

LIVE FENCING: AN ECOFRIENDLY BOUNDARY WALL IN BHADRAK DISTRICT OF ODISHA, INDIA

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Abstract

Live fencing, an age old and traditional practice, commonly found in rural areas of Bhadrak district, Odisha, India, but its importance remains unexplored and not yet documented. Exploratory surveys conducted in Bhadrak district, indicated that traditional farmers have vast knowledge about their live fencing practices and the species used. A total of 61 plant species belonging to 53 genera under 24 families are used by the people as biofencing, besides food, timber, fuel wood, medicine etc. Two groups of species are observed on the fence. The first groups of species (Ipomoea carnea, Bambusa arundinacea, Bougainvillea spectabilis etc.) are used primarily for protection and the second groups of species (Annona squamosa, Borassus flabellifer, Moringa oleifera etc.) are utilized for medicine, fruits and vegetables. Some promising fence species of this region are Acacia nilotica, Annona squamosa, Bambusa arundinacea, Bumbusa arundinacea, Bumbusa facturina equisetifolia, Erythrina indica, Euphorbia tithymaloides, Ipomoea carnea, Jatropha curcas, Pandanus fascicularis, Pilosocereus arrabidae and Vitex negundo. This traditional biofencing practice is playing an important role in biodiversity conservation.

Keywords: APG III; Biofencing; Biodiversity conservation; Economic uses; Indigenous knowledge.

Introduction

Live fencing or biofencing or green fencing is a way of establishing a boundary by planting a line of tree or shrubs at relatively closed spacing and by fixing threads (made from jute or petiole of palm or plastic wire) to them. If cattle and wildlife are to be kept outside more upright double or triple row of dead sticks can be tied to the thread [1, 2]. Live fences are frequent in India separating crop fields, pastures, households, and farm boundaries and forming intricate networks of plant cover across rural landscapes. Not only do live fences occur across areas that are biophysically diverse, with different elevations, ecological life zones, and soil types, but they also occur in areas with distinct cultures, land use histories and agricultural production, notably vegetable plantations, pastures and home gardens [3,4]. In some agricultural regions, where conversion to agriculture has been high, live fences constitute the most prevalent form of tree cover remaining in the landscape. Mainly two types of life fencing are in practice: 1) Permanent boundary wall and 2) Biofencing. Aside from their protective function, biofencing provides bee forage, provide shade, and control dust. They are less expensive and more useful than fences made of wood, barbed wire, or stone masonry. The

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ecological and productive role of biofencing is well studied [5, 6]. Intensive studies concerning biofencing from different parts of the world have earlier been highlighted [7-10] but there is remarkably little information about the live fences in India. For instance, Pujarini (1998) [11] recorded 42 plants used for fencing and making boundaries either live or dried state in Gujarat. Borkataki et al. (2008) [12] reported 26 plant species traditionally used by the people of Nogaon district of Assam. Recently, Dinesh et al (2013) [13] enumerated 18 biofencing plants in Andhra Pradesh. Similarly, Sharma and Devi (2013) [14] documented 61 species of live fencing plants in Himachal Pradesh. But reports about biofencing in Bhadrak district of Odisha, India are still lacking. Biofencing is a common phenomenon in and around almost each rural household of the district. From time immemorial, the people of Bhadrak district have been using different plant species for fencing to protect their cultivated lands and home gardens. As a step in this direction, an attempt is made in this article to investigate the abundance, diversity and distribution of traditional biofencing plants in Bhadrak district of Odisha, India. The main objective of this paper is to understand the biofencing systems as practiced by rural people in the region, and to provide a base for further scientific studies.

Materials and Methods

Study site

Odisha is the ninth largest state of India by area and the eleventh largest by population. It is located in the east coast of India $(17.48^{\circ} - 22.34^{\circ}N \text{ and } 81.24^{\circ} - 87.29^{\circ}E)$ with the Bay of Bengal forming its eastern and south eastern frontiers. Despite severe population pressure and utter disregard for its protection for decades, it still boosts of 5.72 million ha. of forests which constitutes around 36.73% of the geographic area of the state. The vegetation found in this region is tropical moist deciduous forest type [15]. Obviously the Odishan people have not only depended on this rich floristic resources to fulfill all their basic needs, but it has also influenced the faith, belief, rituals, customs, art, craft, sculpture and other finer expressions of human mind and creativity of this region from time immemorial.

Bhadrak district (20° 43'-21° 13'N and 86° 6'-87° E) is located in Northeast Odisha. It spreads over 2505 km² having 1.507 million inhabitants (2011 Census). Four other districts namely Balasore, Kendrapara, Jajpur and Koenjhar surround Bhadrak district while a part is bounded by the Bay of Bengal (Fig. 1). The district covers about 1.61 % of the total land area of the state and contributes 3.59 % of the state's population. About 86.66 % of the inhabitants are villagers and the people are engaged in agricultural practices as their primary occupation. Being situated in close proximity to Bay of Bengal, the district is characterized by periodic earth tremors, thunder storms in the rains and dust storms in April and May. Some of the flora which grow in abundance in the region are: Acacia nilotica (L.) Delile., Anacardium occidentale L., Annona squamosa L., Artocarpus heterophyllus Lam., Averrhoa carambola L. Azadirachta indica A. Juss., Bambusa vulgaris Schrad., Bombax ceiba L., Borassus flabellifer L., Butea monosperma (Lam.) Taub., Cassia fistula L., Crataeva nurvata (Buch.) Ham., Ficus benghalensis L., Ficus religiosa L., Gmelina arborea Roxb., Mangifera indica L., Mimusops elengi L., Morinda citrifolia L., Phoenix sylvestris (L.) Roxb., Polyalthia longifolia (Sonn.)Thw., Pongamia pinnata (L.) Pierre., Pterocarpus marsupium Roxb., Samanea saman (Jacq.) Merr. J. Wash., Spondias mangifera Willd., Streblus asper Lour., Syzygium cumini (L.) Skeels., Tamarindus indica L. and Terminalia arjuna (Roxb.ex DC.) Wight & Arn.

Data collection

Extensive field surveys (June 2014-May 2016) were carried out to document and enlist the live fencing plant species following established and standard procedures [16, 17]. The information was obtained through a combination of tools and techniques of structured questionnaires, complemented by free interviews and informal conversations [17, 18] and

personal observation. The information regarding the live fencing plant species has been gathered mostly from local farmers, elderly and knowledgeable persons.

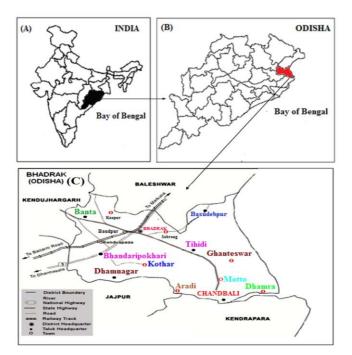


Fig. 1. Location of the Odisha state in the eastern region of India (a), map of Odisha state showing the Bhadrak district (b) and the study area showing different blocks of the Bhadrak district (c)

Personal interviews and group discussions carried out in the local language revealed specific information about the plants, which were further compared and authenticated by crosschecking [19]. The economic uses of these species if any were discussed with the local people. Samples of recorded herbs, twigs of shrubs, climbers and trees were identified using relevant flora [20, 21]. During field study, some of the field characters on live fencing such as rooting ability, soil requirements, growth rates, wind susceptibility, durability, susceptibility to pests, and wood quality were recorded. Similarly, for the management aspect (preparation of stakes, seasonality of management and planting distances), as well as the roles of live fences within the farming system (value as forage, firewood, timber and medicine, provision of shade to cattle, and their effects on soil) information's were collected and noted. The plant species are enumerated and arranged as per Angiosperm Phylogeny Group III Classification [22]. The voucher specimens were deposited in the herbarium of the Department of Botany, Chandbali College, Chandbali. The live fencing plants were represented alphabetically according to their scientific names, family, local name if any, habit and uses.

