the Emperor Akbar's empire. He was a court historian, prominent writer and keen lover of nature. This lexicon is not merely data of administration and ruling of Akbar in medieval India. It stands unique among the Muhammadan histories of India. The data contained in it is trustworthy as it informs on various aspects of human life. The Ain-I-Akbari is thus developed on Indian soil during the said period. Being in high official position, it was easy access to him for any information of the then Indian and as reflected by culture, environment and nature. This is amply apparent from the contents of this manuscript which are also praiseworthy. The present author engaged in exploring history of India in the perspective of plant-kingdom (Patil, 2021). The Ain-I-Akbari also appeared notable in this context and hence the floral elements are being disclosed from it divulging man-plant relationships in medieval period of India.

Methodology:

The Ain-I-Akbari is originally written in Urdu language to which present author is not well conversant. It is, therefore, consulted with English translation. Its three volumes are critically examined. The said lexicon is made available by Blochmann (I Vol., 1873) and Jarrett (II, III Vols. 1948, 1949). The information is presented in the Tables-I: A to F w.r.t. common names (Urdu or English) available, botanical

name and family, habit and status of each taxon about nativity. Exotic status (*) of plant taxa have been evaluated by consulting Patil (2021, 2025a, b) and Singh (2125). The data so obtained is discussed relevantly.

Systematic Enumeration:

The common plant names as mentioned in the said lexicon *viz.*, Ain-In-Akbari are equated with the recent botanical (Latin) names. The species are analysed for their habital categories and nativities consulting relevant taxonomic literature as mentioned against each exotic plant species. The data so accrued is provided in the Tables-I: A to F.

Results And Discussion:

The lexicon *viz.*, Ain-I-Akbari authored by Abul Fqazal Allami (16th Century) is scrutinized for revealing elements of biodiversity on Indian landmass. As many as 116 plant species pertaining to 95 genera and 79 families of angiosperms are identified from the said lexicon. These were used for various purposes in the said period of Emperor Akbar. Their floristic account is presented herewith purpose-wise (c*f*. Table I-VI). They were used as food grains which belonged to total 14 species (09 dicotyledons and 05 monocotyledons). Their analysis disclosed cereals (02 species), millets (03 species), pulses (07 species) and oil-yielding (03 species). It is notable that food grain sources *viz.*, wheat and pear millet did not find place in the said lexicon. All plant taxa are herbaceous ones (Table-I).

Some plant taxa appeared to have exploited for edible fruits. A total of 38 plant species belonging to 35 dicotyledons and 03 monocotyledons were used for the aforesaid purposes. They were trees (33 species), shrubs (03 species), climbers (02 species) and herbaceous one being a single species (Table-II). There were some plant taxa useful as vegetable and salad. These belong to total 19 species (18 dicotyledons and 02 monocotyledons). They represent similarly numerically but belonged to total 13 families (12 Dicotyledons and 01 monocotyledons) (Table-III). Also, some other plant species were employed for spices and condiments. Total 17 plant species (11 dicotyledons and 06monocotyledons) pertaining to 16 genera (11 dicotyledons and 05 monocotyledons) and 12 families of angiosperms (09 dicotyledons and 03 monocotyledons). They appeared to be trees (02), herbs (09) and climbers (01). The figures denote number of species (Table-IV). It is noteworthy that plant taxa were also exhausted for preparing perfumes, while other were enjoyed for fine fragrant flowers. For the sake of perfume preparation, total 06 plant species (05 dicotyledons and 01 monocotyledon) belonged to similarly numerically to generic and familial ranks (Table-V). A fair number of species found in gardens for their beauty and sweet fragrance. A total of 22 plant species (17 dicotyledons and 05 monocotyledons) were enjoyed pertaining to total 21 genera (16 dicotyledons and 05 monocotyledons) and 19 angiospermic families (15 dicotyledons and 04 monocotyledons) (Table-VI).

The scrutiny about their nativities is also carried out. Out of the total 116 species, 35 genera and 79 families, as many as 73 species (65 dicotyledons, 08 monocotyledons) pertaining 63 genera (55 dicotyledons, 08 monocotyledons) are found exotic in status. They are hailed from different continents, countries and specific geographical regions of the world. This is indicative of a fact that exotic cultigens played a considerable role in Indian economy in the said period of domain.

It is also to be noted that common names of some plant species mentioned in this lexicon could not be identified botanically e.g. Badinjan, Kukurah, Ambili, Karihah, Konduri, Kanku, Ghep, Kankochhu, Kakura, Kachachi, Zabad, Sewati, Raibel, Tasbi-I-Gulal, Karnah, Senbal, Kadar Siri Khandi, Dhanandhar, etc. Collaborative efforts from experts of language (such as Urdu or Arabian) may help in resolving their identities on botanical ground.

