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Ethno-Ecology of *Pandanus Fasicularis L*amk, the Bulga Plant of Ganjam Hinterland, South Odisha, India

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Review Article

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Abstract: Exploration of vegetations in ecologically significant areas became underline research in modern approach. In this regard the East Indian coastal belt at Ganjam district has been chosen as the study area and the ethno ecology of *Pandanus fascicularis Lamk* was focused. Normal taxonomic and ecological overviews were adopted to establish the vegetational data. The various ethno biological, ethno ecological uses, medico folklore remedies approaches were strictly adopted. The various data so procured are compiled and greater emphasis of this plant was laid as comprehended from the utility and general psychology of the people who took this as a crop more than that of rice was confirmed as each and every part of the plant is used in one or the other way. On the contrary, the study area (Ganjam Hinterland) is designated as the sacred groove for this plant owing to the part played by the plant for the people's economy and biodiversity conservation as well.

Keywords: Kewda (*Pandanus Fascicularis Lamk*), Ganjam Hinterland, Ethno ecology, Ethno biology, sacred groove.

INTRODUCTION

There has been a concerted human endeavour to systematically exploit the nature amounts to a positive conservative approach getting significant day by day. In this regard, 'Ethno botany' emerged as one of the 11 branches of a latest biological perspective, entitled 'Ethno biology (Ethno botany)' [1]. This science entails the exploration of the traditional relationship of the plant world with the human society. Literarily, 'Hinterland' constitutes area behind the sea coast, river banks which are situated away from the cities, inhabited by people who are economically under developed.

The Ganjam district (undivided) of South Odisha has been focused remarkably for its bird sanctuary in Lake Chilka, hot spots of indigenous medicinal species in Kerandimals, Chandragiri and Mahendragiri, geographical anomaly having hot spring at Taptapani, naturally conserved endangered ecological species *Antelope cervicapra* (Black buck) in the game reserve regions of Bhetnai, Ramanda and unusual protection of giant tortoises at Golia near Buguda and a panoramic scenic sea shore at port Aryapalli beach and Sunupur delta, the converging point of river Bahudaa in Bay of Bengal [2]. Above all the most significant feature of Ganjam hinterland is the coastal vegetation enriched with dominant species like *Casuarina equisetifolia* Linn. (Jhaun/Chabuka-Oriya), *Anacardium occidentalis* Linn. (Kaju/Lankamba-Oriya) and *Pandanus facicularis* Lamk. (Kia-Oriya), the latter has considerable significance in determining the economy in this under developed region. Through out this coastal zone, this single plant almost have a challenging contribution monitoring its economy and the way the plant occupies in the rural communities, unless and until some one witnesses, he can not understand the complementing features of each and every part of the plant for the social and economic conditions, just as the challenging economy rendered by the animal, The Rein Deer/ Bulga Harina in Odia (*Rangifer tarandus*) to the Eskimos in Arctic & Antarctic regions of the globe. Conversely, the *Pandanus* plant may be designated as the Bulga species in this area. As a matter of fact, this part of the East Indian coastal belt has got its importance with the gifted species of *Pandanus* which has been conserved by the rural communities, impenetrable by invaders, thus constitutes a sacred groove for the species in the entire Ganjam Hinterlands.

ECOLOGICAL SPECIFICITY OF *PANDANUS*

Pandanus fasicularis lamk. of Family Pandanaceae known as: Screw pine in English; Kiyaa/ Kia-Oriya; Keya, Kedki, Keori- Bengali; Mogali/Gajangi-Telugu; Talamara/Kyadagegida-Canada; Tazhai/Thalay-Tamil; Kaida / Thala-Malayalam; Keora- Marathi; Kewda / Kewra / Gagandhul- Hindi; Kewoda- Gujarati.

The plant is highly polymorphic and has been described under several names out of which six morphotypes have been identified on the basis of pigmentation, size of the leaf, presence/absence of prickled margin etc. The dark green spiny type is considered as economically important trait for more flower production, while the dwarf variety 'Mala type' has low flower yield. A fully grown plant aged 20-30 years bears average of 15-20 flowers per season which may increases to the tune of 25-35 during rainy season [3]. However, with a general concept with locals two varieties are prevalent under common local names 'Kia' and 'Ketakee' respectively. Ketakee bears yellow flowers, sporadic in frequency, has got comparatively less ecological coverage and its flowers used for worshipping once in a year during 'Mahaa Ssivaraatri' festival. On the other hand, Kia has creamy white flowers (Fig. 9) used for the production of perfume on the basis of which this Ganjam Hinterland is unique in the globe.

The yield of flower production takes place thrice in a year as rainy, summer and winter seasons in a descending rate. Even if, a xerophyte and salt resistant (*i.e.* holophytic), water plays greater role in its yield.

Kewda is widely distributed in the coastal districts of Orissa and no where else such significantly abundance in its frequency of occurrence is seen (Fig.1,2). It is observed that plants growing 2 Km away from the coast do not flower properly, may be due to significant favorable edaphic and climatic conditions. Moreover, this vegetation is so much conserved and deeply occupied in the minds of the people, that it is marked some one hesitates even to spoil a leaf of this plant unless and otherwise badly needed [4].