Results and Discussion

The present study recorded 61 plant species belonging to 24 families under 53 genera which are being used as live fence (Table 1; Fig. 2). As per APG III classification, these taxa are distributed in 8 superorders and 20 orders. 37.7% of the species are reported from the superorder Fabids, 22.95% from superorder Lamids, 14.75% from superorder Lamids and 11.48% from superorder Commelinids. Order Fabales (11), Lamiales (9) and Malphigiales (8) account for about 45.9% of the species in the district. Among the documented plant species, the

family Fabaceae is frequently represented with a total of 11 species followed by Euphorbiaceae (8 species) and Verbenaceae (5 species). Twelve families were monospecific.



Fig. 2. Clerodendrum inerme (L) Gaertn. (a), Euphorbia tithymaloides L. (b), Gliricidia sepium (Jacq) Kunth ex Walp. (c), Pilosocereus arrabidae (Lem.) Byles & Rowley (d)

Fences are both homogenous as well as heterogeneous types in Bhadrak district but heterogeneous fencing is most commonly seen surrounding crop fields. All cultivated lands are surrounded by fence to prevent entry of domestic and wild animals. Presence of thorns, spines, pickles, strong soil binding roots and profuse branching are the important characteristics of biofencing plants which is effective in preventing the entry of wild animals to the agricultural field and homestead [11, 23]. Seven plant species i.e. Acacia nilotica (L.)Willd., Albizzia lebbeck (L.) Benth., Bambusa arundinacea(Retz.)Willd., Bambusa vulgaris L., Borassus flabellifer L., Casuarina equisetifolia L. and Phoenix sylvestris Roxb. (L.) are used both in live and dried conditions. Some of the species like Euphorbia tirucalli and Jatropha curcas are preferred for biofencing due to their unpalatability to cattle. Similarly, Acacia nilotica, Lantana camara, Pandanus fascicularis and Pilosocereus arrabidae make their presence as they form impenetrable thickets. While, Bambusa sp. acts as wind breakers and also increase the firmness of the fences. House fencing is often supplemented with flowering plants and fruit yielding climbers which also support in livelihood of poor farmers [24]. Moreover the large trees planted along the boundary act as wind breakers, thereby reducing the rate of evaporation from the field and barren land formation. Informants also indicated that, shade from live fences is important for cattle, reducing heat stress, particularly in the dry season, and providing a more comfortable environment for domestic animals particularly cattle. Villagers plant trees mainly for household consumption. In Bangladesh, trees are mainly planted by farmers for the purpose of household consumption in the form of fruits, firewood, etc. [25]. The recorded plant species have been attributed to three different life forms (Fig. 3a). An important characteristic of the biofencing is the predominance of shrubs (62.3%) followed by trees (36.1%). Enumerated plant species in the biofencing include those supplying food, fuel wood, shade, rituals, household products and medicine, among which majority are indigenous [26]. Five major plant use categories were identified in biofencing plants. Figure 3b shows the number of species in each use category, with the dominant one being the medicine category, followed by tooth brush, fuel wood and miscellaneous.

Sl. No	Botanical name, family & local name	Habit/habitat/domestication	Form of use
1.	Acacia nilotica (L.)Willd. (Fabaceae) 'Babul'	Medium sized tree in plains and rural areas.	Live fencing. Tender shoot axis is used as tooth stick.
2.	Agave americana L. (Asparagaceae)	A common ornamental shrub.	Live fencing.
3.	Albizzia lebbeck (L.) Benth. (Fabaceae) 'Sirish'	A common wasteland tree.	Live fencing.
4.	Alangium salvifolium (Linn.f.)Wagn (Cornaceae) 'Ankula'	A small tree commonly found in wasteland and in hedges.	Live fencing. Shoot is used as tooth stick Powered bark is used as tooth powder to get relied from pyorrhea.
5.	Annona reticulata L. (Annonaceae) 'Atta'	A common tree.	Live fencing. Root decoction is taken as a febrifuge to relieve toothache. Ripen fruits are edible.
6.	Annona squamosa L. (Annonaceae) 'Neuwa'	A common tree.	Live fencing. Ripen fruits are edible.
7.	Areca catechu L. (Arecaceae) 'Gua'	A common cultivated tree.	Live fencing. Fruits are used for various ritua purposes.
8.	Atylosia cajanifolia Haines. (Fabaceae)'Banaharada'	Wild shrub.	Live fencing. Shoot bark is chewed to get relie from caries infection and toothache.
9.	Bambusa arundinacea (Retz.)Willd. (Poaceae) Kantabaunsa	A common tree.	Live fencing.
10.	Bambusa vulgaris L. (Poaceae)'Baunsa'	A medium sized plant.	Live fencing The young shoot is used as tooth stick.
11.	Barleria prionitis L. (Acanthaceae)'Daskerenta'	A common roadside and wasteland shrub.	Live fencing. Juice extracted from whole plant is taken orally with honey in equal proportions to cure pyorrhea.
12.	Bauhinia variegata L. (Fabaceae) 'Kanchana'	A common tree.	Live fencing. Flowers are edible.
13.	Bombax ceiba L. (Malvaceae) 'Simili'	A wasteland tree.	Live fencing. Thorn paste with cow milk is applied on pimples.
14.	Borassus flabellifer L. (Arecaceae) 'Tala'	A tall tree. Common in wasteland and boundaries of cultivated fields.	Live fencing. The leaves are used for thatchin, huts, making brushes, weaving mats, brushes baskets, brooms, fans, hats, umbrella and othe indigenous products. Fruits are edible.
15.	Bougainvillea spectabilis Willd. (Nyctaginaceae) 'Kagajaphula'	Common shrub in hedges and gardens.	Live fencing.
16.	Breynia retusa (Denn.) Alston (Euphorbiaceae) 'Jajangi'	Bushy shrub planted on village hedges.	Live fencing The shoot axis is used as tooth stick.
17.	Butea monosperma (Lamk.) Taub.(Fabaceae) 'Palasa'	A tree in hills and plains.	Live fencing. Powder of shoot bark is used a tooth powder for pyorrhea and gum affection.
18. 19.	Caesalpinia bonduc (L.) Roxb. (Fabaceae) 'Gila' Calamus rotang L. (Arecaceae) 'Beta'	A common cultivated shrub. Shrub.	Live fencing. Live fencing. Root paste is used for piles.
20.	Calotropis gigantea R.Br. (Apocynaceae) 'Arakha'	A tall wasteland shrub.	Live fencing. The shoot axis is used as tooth sticl to check and cure caries infection and pyorrhea.
21.	Calotropis procera (Ait.) R.Br.(Apocynaceae) 'Sweta Arakha'	A tall wasteland shrub.	Live fencing. The shoot is used as tooth stick to check and cure caries infection and pyorrhea.
22.	Cassia fistula L. (Fabaceae) 'Sunari'	A medium sized tree.	Live fencing. Leave paste is applied externally for rheumatism.
23.	Casuarina equisetifolia L. (Casuarinaceae) 'Jhaun'	A tall branched tree.	Live fencing.
24.	<i>Citrus limon</i> (L.) Burm.f. (Rutaceae) 'Lembu'	A common cultivated shrub.	Live fencing. Fresh fruit juice is taken orally for indigestion
25.	Clerodendrum inerme (L.) Gaertn. (Verbenaceae)	A common wasteland shrub.	Live fencing. The powdered leaves mixed wit camphor and garlic is used for muscular as well a rheumatic pain.
26.	<i>Clerodendrum phlomidis</i> L. f. (Verbenaceae) 'Donkari'	A common wasteland shrub.	Live fencing.
27.	Duranta repens L. (Verbenaceae)	A branched thorny shrub.	Live fencing. Stem is used as tooth stick.
28.	<i>Erythrina indica</i> Lam. (Fabaceae) 'Paladhua'	A common wasteland tree.	Live fencing. Leaf juice is prescribed for deworming.
29.	Euphorbia antiquorum L. (Euphorbiaceae)	A common wasteland shrub.	Live fencing.
30.	<i>Euphorbia nivulia</i> BuchHam. (Euphorbiaceae)	A common wasteland shrub.	Live fencing.