Mankind in all period exhausted natural bioresources in his surroundings and also brought them under cultivation. Medievel period of India is not exception to it. During region of Emperor Akbar (16th Century), such utilities are recorded by Prime Minister Abul Fazal Allami of his Kingdom. The above floristic resume amazingly presented delicious variety of food sources, wide range of sources for spices, condiments, fruits and perfumes. Even some plant taxa were taken notice for their beauty and fragrance. It appears that under

illustrious ruler Akbar, the 16th century witnessed unparallel prosperity and cultural flourishing. The Ain-I-Akbari is not merely a record of historical, political and social annals but economic potentials are mirrored from it in the said period of India.

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Table-I: Biodiversity In Ain-I-Akbari

(A) Food Grains

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
1	Kabilligram Nukhud Dal	**Cicer arietinum* L.	Papilionaceae	H	(i) South Europe: Patil, 1990. (ii) Mediterranean Region: Shetty & Singh, 1987.
2	Blackgram, Mash	*Vigna mungo* (L.) Hepper	Papilionaceae	H	Indigenous
3	Lentil	**Lens culinaris* Medik.	Papilionaceae	H	(i) Central Europe, Mediterranean Region and W.Asia: Patil, 1995. (ii) Mediterranean Region & W.Asia: Shetty & Singh, 1987.
4	Barley	**Hordeum vulgare* L.	Poaceae	H	Ethiopia: Fekadu *et al.*, 2021.
5	Linseed	**Linum usitatissimum* L.	Linaceae	H	(i) Mediterranean Region: De Candolle, 1959. (ii) Europe: Dar *et al.*, 2002.
6	Safflower	**Carthamus tinctorius* L.	Asteraceae	H	(i) West Asia: Yadav & Sardesai, 2002. (ii) South-West Asia: Patil, 2003; Cooke, 1958.
7	Paddy	*Oryza sativa* L.	Poaceae	H	Indigenous
8	Mung	*Vigna radiata* (L.) R.Wilczek	Papilionaceae	H	Indigenous
9	Moth	*Vigna aconitifolia* (Jacq.) Marechal	Papilionaceae	H	Indigenous
10	Sesame	**Sesamum orientale* L. (Syn.S. indicum L.)	Pedaliaceae	H	Africa: Dogra, 2011.
11	Lobiya (Bean)	**Vigna unguiculata* L.	Papilionaceae	H	West Central Africa: Singh & Nigam, 2017.

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
12	Juwari	**Sorghum bicolor* (L.) Moench.	Poaceae	H	North-Eastern Quadrant of Africa/Ethiopia; Singh & Nigam, 2017.
13	Kodrum	**Paspalum scrobiculatum* L.	Poaceae	H	Tropical Africa: Singh & Nigam, 2017.
14	Kangni	**Setaria italica* (L.) P.Beauv.	Poaceae	H	(i) Near East (China): Singh & Nigam, 2017. (ii) East Asia: Naik, 1988.

(B) Fruits In Ain-I-Akbari

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
1	Quince	**Cydonia oblonga* Mill.	Rosaceae	T	Western Asia (Iran To Turkey): Singh & Sexena, 1988.
2	Guava	**Psidium guajava* L.	Myrtaceae	T	(i) Tropical America: Patil, 2003. (ii) Mexico: Shetty & Singh, 1987.
3	Pomegranate	**Punica granatum* L.	Punicaceae	T	(i) Afghanistan, Baluchistan & Persia: Patil, 2003. (ii) South Asia: Gaikwad & Garad, 2015.
4	Grapes, Munaqaa	**Vitis vinifera* L.	Vitaceae	C	(i) South-West Europe to West Indies: Singh *et al.*, 2000a. (ii) West Indies: Gaikwad & Garad, 2019.
5	Dates	**Phoenix dactylifera* L.	Arecaceae	T	(i) Persian Gulf: Patil, 2019. (ii) Africa: Bailey, 1945.
6	Apricot	**Prunus armeniaca* L.	Rosaceae	T	China: Singh & Saxena, 1988.
7	Fig, Pakar	**Ficus carica* L.	Moraceae	T	(i) Mediterranean Region: Gaikwad & Garad, 2015. (ii) Europe: Dar *et al.*, 2002.