Estimated reports reflect on 4800 hectars of this vegetation in this region grown naturally or through plantation by social forestry and common people (Fig.3). This area includes 475 Sq.Km in Ganjam coast which envisages 200 villages, 31 GPs in 4 Blocks like Ganjam, Chatrapur, Rangailunda and Chikiti [5].

PHYTOGRAPHY OF *PANDANUS*

Plants are gigantic branched shrub of 4-6m high, prostrate or erect, supported by aerial stilt roots of equivalent/ proportionate length. Leaves, measures 1.5m X 4-5cm, imbrications making an impenetrable canopy, base amplexicaul and apex linearly tapered acuminate. Plants dioeciously indifferent; male plants emit characteristic fragrance during anthesis; but females are not. The male inflorescence a Spadix, 15-40cm long with 5-10cm long spathious bracts arranged racemes at the axils bear tufted staminate flowers. The female flowers also of Spadix, solitary with out bracts, 5cm diameter and develops an etaerio of drupes.

Fig-1: Abundance in occurrence

Fig-2: Abundance in Nature (Hinterlands)

Fig-3: Social Forestry

Fig-4: Avenue Tree

Fig-5: Hedge value

Fig-6: Rest Shed for Domesticated animals

Fig-7: Cowsheds

Fig-8: Rhizome Peals-Raw material for Paper industry

Ethnic utilities

The various utilities enlisted underneath are either collected personally, or from the literature locally available and simultaneously verified.

i. **Ecological**

- Whole Plant: Live green wall, avenue tree, hedge value (Fig.4,5); rest shed for travelers and domesticated animals (Fig.6,7 & 10); horticultural value; Phyto-sociological value; fuel value.
- Rhizome: Nutrient value; means of propagation; coir for cushion; making of musical instruments like Mridunga; raw materials for paper industries (Fig.8).
- Stilt Root: Thin strips prepared from it used for repairing baskets etc as Source of livelihood by a nomadic community 'Naloe'; making brushes for wall painting and making of ropes.
- Root: used as tooth stick
- Leaf: A raw material for making fancy materials like basket, hat, umbrella and sac. Ash, from the burnt leaves used as detergent by washer man.
- Inflorescence (Male): Spathe used for hair dressing that removes bad odour of hair with anti-dandruff value.
- Oil/Attar/Perfume from staminate flower has aesthetic value locally extracted from various distilleries.
- Peduncle marc: from distilleries used as fodder & green manure.
- Seeds: Seeds have edible value some times used by tenants.

ii. **Industrial**

- Leaves and Rhizome: thin strips are used as raw material for Manufacture of quality papers. A gifted species for perfume industries, cottage industries: incense sticks (Agarbati), lotion (for skin & facial).
- Cosmetics, Soap, Hair oil ingredient.
- Flavouring of tobacco leaves, sweets, syrup and soft drink manufacturing

iii. **Ethno-therapeutic**

- Root: ensure abortion and sterility. However, macerated roots in cow milk taken internally prevent abortion by checking discharge (discharge). Ash from the dried roots, mixed with til (*Sesamum indicum*) oil, made to pills for internal use cures internal tumors and rheumatic colic [6].
- Leaf: skin diseases like scabies and leprosy; brain and blood disorders
- Juice from inflorescence peduncle: as veterinary medicines and against rheumatic arthritis.
- Flower: cures ailments like debility, swooning, vertigo, conjunctivitis.
- Fruits and pollen grains used for preparation of ayurvedic formulation on internal use cures Leucorrhoea, Spermatorrhoea and Rheumatism.

- Kewda oil extract used as bitter tonic, purgative, antispasmodic, stimulant, aphrodisiac and as ear drop against ache; applied externally to cure headache. Pollen grains beneficial in balancing Pita *& Kapha*, rejuvenating & invigouratory.

iv. **Folk-lore significance**

1. Ethno-agricultural: *Jyeshthe Kadalee Aashaadhe Keyaa,*
Pota Napota Hoeba Thiaa. (Khanna bachana)
2. Ethno-nutritional: *Jhulu Haatee Jhulu,*
Keyaa Kandaa khaai Fulu. (Khanna bachana)
3. Ethno therapeutic:

Ketakee Kusumam Bande, Kessa dourgandhya naassanam,
Hemaavam madanounmaada bardhnam soukhyakaaricha;
Tasyastanoti ssareerah katupitta-kaphaaparah,
Rasaayana karobalya Dehadaa durya karah parah
(Raja nighantu)

(The golden coloured flowers of this plant brightens complex and removes unpleasant odour of the hair, aphrodisiac, pollens are extremely cold, bitter, beneficial in derange pitta and kapha, rejuvenating and invigorating.)

Present Public Interest

Greater interest now is laid by the local public to be fascinated rather preferred totally opting for undertaking Kewda cultivation as a cash crop substitute of Rice in view of the former not demanding huge irrigation facility and more care comparing with the latter.

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