Table 1. Plant species used for biofencing in Bhadrak district of Odisha, India

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36. Hibicare rows-intensis L. (Malvaceae), 'Mandura' producted, kalama' A common shrub oramental garden plant. Live fencing. Flower is used in various rituals. 37. Journee carrea Jace, (Convolvulaceae) A wild shrub. Live fencing. 38. Jatropha curcas L. (Exploritica adhtarda L. (Acanhaceae) 'Basanga' A common shrub in wasteland. Live fencing. There for the fo	55.		A who shi uo.	Live leneing.
(Malvaceae), 'Mandara'orramental garden plant.7.Jornote carrea Jacq. (Convolvulaceae)7.Jornote carrea Jacq. (Acambaceae)7.Jornote carrea Jacq. (Acambaceae)7.Jornote carrea Jacq. (Acambaceae)7.Kalabasang'7.Jornote carrea Jacq. (Moriginaceae)7.Jornote carrea Jacq. (Musaceae) 'Kadali'7.Verborascea) 'Manjuati'7.Jornote carrea Jacq. (Musaceae) 'Kadali'7.Verborascea) 'Kadali'7.Verborascea) 'Kadali'7.Jornote carrea Jacq. (Musaceae) 'Kadali'7.Ponduns facciularis Lam. (Morigina carrebide7.Pronduns facciularis Lam. (Parabaneae) Kai7.Pronduns facciularis Carn. (Cactaceae)7.Pronduns facciularis Carnea7.Pronduns facciular	36	. ,	A common shrub	Live fencing. Flower is used in various rituals
37. Ipomoca carrea Jacq. (Convolvulaceae) BadaKalama' A wild shrub. Live fencing. 38. Jatropha curcas L. (Equiphoniaceae) Baigaba' A common shrub in vasteland. Live fencing. Tender stem is used as tooth stick to cure grant affection. 39. Justicia adhatoda L. (Acanthaceae) Basanga' A bushy shrub used fencing and decoration. Ive fencing. Stem is used as tooth stick to cure grant affection. 40. Lantona cumra L. (Verbenaceae) 'Nagabairi' A wasteland shrub. Live fencing. Juice extracted from root with rice water is given to cure jundice: 41. Lantona cumra L. (Verbenaceae) 'Nagabairi' A wasteland shrub. Live fencing. Juice extracted from root with rice water is given to cure jundice: 42. Lawsonia internis L. (Musaceae) 'Kadali' Nuid shrub. Live fencing. Feeding of rice husk with hannan is useful to cure dirroboa in cattle. 43. Poing affering Land. (Pandhanceae) 'Kaif' A wasteland shrub. Live fencing. The still root is used as tooth stick. 44. Photophia (Jennia fascicularis Lam. (Pandhanceae) 'Kaif' A wasteland shrub. Live fencing. 45. Pycentaris fasch, (Lam, Cactaceae) 'Deblari' A wasteland shrub. Live fencing. 50. Photophia (Lem), Byles & Rowley (Cactaceae) 'Deblari' A wasteland shrub. Live fencing. 51.	50.			Live renemig. Flower is used in various rituals.
 ¹BadaKalama' 1 ¹BadaKa	27			Live foreing
 Jarropha curcas L. (Explorbiacea) 'Baigaba' Jarropha curcas L. (Explorbiacea) 'Baigaba' Justicia adhardod L. (Acanthaceae) 'Basaga' Justicia adhardod L. Moring adeifera Lam. (Pandanus fascicularis Lam. (Pandanu	57.		A wild silfub.	Live lencing.
(Euphorbiaceae) 'Baigaba' wasteland. A bushy shrub used' 1. Justicia adharoda L. A bushy shrub used' Live fencing. Stem is used as tooth stick to cure gum affection. 40. Justicia adharoda L. A wasteland shrub. Live fencing. Stem is used as tooth stick for the denial care. 41. Loratura cumaru L. A wasteland shrub. Live fencing. Juice extracted from root with rice water is given to cure jaundice. 42. Lawsonia inermits L. Shrub. Live fencing. Juice extracted from root with rice water is given to cure jaundice. 43. Moring a olejfera Lam. Musa paradistaca L. (Musaceae) 'Kadali' Cultivated shrub. Live fencing. Team, is applied over the bone fractured part. 44. Musa paradistaca L. (Musaceae) 'Kadali' A wild shrub. Live fencing. Leaf decotion mixed with honey is prescribed to cure ferve. 45. 'Nyctambes arbor-trisits L. (Oleaceae) 'Kajani' A wasteland shrub. Live fencing. 46. Opunita dillenti Wight & Arn.(Cactaceae) 'Nagapheni' A wasteland shrub. Live fencing. Live fencing. 47. Pandomus fascicularis Lam. A wild shrub. Live fencing. Live fencing. Live fencing. 48. Phoenix sylvextris Rosh (L.) '(Pathal angliolia (Sonn.) 'Thw. (Anonaceae) 'Kaji'' A wild shrub. Live fencing. Live fencing. Live fencing. Live fencing. <td>20</td> <td></td> <td>A common shout in</td> <td>Live ferging. Tender stem is used as tooth stick to</td>	20		A common shout in	Live ferging. Tender stem is used as tooth stick to
9. Justicia adharoda L A bushy shrub used for facture grand across and secontion. Live fencing. Stem is used as tooth stick to care grandfection. 40. Justicia gendarassa Burn.f. (Acanthaceae) 'Kalabasanga' A wasteland shrub. Live fencing. Stem is used as tooth stick for the dental care. 41. Lattana camara L. A wasteland shrub. Live fencing. Stem is used as tooth stick for the dental care. 42. Lawsonia internis L. Shrub. Live fencing. Stem is used as tooth stick for the dental care. 43. Moring a oleffera L. Shrub. Live fencing. Stem is used as tooth stick for the dental care. 44. Musa paradisiaca L. (Musaceae) 'Kadali' Cultivated shrub. Live fencing. Teeding of rice husk with banana is useful to cure dirohoea in cattle. 45. Nyctanthes arbor-tristis L. (Oleaceae) A wasteland shrub. Live fencing. Teeding. Teeding. Teeding. 46. Opmid allenii Wight & Arn.(Cactaceae) A wasteland shrub. Live fencing. Teeding. 47. Pandanaceae) 'Kai' A wasteland shrub. Live fencing. Teeding. 48. Phoenix sylvestris Rosh (L.) A wasteland shrub. Live fencing. Shoots are used as tooth stick. 49. Polosocereus A wild shrub. Live fencing. Shoots are used as tooth stick.	38.			
(Acanthacee) 'Basanga' Justice gendarussa Burn.f. (Acanthaceae) 'Kalabasanga'fencing ind decoration. Strub.gum affection. Live fencing.40.Justice gendarussa Burn.f. (Acanthaceae) 'Kalabasanga'A wasteland shrub.Live fencing.41.Latusno camara L. (Cythaceace) 'Maglabiri'A wasteland shrub.Live fencing. Stem is used as tooth stick for the demal care.42.Lawsonia inermis L. (Lythaceace) 'Manjuat'Shrub.Live fencing. Curn is applied over the bone fractured part.43.Moringa oleffera Lam. (Moriginaceae) 'Kadali'Cultivated shrub.Live fencing. Cending of ice husk with banana is useful to cure dirotose in cattle.44.Musa paradisiaca L. (Musaceae) 'Kadali'A wild shrub.Live fencing. The still root is used as tooth stick.45.Nycturthes arbor-tristis L. (Oleaceae) 'Nagapheni'A wasteland shrub.Live fencing. The still root is used as tooth stick.46.Opanita dillenti Wight & Am.(Catcaceae) 'Nagapheni'A wasteland shrub.Live fencing. The still root is used as tooth stick.47.Pardadanaceae) 'Kaijuri'A wasteland shrub.Live fencing.48.Phoenits sylvestris Roxb(L). (Arcaceace) 'Khajuri'A wild shrub.Live fencing.50.Polyathia longifolia (Sonn.) (Fabacea)' Phab Babula' Celbau'A wild shrub.Live fencing. Shoots are used as tooth stick.54.Samsevierian roxburghiama Schult, & Schult. (Asparagaceae) 'Sajhada'A wild shrub.Live fencing.55.Strebhus ager Lou., (Moreceae)' Shaha'Cultivated shrub.Live fencing.<	20			
40. Justicia gendarmsas Burn.f. (Acanthaceae) 'Kalabasanga' Shrub. Live fencing. 41. Lantona camara L. (Verbenaceae) 'Nagabairi' A wasteland shrub. Live fencing. Juice extracted from root with rice water is given to cure jaundice. 42. Lawsonia inermis L. (Lythraceae) 'Manjuati' Shrub. Live fencing. Teensing. Juice extracted from root with rice water is given to cure jaundice. 43. Moring a olefera L. (Musaceae) 'Kadali' Cultivated shrub. Live fencing. Teeding of rice husk with banana is useful to cure forencing. Lead facecton mixed with honey is prescribed to cure fever. 45. Nyctanthes arbor-tristis L. (Oleaceae) 'Nagapheni' A wasteland shrub. (Pandanaceae) 'Kiaj' (Pandanaceae) 'Kiaj' A wasteland shrub. (Pandanaceae) 'Kiaj' (Pandanaceae) 'Kiaj' A wasteland shrub. (Pandanaceae) 'Kiaj' (Lue) Byles & Rowley (Cactaceae) 'Deulisju' A wasteland shrub. (Pandanaceae) 'Kiaj' (Cactaceae) 'Deulisju' Live fencing. The still root is used as tooth stick. (Pandanaceae) 'Kaj' (Lue) Byles & Rowley (Cactaceae) 'Deulisju' 51. Poloscereus 'Deulisju' A wild tree. Live fencing. Shoots are used as tooth stick to cheaceae) 'Kajanja' (Cactaceae) 'Shanja' 52. Prostparis jufflora (Sw) DC (Fabaceae)'Phala Babula' Si Richus geominis L. (Euphorbiaceae) 'S Arrohus apper Lour. (Fabaceae)'Phala Babula' Si Richus geominis L. (Euphorbiaceae) 'S Arrohus apper Lour. (Euphorbiaceae) 'S Arrohus apper Lour. (Euphorbiaceae) 'S Arrohus apper Lour. (Euphorbiaceae)' Si Thevictin nerrifichi Pers. Steud	39.			