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
8	Jujube, Ber	**Ziziphus mauritiana* Linn.	Rhmnaceae	T	(i) Tropics & Warm Subtropics: Martin *et al.*, 1987. (ii) Australia: Veerasamy & Arumugan, 2014.
9	Almond	**Prunus amygdalus* Batsch.	Rosaceae	T	Central & Western Asia: Singh *et al.*, 2000a.
10	Watermelon	**Citrullus lanatus* (Thunb.) Matsura & Nakai	Cucurbitaceae	C	(i) South Africa: Patil, 2003. (ii) Tropical Africa: Shetty & Singh, 1987.
11	Pistachio	**Pistacia vera* L.	Anacardiaceae	T	West Asia: Singh & Saxena, 1988.
12	Hazal Nuts	*Corylus avellana* L.	Betulaceae	S	Europe: Sharma, 2024.
13	Pine Apple	**Ananus comosus* (L.) Merr.	Bromeliaceae	S	(i) Tropical America: Yadav & Sardesai, 2002. (ii) America: Sorenson, 2005.
14	Orange	**Citrus sinensis* (L.) Osbeck.	Rutaceae	T	China: Singh *et al.*, 2000a.
15	Jackfruit	**Artocarpus heterophyllus* Lam. (Syn.A.incisus L.f.)	Moraceae	T	Tahiti Islands: Mukhopadhyay & Chakraverty, 2008.
16	Plantain	*Musa paradisiaca* L.	Musaceae	H	Indigenous
17	Mulberry	**Morus nigra* L.	Moraceae	T	West Asia (Iran): Singh & Saxena, 1988.
18	Custard Apple	**Annona squamosa* L.	Annonaceae	T	Tropical America: Patil, 2003. Tropical America, West Indies: Shetty & Sigh, 1987.
19	Khirni	**Mimusops kauki* L.	Sapotaceae	T	Tropical Australia: Singh *et al.*, 2001.
20	Tendu	*Diospyros melanoxylon* Roxb.	Ebenaceae	T	Indigenous
21	Mahuwa	*Madhuca indica* J.F. Gmel.	Sapotaceae	T	Indigenous
22	Bholsari	*Mimusops elengi* L.	Sapotaceae	T	Indigenous
23	Coconut	*Cocos nucifera* L.	Arecaceae	T	Indigenous

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
24	Walnut	**Juglans regia* L.	Juglandaceae	T	South-East Asia: Singh & Saxena, 19880
25	Chirannchi (Chironji)	*Buchanani cochinchenensis* (Lour.) M.R.Almeida	Anacardiaceae	T	Indigenous
26	Kamrak	**Averrhoa carambola* Linn.	Oxalidaceae	T	Tropical America: Gaikwad & Garad, 2015.
27	Jaman	*Syzygium cumini* (Linn.) Skeels	Myrtaceae	T	Indigenous
28	Garnah, Karaunda	**Carissa congesta* Wight	Apocynaceae	S	South Africa: Sainkhedia, 2016
29	Narangi	**Citrus aurantium* L.	Rutaceae	T	South China: Yadav & Sardesai, 2002.
30	Kait	*Limonia acidissima* L.	Rutaceae	T	Indogenous
31	Jambhiri, Lemon	**Citrus limon* (Linn.) Burm.	Rutaceae	T	South-East Asia: Yadav & Sardesai, 2002.
32	Sour Lime	**Citrus aurantifolia* (Christm.) Swingle	Rutaceae	T	(i) Malaya: Singh *et al.*, 2000. (ii) Malaysia: Yadav & Sardesai, 2002.
33	Mango	*Mangifera indica* L.	Anacardiaceae	T	Indigenous
34	Apple	*Malus domestica* (Suckow) Borkh. (Syn.M.pumila Mill.)	Rosaceae	T	Indigenous
35	Amalbet	*Garcinia indica* Choisy	Clusiaceae	T	Indigenous
36	Galgal	*Citrus psudolimon* Tanaka (Syn.C.reticulata Blanco)	Rutaceae	T	Indigenous
37	Bijaura	**Citrus medica* Linn.	Rutaceae	T	China: Patil, 2019.