'Kalabasang'41.Latura camara L. (Verbenaceae) 'Nagabairi'A wasteland shrub.Live fencing. Stem is used as tooth stick for the dental care.42.Lawsonia inermis L. (Lythraceae) 'Manjuati'Shrub.Live fencing. Juice extracted from root with rice water is given to cure jaundice.43.Moringa olefera Lam. (Morginaceae) 'Kadali'Tree.Live fencing. Curi is applied over the bone fractured part.44.Musa paradisiaca L. (Musaceae) 'Kadali'Cultivated shrub.Live fencing. Cami is applied over the bone fractured part.45.Nyctanthes arbor-tristis L. (Oleaceae) 'Gangashul'A wild shrub.Live fencing. Tead decoction mixed with honey is prescribed to cure fever.46.Opmita dillenii Wight & Arn.(Cactaceae) 'Nagapheni'A wasteland shrub.Live fencing. The still root is used as tooth stick.47.Padanaceae) 'Kain'A wasteland shrub.Live fencing. The still root is used as tooth stick.48.Phoenis gives tracted is given to cure jaundice.A wild shrub.Live fencing. The still root is used as tooth stick.49.Plasocereusarrabidae (Cactaceae)' Kain''A wild shrub.Live fencing.50.Polyathia longifolia (Sonn.) Thew. (Annonaceae) 'Kain'' (Fabaceae)' Karanja'A wild shrub.Live fencing. Shoots are used as tooth stick to check bad breath.51.Porgonia pinnata (L) Pierre. (Fabaceae)' Starid' Shubul (Asparagaceae)' Kanja'A wild shrub.Live fencing. Cander shoots is used as tooth stick.53.Strebhus asper Lour. (Moraceae)' Shahad'Cultivated shrub.Live fencing	10			6
41. Lantana camara L. A wasteland shrub. Live fencing. Stem is used as tooth stick for the drale care. 42. Lawsonia inermis L. Shrub. Live fencing. Juice extracted from root with rice water is given to cure jaundice. 43. Moringa oleifera Lam. (Moriginaceae) 'Kadali' Tree. Live fencing. Gum is applied over the bone fractured part. 44. Muss paradisizea L. (Musaceae) 'Kadali' Cultivated shrub. Live fencing. Feeding of rice husk with banana is useful to cure dirohoea in cattle. 45. Nyctamhes arbor-trisis L. (Oleaceae) 'Kadali' A wild shrub. Live fencing. Leaf decoction mixed with honey is prescribed to cure fever. 46. Opunita dillenii Wight & Arn.(Cactaceae) 'Kadapiteni' A wasteland shrub. Live fencing. The stilt root is used as tooth stick. 47. Pandanus fazicularis Lam. (Pandanus fazicularis Lam. (Pandanus fazicularis Lam. (Pandanus fazicularis Lam. (Pandanus fazicularis Cash) A wasteland shrub. Live fencing. The stilt root is used as tooth stick. 48. Phoenix sylvestris Roxb.(L.) A monocot unbranched (Arceaceae) 'Khajuni'. Kwild shrub. Live fencing. 49. Phoenix sylvestris Roxb.(L.) A wild shrub. Live fencing. Live fancing. Shoots are used as tooth stick to check had breath. 50. Polyathiu longifolia (Sonn.) A tree species common	40.		Shrub.	Live fencing.
(Verbenacea) 'Nagabairi' dental car.' 42. Lawsonia inermis L. (Lythraceace) 'Manjuati' Shrub. Live fencing. Juice extracted from root with rice water is given to cure jaundice. 43. Moringa oleffera Lam. (Moriginaceae) 'Sajana' Tree. Live fencing. Gum is applied over the bone fractured part. 44. Musa paradisiaca L. (Musaceae) 'Kadali' Cultivated shrub. Live fencing. Feeding of rice husk with banana is useful to cure dirrohoea in cattle. 45. Nyctanthes arbor-tristis L. (Oleaceae) 'Gangasiuli' A wild shrub. Live fencing. Leaf decoction mixed with honey is prescribed to cure forver. 46. Optimit dillenii Wight & Arn.(Cactaceae) 'Nagapheni' A wasteland shrub. Live fencing. 78. Padamaceae) 'Kia' A monocot unbranched (Lem.) Byles & Rowley (Cactaceae) 'Deulisiju' Live fencing. 90. Polosocereus 'Deulisiju' arrabidae A wild shrub. Live fencing. 50. Poloshihia longifolia (Sonn.) 'Poloshihia longifolia (Sonn.) A wild tree. Live fencing. 71. Poragamia pinnata (L) Pierre. 'Jada' A tree species common in coastal plains and hills. Cattle aceae and to cure gum boils. Live fencing. 53. Ricinus communis L. (Euphorbiaceae) 'Stabda' A wild shrub. Live fencing. 54.				
 4. Lawsonia inermis L	41.		A wasteland shrub.	
Lythraceace) 'Manjuati'water is given to cure joundice.43.Moringa oleifera Lam. (Moriginaceae) 'Siajana'Tree.Live fencing. Gum is applied over the bone fractured part.44.Musa paradisiace L. (Musaceae) 'Kadali'Cultivated shrub.Live fencing. Feeding of rice husk with banana is useful to cure firohoea in cattle.45.Nyctanthes arbor-tristis L. (Oleaceae) 'Gangasuli'A wild shrub.Live fencing. Feeding of rice husk with banana is useful to cure firohoea in cattle.46.Opuntia dillenii Wight & Arn.(Cactaceae) 'Nagapheni'A wasteland shrub.Live fencing. The stilt root is used as tooth stick.47.Pandamus fascicularis Lam. (Arceaceae) 'Khajuri'A wasteland shrub.Live fencing. The stilt root is used as foncing. Ripen fruits are edible.49.Piloscereus 'Debdari'arrabidae (Lem.) Byles & Rowley (Cactaceae) 'Debdari'A wild shrub.Live fencing.51.Pongamia pinnata (L) Pierre. (Fabaceae) 'Phala Babula' 'S ansevieria roxburghiana Schult. & Schult. (Asparagacae)A tree species common in coastal plains and hills. coastal plains and hills. Common tree in village periphery.Live fencing. Shoots are used as tooth stick to check bad breath.54.Sansevieria roxburghiana Schult. & Schult. (Asparagaceae)A wild shrub.Live fencing. Live fencing.55.Strebus aper Lour. (Aporynaceae) 'Tagari' Sonda'Common tree in village periphery.Live fencing. Shoots are used as tooth stick for dental care and to cure gum boils. Live fencing.56.Synadenium grantii Hook f. (Aporynaceae) 'Tagari'A wild sh				
 43. Moringa oleifera Lam. (Moriginaceae) 'Sajana' 44. Musa paradisiaca L. (Musaceae) 'Kadali' 45. Nyctanthes arbor-tristis L. (Oleaceae) 'Gangasiul' 46. Opuntia dillenii Wight & Arn.(Cactaceae) 'Nagapheni' 47. Pandanus fascicularis Lam. (Pandanaceae) 'Kala' 48. Phoenix sylvestris Roxb (L.) (Pandanaceae) 'Kia' 49. Pilosocereus (Lem.) Byles & Rowley (Cactaceae) 'Deulisiju' 50. Polyalthia longifolia (Sonn.) Thw. (Annonaceae) ''Debdaru' 51. Pongamia pinnata (L.) Pierre. (Fabaceae) 'Phala Babula' (Fabaceae) 'Phala Babula' (Fabaceae) 'Rala Schult. & A wild strub. 53. Ricinus communis L. (Euphorbiaceae) ''Jada' 54. Sansevieria roxburghiana Schult. & A wild strub. 55. Strelika saper Lour. (Euphorbiaceae) 'Sahada' (Arceaceae) 'Shada' 56. Synadenium grantii Hook f. (Euphorbiaceae) ' Common tree in village periphery. Schult. (Asparagaceae) 55. Strelika saper Lour. (Euphorbiaceae) ' Common tree in village periphery. Schult. (Asparagaceae) Shrub. Synadenium grantii Hook f. (Euphorbiaceae) 'Sahada' (Arceaceae) 'Shada' Shrub. Stretus anerifolia Persex Steud. (Apocynaceae) 'Sahada' Synadenium grantii (Lo) Eure. (Euphorbiaceae) ' Synadenium grantii (Lo) Eure. (Euphorbiaceae) Synadenium grantii Hook f. (Euphorbiaceae) Synadenium grantii Hook f. (Euphorbiaceae) Synadenium grantii (Lo) Kiliyar 50. Thevetia nenifolia Persex Steud. (Apocynaceae) 'Sahada' Wernonia cincreae (L) Less. (Asteraceae) ''Asama' Wernonia cincreae (L) Less. (Asteraceae) ''Asama' Wernonia cincreae ''Asama' Kasama baibus shrub. Live fencing. Tender shoots are used as tooth stick for dental care and to cure piles. Yoekunga' Wernonia cincreae ''Asama' Wernonia cincrea	42.		Shrub.	