(C) Vegetable And Salad In Ain-I-Akbari

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
1	Spinach	**Spinacea oleracea* L.	Chenopodiaceae	H	Persia: De Candolle, 1959.
2	Turnip	**Brassica rapa* L. var.*rapa*	Brassicaceae	H	Central & Southern Europe: Purseglove, 1968.
3	Cabbage	**Brassica oleracea* L.var. *capitata* L.	Brassicaceae	H	Europe: Dar *et al.*, 2002.
4	Carrot, Shaququl	**Daucus carota* L.	Apiaceae	H	Europe: Patil, 2003; Yadav & Sardesai, 2002.
5	Raddish	**Raphanus sativus* L.	Brassicaceae	H	Europe & Temperate Asia: Patil, 1995.
6	Toci, Turai	**Luffa acutangula* (L.) Roxb.	Cucurbitaceae	C	Tropical Asia: John, 1891.
7	Sugan	*Amorphophallus paeonifolius* Dennst.	Araceae	H	Indigenous
8	Chachida	**Trichosanthes anguina* L.	Cucurbitaceae	C	Tropical Asia: John, 1891.
9	Gourd	**Lagenaria siceraria* (Mol.) Standl.	Cucurbitaceae	C	Africa: Singh & Nigam, 2017.
10	Fenugreek	**Trigonella foenum-graecum* L.	Papilionaceae	H	South Europe: Patil, 1995; Shetty & Singh, 1987.
11	Badinjan	**Solanum melongena* L.	Solanaceae	S	(i) America: Gaikwad & Garad, 2015. (ii) East Indies: Singh *et al.*, 2001.
12	Kanduri	**Coccinia grandis* (L.) Voight	Cucurbitaceae	C	Africa; Medakkar & Sharma, 2016b.

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
13	Kaseru	*Actinscirpus grossus* (L.*f.*) Goeth. & D.A.Simpson (Syb.Scirpus grossus Linn.)	Cyperaceae	H	Indigenous
14	Senb	*Malus pumilla* Mill. (Suckow) Borkh.	Rosaceae	T	Indigenous
15	Peth	**Benincasa hispida* (Thunb.) Cogn.	Cucurbitaceae	C	(i) Java: Patil, 1995, 2003. (ii) Japan & Java: De Candolle, 1959.
16	Karilah	**Momordica charantia* L.	Cucurbitaceae	C	Africa: Marr *et al.*, 2004.
17	Salak	**Salcea zalacca* (Gaertn.) Voscs.	Arecaceae	T	South Sumatra & South-West Java: Saleh *et al.*, 2018.
18	Singharah	**Trapa natans* L.	Trapaceae	C	Europe: Kak, 1990.
19	Pindalu	**Ipomoea batatas* (Linn.) Lam.	Convolvulaceae	C	America: Singh *et al.*, 2001.

(D) Spices And Condiments In Ain-I-Akbari

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
1	Fennel	**Foeniculum vulgare* Mill.	Apiaceae	H	(i) South Europe: Shetty & Singh, 1987. (ii) Mediterranean Region: Purseglove, 1968.
2	Mint	**Mentha spicata* L.	Lamiaceae	H	(i) Europe: Patil, 2003. (ii) Europe & North America: Stewart, 1972.
3	Onion	**Allium cepa* L.	Liliaceae	H	(i) West Asia: Naik, 1998; Patil, 2003. (ii) Western Temperate Asia: De Candolle, 1959.

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
4	Garlic	**Allium sativum* L.	Liliaceae	H	(i) Europe: Naik, 1988. (ii) Central Asia: Shah, 2014.
5	Saffron	**Crocus sativus* L.	Iridaceae	H	Southern Europe: Patil & Dhale, 2013.
6	Cloves	**Syzygium aromaticum* (L.) Merr. & L.M. Perry	Myrtaceae	T	Molucca Islands: Patil & Dhale, 2013; Sharma, 2024.
7	Cardamom	*Elettaria cardamomum* (L.) Maton	Zingiberaceae	H	Indigenous
8	Round Pepper	**Capsicum annuum* L. var.*grossum*	Solanaceae	H	(i) Tropical America: Patil, 2003. (ii) America: Sorenson, 2005.
9	Long Pepper	*Piper nigrum* L.	Piperaceae	C	Indigenous
10	Ginger	*Zingiber officinale* Roscoe	Zingiberaceae	H	Indigenous
11	Cumin	**Cuminum cuminum* L.	Apiaceae	H	(i) South Europe: Yadav & Sardesai, 2002. (ii) Mediterranean Region: Shetty & Singh.
12	Aniseed	**Pimpinella anisum* L.	Apiaceae	H	East Mediterranean Region: Patil & Dhale, 2013.
13	Turmeric	*Curcuma longa* L.	Zingiberaceae	H	Indigenous
14	Coriander	**Coriandrum sativum* L.	Apiaceae	H	(i) South Europe: Yadav & Sardesai, 2002. (ii) Mediterranean Region: Shetty & Singh, 1987.
15	Asafoetida	**Ferula assafoetida* L.	Apiaceae	H	Iran & Afghanistan: Sharma, 2024.
16	Cinnamon	**Cinnamomum zeylanicum* Blum. (Syn.C.vera J. Presl.)	Lauraceae	T	Sri Lanka: Vickramsinghe & Padumadasa, 2018.