 *Sajana' *Sajana' *Musa paradisiaca L. (Musaceae) 'Kadali' Musa paradisiaca L. (Musaceae) 'Kadali' Cultivated shrub. Synadnie jama (L) (Dieaceae) *Gangagaiuli' A waiteland shrub. Pronomus fascicularis Lam. Pronomus fascicularis Lam. Pronomis sylvestris Rosh (L.) A wasteland shrub. Proconcerum Produanaceae) 'Kia' A wasteland shrub. Prosopsis julifora (Sonn.) Prosopsis julifora (Sw) DC Schult. (Aparagaceae) Strebus asper Lour. Kicinus communis L. (Euphorbiaceae) *Jada' Strebus asper Lour. Schult. (Aparagaceae) Strebus asper Lour. (Moraceae) 'Sahada' Strebus asper Lour. (Euphorbiaceae) Strebus asper Lour. (Moraceae) 'Sahada' Shrub. Zizyphus cenoplia (L.) Mill. (Rhamnaceae) A wild shrub. A wild shrub. Live fencing. Li				
 44. Musa paradisiaca L. (Musaceae) 'Kadali' 45. Nyctanthes arbor-tristis L. (Oleaceae) 'Gangasiul' 46. Opunita dillenii Wigh & Arn. (Cactaceae) 'Nagapheni' 47. Pandanasceae) 'Kai' 48. Phoenix sylvestris Roxb.(L.) (Pandanasceae) 'Kai' 48. Phoenix sylvestris Roxb.(L.) (Pandanasceae) 'Kai' 49. Piloscereus (Lem.) Byles & Rowley (Cactaceae) 'Deblaru' 50. Polyalthia longifolia (Sonn.) Thw. (Annonaceae) 'Debdaru' 51. Prosopsis julifora (Sw) DC (Fabaceae) 'Kanaja' 52. Strebdas asper Lour. 53. Ricinus communis L. (Euphorbiaceae) 'Samevieria roxburghiana Schult. & Schult. (Asparagaceae) 53. Strebus asper Lour. 54. Synadenium granti Hook f. (Exphorbiasceae) 'Sahada' 55. Strebus asper Lour. (Moraceae) 'Sahada' 56. Synadenium granti Hook f. (Exphorbia cace) 'Sahada' 57. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) 'Sahada' 58. Thevetia neritifolia Pers.ex Steud. (Apocynaceae) 'Sahada' 59. Verbina cincerae (L.) (Lagan) 50. Trebus asper Lour. (Apocynaceae) 'Sahada' 50. Thevetia neritifolia Pers.ex Steud. (Apocynaceae) 'Sahada' 50. Viet renegundo L. (Apocynaceae) 'Bagunia' 51. Zizyphus oenoplia (L.) Mill, (Rhamnaceae) 52. Strebus soper Lour. (Apocynaceae) 'Bagunia' 53. Ricence, Chanaja' 54. Strub. fue fencing. 55. Strebus asper Lour. (Apocynaceae) 'Sahada' 56. Synadenium granti Hook f. (Apocynaceae) 'Sahada' 57. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) 'Bagunia' 58. Thevetia neritifolia Pers.ex Steud. (Apocynaceae) 'Bagunia' 59. Vernoina cincerae (L.) Less. (Asteraceae) 50. Viet renegundo L. (Apocynaceae) 'Bagunia' 50. Viet renegundo L. (Verbenaceae) 'Bagunia' 50. Viet renegundo L. (Verbenaceae) 'Bagunia' 51. Zizyphus oenoplia (L.) Mill, (Rhamnaceae) 52. Awild shrub. 53. Thevetia neritifolia Pers.ex Steud. (Apocynaceae) 'Bagunia' 54. Zizyphus oenoplia (L.) Mill, (Rhamnaceae) 55. Areitign Root paste is used for healing of the state for fever and courge. 56. Viet renegundo L. (Verbenaceae) 'Begunia' 57. Thetamenona (Live Since Acta	43.		Tree.	
 45. Nyctauthes arbor-tristis L. (Oleaceae) 'Gangasiuli' 47. Pandanus fascicularis Lam. (Pandanaceae) 'Kai' 48. Phoenix sylvestris Roxb.(L.) (Arceaceae) 'Khajuri' 49. Pilosoceretus (Lem.) Byles & Rowley (Cactaceae) 'Dedilsiju' 50. Polyalthia longifolia (Sonn.) Thw. (Annonaceae) 'Dedilsiju' 50. Polyalthia longifolia (Sonn.) Thw. (Annonaceae) 'Dedilsiju' 51. Pongania pinnata (L) Pierre. (Fabaceae) 'Kanju' 52. Prosopsis julifora (Sw) DC (Fabaceae) 'Bhal Babula' 53. Streblus asper Lour. (Buptorbiaceae) 54. Samsevieria roxburghiana Schult & Schult. (Asparagaceae) 'Sahada' 55. Streblus asper Lour. (Buptorbiaceae) 56. Streblus asper Lour. (Buptorbiaceae) 57. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) 'Tagara' 58. Theveria neriifolia Persex Steud. (Apocynaceae) 'Tagara' 59. Vernonia cinerea (L.) Less. (Asteraceae) 'A small bushy shrub. 50. Strebus asper Lour. (Buptorbiaceae) 51. Jongania pinnata (L.) Pierre. (Moraceae) 'Shada' 52. Strebus asper Lour. (Moraceae) 'Sahada' 53. Strebus asper Lour. (Moraceae) 'Tagara' 54. Samsevieria roxburghiana Schult & (A wild shrub. 55. Strebus asper Lour. (Moraceae) 'Tagara' 56. Strebus asper Lour. (Moraceae) 'Tagara' 57. Tabernaemotana coronaria (Jacq) Willd, (Apocynaceae) 'Tagara' 56. With regundo L. (Apocynaceae) 'Tagara' 57. Tabernaemotana coronaria (Jacq) Willd, (Apocynaceae) 'Tagara' 58. Theveria nerificia Persex Steud. (Apocynaceae) 'Tagara' 59. Vernonia cinerea (L.) Less. (Asteraceae) 'Poksunga' 60. Vite megundo L. (Verbenaceae) 'Begunia' 61. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) 'Dediata 62. Vite megundo L. (Verbenaceae) 'Begunia' 63. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) 'Poksunga' 64. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) 'Poksunga' 65. Strebus asper Lour. (Verb				····· · · · · · · · · · · · · · · · ·
 45. Nyctanthes arbor-tristis L. (Oleaceae) 'Gangasiuli' 46. Opunita dillenii Wight & Arn.(Cactaceae) 'Nagapheni' 47. Pandanus fascicularis Lam. (Pandanaceae) 'Kia' 48. Phoenix sylvestris Roxb.(L.). (Pandanaceae) 'Kia' 49. Pilosocereus 'Deulisiju' 40. Pilosocereus 'Deulisiju' 50. Polyalthia longifolia (Sonn.) (Fabaceae) 'Kanaja' 51. Pongamia pinnata (L.) Pierre. (Fabaceae) 'Maganeia' 'Jada' 53. Richus communis L. (Euphorbiaceae) 'Jada' 54. Sansevieria roxburghiana Schult. & Schult. (Asparagaceae) 'Sublication of the state of the state	44.	Musa paradisiaca L. (Musaceae) 'Kadali'	Cultivated shrub.	
 'Gangasiul' 'Gangasiul' <i>Opuntia dillenii</i> Wight & Arn.(Cactaceae) 'Nagapheni' <i>Pandanus fascicularis</i> Lam. (Pandanasceae) 'Kia' <i>Phoenix sylvestris</i> Roxb.(L.) (Arceaceae) 'Kia' <i>Phoenix sylvestris</i> Roxb.(L.) (Arceaceae) 'Khajuri' <i>Phisocereus</i> <i>a</i> monocot unbranched tree. <i>Piloscoereus</i> <i>a</i> monocot unbranched tree. <i>A</i> wild shrub. <i>Live fencing.</i> <i>Live fencig.</i>				
 46. Opinita dillenii Wight & Arn.(Cactaceae) ^NAgapheni¹ 47. Pandanus fascicularis Lam. (Pandanus fascicularis Lam. (Pandanaceae) ¹Kia¹ 48. Phoenix sylvestris Roxb.(L.) (Arecaceae) ¹Kia¹ 49. Pilosocereus (Lem.) Byles & Rowley (Cactaceae) ¹Deulisiju¹ 50. Polyalthia longifolia (Son.) Thw. (Annonaceae) ¹Debdaru¹ 51. Pongamia pinnata (L) Piere. (Fabaceae) ¹Ramj^a ¹Jada¹ 52. Prosopsis juliflora (Sw) DC (Fabaceae) ¹Pangana Schult. & Schult. (Asparagaceae) 53. Streblus asper Lour. (Euphorbiaceae) 54. Sansevieria roxburghiana Schult. & Schult. (Asparagaceae) 55. Streblus asper Lour. (Euphorbiaceae) 56. Synadenium grantii Hook f. (Euphorbiaceae) 57. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) ¹Tagara³ 59. Vernonia cinerea (L.) Less. (Asteraceae) ¹Polsauna³ 50. Thevetia nerifolia Pers.ex Steud. (Apocynaceae) ¹Tagara³ 51. Thevetia nerifolia Pers.ex Steud. (Apocynaceae) ¹Tagara³ 53. Thevetia nerifolia Pers.ex Steud. (Apocynaceae) ¹Tagara³ 54. Thevetia nerifolia Pers.ex Steud. (Apocynaceae) ¹Tagara³ 55. Thevita nerifolia Pers.ex Steud. (Apocynaceae) ¹Tagara³ 56. Thevetia nerifolia Pers.ex Steud. (Apocynaceae) ¹Tagara³ 57. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) ¹Tagara³ 59. Vernonia cinerea (L.) Less. (Asteraceae) ¹Polsaung³ 50. View negundo L. (View neg	45.	Nyctanthes arbor-tristis L. (Oleaceae)	A wild shrub.	Live fencing. Leaf decoction mixed with honey is
 ¹Nagapheni¹ 47. Pandanus fascicularis Lam. (Pandanacees) ¹Kia¹ 48. Phoenix sylvestris Roxb.(L.) (Arecaces) ¹Khajuri¹ 49. Pilosocereus arrabidae (Lem.) Byles & Rowley (Cactaceae) 'Deblaigij¹ 50. Polytalthia longifolia (Son.) Thw. (Annonaceae) ¹Debdaru¹ 51. Pongania pinnata (L) Pierre. (Fabaceae) ¹Kanj¹ 52. Prospisis juliflora (Sw) DC (Fabaceae) ¹Kanj¹ 53. Ricinus communis L. (Euphorbiaceae) 'Jada¹ 54. Sanseviria roxburghiana Schult. & Schult. (Asparagaceae) 55. Streblus asper Lour. (Euphorbiaceae) 56. Synadenium grantii Hook f. (Euphorbiaceae) 57. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) ¹Kanjara³ 58. Thevetia neriifolia Pers.ex Steud. (Apocynaceae) ¹Canjara³ 59. Vernonia cincrea (L.) Less. (Asteraceae) 50. Vernonia cincrea (L.) Less. (Asteraceae) 'Postanga' 50. Vernonia cincrea (L.) Less. (Asteraceae) 'Asmal' Asmall bush shrub. 51. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) 52. Awid shrub. 53. Tievptus oenoplia (L.) Mill. (Rhamnaceae) 54. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) 55. Strebus asper Lour. (Verbenaceae) ¹Canjara³ 56. Synadenium grantii Hook f. (Euphorbiaceae) 57. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) ¹Canjara⁴ 58. Thevetia neriifolia Pers.ex Steud. (Apocynaceae) ¹Canjara⁴ 59. Vernonia cincrea (L.) Less. (Asteraceae) 'Asmall bushy shrub. 51. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) 'A wild shrub. 52. Live fencing. Root paste is used for healing of 				
 47. Pandanus fascicularis Lam. (Pandanaceae) 'Kia' 48. Phoenix sylvestris Roxb.(L.) (Arceaceae) 'Klajuri' 49. Pilosocereus arrabidae (Lem.) Byles & Rowley (Cactaceae) 'Deulisiju' 50. Polyalthia longifolia (Son.) A wild shrub. 51. Pongamia pinnata (L) Pierre. (Fabaceae) 'Karanja' 52. Prosopsis juliffora (Sw) DC Common tree in village periphery 53. Ricinus communis L. (Euphorbiaceae) 'Schult. (Asparagaceae) 54. Sansevieria roxburghiana Schult. & A wild shrub. 54. Sansevieria roxburghiana Schult. & A wild herb. Schult. (Asparagaceae) 55. Streblus asper Lour. (Euphorbiaceae) 76. Synadenium grantii Hook f. (Euphorbiaceae) 77. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) 'Tagara' 78. Thevetia neriifolia Pers.ex Steud. (Apocynaceae) 'Tagara' 79. Vernonia cinerea (L.) Less. (Asteraceae) 'Asinga' 70. View negundo L. (Verbenaceae) 'Begunia' 71. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) 'Asinga' 70. Witx negundo L. (Verbenaceae) 'Begunia' 71. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) 'Asinga' 70. Witx negundo L. (Li Zizyphus oenoplia (L.) Mill. (Rhamnaceae) 'Asinga Canaa Asinga Ca	46.		A wasteland shrub.	Live fencing.
 (Pandanaceae) 'Kia' 48. Phoenix sylvestris Roxb.(L.) (Arceaceae) 'Khajuri' 49. Pilosocereus (Lem.) Byles & Rowley (Cactaceae) 'Deulisiju' 50. Polyalthia longifolia (Sonn.) Thw. (Annonaceae) 'Debdaru' 51. Pongamia pinnata (L) Pierre. (Fabaceae) 'Kanaja' 52. Prosporis julifora (Sw) DC (Fabaceae) 'Kanaja' 53. Ricinus communis L. (Euphorbiaceae) 'Jada' 54. Sansevieria roxburghiana Schult. & Schult. (Asparagaceae) 55. Streblus asper Lour. (Euphorbiaceae) 56. Synadenium grantii Hook f. (Euphorbiaceae) 57. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) 'Tagara' 58. Thevetia neriifolia Pers.ex Steud. (Apocynaceae) 'Kaiayi' 59. Vernonia cinerea (L.) Less. (Asteraceae) 'Poksunga' 60. Vitex negundo L. (Verbenaceae) 'Begunia' 61. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) A wild shrub. A wild shrub. A wild shrub. A wild shrub. Live fencing. <l< td=""><td></td><td>'Nagapheni'</td><td></td><td></td></l<>		'Nagapheni'		
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 (Arecaceae) 'Khajuri' 49. <i>Pilosocereus</i> arrabidae (Lem.) Byles & Rowley (Cactaceae) 'Deulisiju' 50. <i>Polyalthia longifolia</i> (Sonn.) Thw. (Annonaceae) 'Debdaru' 51. <i>Pongamia pinnata</i> (L) Pierre. (Fabaceae) 'Karaja' 52. <i>Prosopsis julflora</i> (Sw) DC (Fabaceae) 'Karaja' 53. <i>Ricinus communis</i> L. (Euphorbiaceae) 'Jada' 54. <i>Sansevieria roxburghiana</i> Schult. & Schult. (Asparagaceae) 55. <i>Streblus asper</i> Lour. (Moraceae) 'Sahada' 56. <i>Synadenium granti</i> Hook f. (<i>Synadenium granti</i> Hook f. (Apocynaceae) 'Tagara' 57. <i>Tabernaemontana coronaria</i> (Jacq) Willd, (Apocynaceae) 'Koniyara' 58. <i>Thevetia nerifolia</i> Pers.ex Steud. (Apocynaceae) 'Koniyara' 59. <i>Vernonia cinerea</i> (L.) Less. (Asteraceae) 'Poksunga' 60. <i>Vitex negundo</i> L. (Verbenaceae) 'Begunia' 61. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) A wild shrub. 71. <i>Zizyphus oenoplia</i> (L.) Mill. (Rhamnaceae) A wild shrub. 72. <i>Tizphus oenoplia</i> (L.) Mill. (Rhamnaceae) A wild shrub. 73. <i>Taizphus oenoplia</i> (L.) Mill. (Rhamnaceae) A small bushy shrub. 74. <i>Zizyphus oenoplia</i> (L.) Mill. (Rhamnaceae) A wild shrub. 75. <i>Strebus asper</i> Lour. (Moraceae) 'Begunia' 76. <i>Tabernaemontana coronaria</i> (Jacq) Willd, (Apocynaceae) 'Tagara' 77. <i>Tabernaemontana coronaria</i> (Jacq) Willd, (Apocynaceae) 'Koniyara' 78. <i>Thevetia nerifolia</i> Pers.ex Steud. (Yerbenaceae) 'Begunia' 79. <i>Vernonia cinerea</i> (L.) Less. (Asteraceae) A small bushy shrub. 70. <i>Vitex negundo</i> L. (Verbenaceae) 'Begunia' 71. <i>Zizyphus oenoplia</i> (L.) Mill. (Rhamnaceae) 72. <i>A</i> wild shrub. 73. <i>Live</i> fencing. Root paste is used for healing of 				
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(Lem.) Byles & Rowley (Cactaceae) 'Deulisiju'A wild tree.Live fencing.50.Polyalthia longifolia (Sonn.) Thw. (Annonaceae) 'Debdaru'A wild tree.Live fencing.51.Pongamia pinnata (L) Pierre. (Fabaceae) 'Karanja' 2.A tree species common in coastal plains and hills. Common tree in village (Fabaceae)'Phala Babula' 3.Live fencing. Shoots are used as tooth stick to check bad breath. Live fencing. Tender shoots is used as tooth stick.52.Prosopsis julifora (Sw) DC (Fabaceae) 'Karanja' Jada'Common tree in village pripheryLive fencing. Shoots are used as tooth stick. Live fencing. Shoots are used as tooth stick. Live fencing. Shoots are used as tooth stick. Live fencing.53.Ricinus communis L. (Euphorbiaceae) 'Jada'A wild herb.Live fencing. Live fencing.54.Sansevieria roxburghiana Schult. & Schult. (Asparagaceae)A wild herb.Live fencing. Live fencing.55.Streblus asper Lour. (Moraceae) 'Sahada' (Euphorbiaceae)Common tree in village periphery.Live fencing. Live fencing.56.Synadenium grantii Hook f. (Euphorbiaceae)Shrub.Live fencing.57.Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) 'Tagara'Cultivated shrub.Live fencing.58.Thevetia neriifolia Pers.ex Steud. 'Poksunga'A wild shrub.Live fencing. Leaf paste is used to cure piles.59.Vernonia cinerea (L.) Less. (Asteraceae) 'Poksunga'A small bushy shrub.Live fencing. Tender shoots are used as tooth stick. Decoction of leaf is taken for fever and cough.60. <td< td=""><td></td><td></td><td></td><td></td></td<>				
 [*]Deulisiju[*] 50. Polyalthia longifolia (Son.) Thw. (Annonaceae) [*]Debdaru[*] 51. Pongania pinnata (L) Pierre. (Fabaceae) [*]Karanja[*] 52. Prosopsis julifora (Sw) DC (Fabaceae) [*]Maranja[*] 53. Ricinus communis L. (Euphorbiaceae) [*]Jada[*] 54. Sansevieria roxburghiana Schult. & Schult. (Asparagaceae) 55. Streblus asper Lour. (Moraceae) [*]Sahada[*] 56. Synadenium grantii Hook f. (Euphorbiaceae) 57. Tabernaemontana coronaria (Jacq) Willd, (Apocynaceae) [*]Tagara[*] 58. Thevetia neriifolia Pers.ex Steud. (Apocynaceae) [*]Tagara[*] 59. Vernonia cinerea (L.) Less. (Asteraceae) *Poksunga[*] 60. Vitex negundo L. (Verbenaceae) [*]Begunia[*] 61. Zizyphus oenoplia (L.) Mill. (Rhamnaceae) A wild shrub. A wild shrub. A wild shrub. A wild shrub. Live fencing. Live fencing. Leaf paste is used to cure piles. Live fencing. Tender shoots are used as tooth stick. Decoction of leaf is taken for fever and cough. Live fencing. Root paste is used for healing of 	49.		A wild shrub.	Live fencing.
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Fourteen species are used for tooth brush. Prominent among them are Acacia nilotica (L.)Willd., Bambusa vulgaris L., Calotropis gigantea R.Br., Jatropha curcas L., Justicia adhatoda L., Lantana camara L., Pongamia pinnata (L) Pierre.and Streblus asper Lour. The present report on the use of plants for dental care draws support from earlier studies [27-29] in different parts of India. Most important plant species for edible purpose include Annona