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
17	Mustard	**Brassica juncea* (L.) (Zern. & Coss)	Brassicaceae	H	(i) Middle East & Neighbouring Region: Prakash, 1980. (ii) Eastern Europe & China: Spect & Diedarichson, 2001.

(E) Sources of Perfumes In Ain-I-Akbari

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
1	Agar, Lignum aloes	*Aquilaria malaccensis* Lam.	Thymelaeaceae	T	Indigenous
2	Gaurah	*Oenothera lindheimmeri* (Engelm. & A. Gray, W.L. Wanger & Hoch)	Onagraceae	H	Southern Louisiana & Texas: Anonymous, 2018.
3	Camphor	**Cinnamomum camphora* (L.) Nees	Lauraceae	T	China & Japan: Bailey, 1949.
4	Zafaran	**Crocus sativus* L.	Iridaceae	H	Europe: Patil & Dhale, 2013.
5	Sandal Wood	**Santalum album* L.	Santalaceae	T	Indigenous
6.	Ciolet	**Viola adorata* L.	Violaceae	H	(i) Europe: Graf, 1980 & Asia. (ii) Europe: Africa & Asia: Bailey, 1949.

(F) Fragrant Flowers In Ain-I-Akbari

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
1	Blolsari	*Mimusops elengi* L.	Sapotaceae	T	Indigenous

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
2	Chambeli, Gul-I Malti	**Jasminum officinale* L.	Oleaceae	S	China: Patil, 2003; Yadav & Sardesai, 2002.
3	Mogra, Raibel	**Jasminum sambac* (L.) Aiton	Oleaceae	T	Tropical Asia: John, 1891.
4	Champah	*Michelia champaca* (L.) Baill. Ex Pierve	Magnoliaceae	T	Indigenous
5	Ketki (KMewrah)	*Pandanus tectorius* Parkinson ex Du Roi	Pandanaceae	T	Indigenous
6	Padal	*Sterospermum suaveolens* Roxb.	Bignoniaceae	T	Indigenous
7	Nargis	**Narcissus poeticus* L.	Amaryllidaceae	H	France to Greece: Bailey, 1949.
8	Singarhar	*Nyctanthes arbor-tristis* L.	Oleaceae	T	Indigenous
9	Violet	**Viola odorata* L.	Violaceae	H	(i) Europe & Asia: Graf, 1980. (ii) Europe: Africa & Asia: Bailey, 1949.
10	Kapur	**Cinnamomum camphora* (L.) Nees	Lauraceae	T	China & Japan: Bailey, 1945.
11	Gul-i-Za-Farhan	**Crocus sativus* L.	Iridaceae	H	Europe: Patil & Dhale, 2013.
12	Gul-i_Aftab	**Helianthus annus* L.	Asteraceae	H	(i) Western USA: Patil, 2003. (ii) America: Sorenson, 2005.
13	Gul-i-Kanwal	*Nelumbo nucifera* Gaertn.	Nelumbonaceae	H	Indigenous
14	Ja Fari	**Tagetes erecta* L.	Asteraceae	H	Mexico: Naik, 1998; Patil, 2003; Cooke, 1958.
15	Gudhal	**Hibiscus rosa-sinensis* L.	Malvaceae	S	(i) China: Patil, 1995, 2003. (ii) Sino-Japanese: Singh & Srivastava, 2000.

Sr. No. (1)	Common Name (2)	Botanical Name (3)	Family (4)	Habit (5)	Nativity (6)
16	Kesu	*Butea monosperma* (Lam.) Taub.	Papilionaceae	T	Indigenous
17	Ratanmala	**Adenanthera pavonia* L.	Mimosaceae	T	(i) China & Malaya: Chaphekar *et al.*, 2007. (ii) Tropical Asia: Mukhopadhyay & Chakraverty, 2008.
18	Kanir	**Nerium indicum* Mill. (Syn.N.oleander L.)	Apocynaceae	S	Mediterranean Region: Purseglove, 1968.
19	Nagkersar	*Mesua ferrea* L.	Clusiaceae	T	Indigenous
20	Dupariya	*Pentapetes phoenicea* L.	Malvaceae	H	Indigenous
21	Bhun Champa	*Kaempferia rotunda* L.	Zingiberaceae	H	Indigenous
22	Sudarsan	**Crinum asiaticum* L.	Amaryllidaceae	H	(i) Tropical Asia: Bailey. (ii) Tropical South Asia: & Malaysia: Graf, 1980.