reticulata L., Annona squamosa L., Borassus flabellifer L., Citrus limon (L.) Burm.f., Mimusops elengi L., Musa paradisiaca L. and Phoenix sylvestris Roxb.(L.). Some of the studied plants are also frequently used for food purposes in India and Odisha [2, 30-33]. Most preferred plant species for the management of various ailments are Cassia fistula L., Euphorbia tirucalli L., Justicia adhatoda L., Mimusops elengi L., Moringa oleifera Lam. Ricinus communis L., Pongamia pinnata (L.) Pierre. and Vitex negundo L. Similar plant use is recorded earlier in different parts of India [34-36], indicating the importance of traditional medicine in the treatment of various ailments in Bhadrak district. Two species in the present study is used for various household articles. The stem of Borassus flabellifer L. provides strong timber material useful for construction [37-39]. The leaves are used in a variety of artifact construction. For example, for making mats, umbrellas, toys, huts and other household utility products [37]. The pulp is mixed with flour and used to make several edible preparations [40]. Similarly, the leaves of Phoenix sylvestris Roxb. (L.) are used in many religious and socio-cultural functions in the district. This plant provides a multitude of useful products such as handicrafts and mats, screens, thatching and fencing materials, baskets, crates, fuel wood, and house brooms and is the main subsistence resource for the poorest people [41]. The important timber and fuel yielding plant species recorded in our study are Albizzia lebbeck (L.) Benth., Alsotonia scholaris (L.) R.Br., Bambusa vulgaris L., Casuarina equisetifolia L., Polyalthia longifolia (Sonn.)Thw. and Pongamia pinnata (L) Pierre. The diverse patterns of use of different plant species in the study area show that rural people have a high level of indigenous knowledge. The results of preference ranking for four selected threats against the availability of plant species in the study area shows that agricultural expansion is the first ranking threat (most detrimental), followed by urbanization, fuel wood collection and overgrazing. In addition to the above mentioned threats the respondents mentioned that limited government support for species conservation and the gradual waning of the existing traditional systems and coping mechanisms due to external intervention are among the main reasons behind the neglecting of local knowledge and tree management and conservation systems.

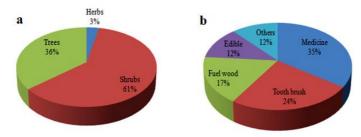


Fig. 3. Life form analysis (a) and the diversity of economic uses (b)

In all areas of the district, most farmers harvested the branches of established live fences to use as material for establishing new live fences or increasing the tree density within existing fences. Forage for cattle is an important product, particularly because many of the common live fence species such as *Gliricidia sepium* and *Erythrina indica* are nitrogen-fixing species that provide forage that is of high nutritive quality and available in the dry season when grass is scarce [42, 43]. Thus these traditional fences are time tested, easily affordable, easy to construct and play an important role in the conservation of many plants [24]. Litter from fencing plants accumulates at the base making soil fertile. Fencing plants attract birds, butterflies, insects, ants and is considered as promising sites to locate the seedlings of species which are dispersed by birds [44]. Therefore, fencings around them provide good sites for maintenance rather conservation of some important wild species. Live fences are abundant and conspicuous features in all rural areas of the Bhadrak district and have fulfilled a range of social, economic and ecological functions: acting as barriers to animal movement and sources of fodder,

firewood and fruits, while also serving as habitat, providing resources, acting as corridors for wildlife conservation and play important role in ethnobotany and ethno medicines [12, 45]. The technique of management and high diversity of live fences reflect the wisdom of traditional culture and ecological knowledge that have evolved over the years. 'Conservation through use' [46] approach in live fences is an element of a complementary conservation strategy. There is an urgent need to strengthen and document such traditional systems of natural resource management for economic viability, ecological sustainability and social acceptability.

Conclusion

The present study demonstrates the important productive and ecological roles of live fences within rural areas of Bhadrak district, Odisha, India. The multiple benefits illustrate traditional biofencing practices have great potential to reduce environmental degradation, serve agronomic functions, and also enhance the conservation of biodiversity. Current research focuses on identifying the best combinations of different growth forms to make more efficient biofencing structure and function, with an aim to attain optimum productivity and profitability with reduced economic risks.

References

- [1] P.R. Choudhuri, P. Rai, U.S. Pattanaik, R. Sitaram, *Live fencing practices in the tribal dominated eastern Ghat of India*, Agroforestry Systems, 18, 1997, pp. 41-53.
- [2] S. Mishra, P. Vasudevan, S. Prasad, *Biofencing : an ecofriendly boundary wall*, Journal of Scientific and Industrial Research, **70**, 2011, pp.727-731.
- [3] J.D. Sauer, Living fences in Costa Rican agriculture, Turrialba (IICA), 29, 1979, pp. 225– 261.
- [4] G. Budowski, Living fences in tropical America, a widespread agroforestry practice, Agroforestry: Realities, Possibilities and Potentials, (Editor: H.L. Gholz), Springer, Heidelberg, 1987, pp. 169–178.
- [5] J.R.G. Baudry, H. Bunce, F. Burel, *Hedgerows: an international perspective on their origin, function and management*, Journal of Environment Management, 60, 2000, pp. 7–22.
- [6] E.J.P. Marshall, A.C. Moonen, Field margins in northern Europe: their functions and interactions with agriculture, Agriculture, Ecosystem and Environment, 89, 2002, pp. 5–21.
- [7] G. Budowski, R. Russo, *Live fence posts in Costa Rica: a compilation of the farmer's beliefs and technologies*, Journal of Sustainable Agriculture, **3**, 1993, pp. 65–85.
- [8] A.J.F. Villanueva, R.R. Sanchez, C.F.O. Carrete, H.L. Mena, *Establishment of different tree species for live fences on the Nayarit coast*, Tecnica-Pecuaria-en-Mexico, 34, 1996, pp. 64-70.
- [9] D. Le Coeur, J. Baudry, F. Burel, C. Thenail, Why and how we should study field boundary biodiversity in an agrarian landscape context, Agriculture, Ecosystems and Environment, 89, 2002, pp. 23–40.
- [10] C.A. Harvey, N. Tucker, A. Estrada, Live Fences, Isolated Trees and Windbreaks: Tools for Conserving Biodiversity in Fragmented Tropical Landscapes? (Editors: G. Schroth, G.A.B. Fonseca, C.A. Harvey, C. Gascon, H.L. Vasconcelos and A.M.N. Izac,), Agroforestry and Biodiversity Conservation in Tropical Landscapes, Island Press, Washington, DC, 2004, pp. 261–289.
- [11] B.L. Punjani, *Role of Plants in field fencing in Tribal areas of district Sabarkantha (North Gujarat)*, Ethnobotany, 10, 1998, pp. 56-60.

- [12] S. Borkataki, M. Chutia, S.K. Borthakur, Ethnobotany of Biofencing among teagarden and ex- teagarden communities of Nagaon District of Assam, Indian Journal of Traditional Knowledge, 7(4), 2008, pp. 666-668.
- [13] V. Dinesh, S.K. Bembrekar, P.P. Sharma, *Traditional use of biofencing plants in indigenous folklore of Nizamabad district ,Andhra Pradesh,India,* International Journal of Pharmaceutical and Chemical Sciences, 2(3), 2013, pp. 1491-93.
- [14] P. Sharma, U. Devi, Ethnobotanical uses of biofencing plants in Himachal Pradesh, Northwest Himalaya.Pakisthan, Journal of Biological Science, 16(24), 2013, pp. 1957-1963.
- [15] H.G. Champion, S.K. Seth, A Revised Survey of the Forest Types of India, Manager of Publications, New Delhi, 1968, pp. 16-17.
- [16] S.K. Jain, **Glimpses of Indian Ethnobotany**, Oxford and IBH Publishing Co, New Delhi, 1987, pp. 231-241.
- [17] G.J. Martin, Ethnobotany: A Methods Manual, Chapman and Hall, London, UK, 1995, pp. 102-104.
- [18] H.P.Huntington, Using traditional ecological knowledge in science: Methods and applications, Ecological Application, 10, 2000, pp. 1270–1274.
- [19] A.B. Cunningham, Applied Ethnobotany: People, Wild Plant Use and Conservation, Earthscan Publishing Ltd., London,, UK, 2001.
- [20] H.H. Haines, **The Botany of Bihar and Orissa**, Adland and Son, West Newman Ltd., London, UK, 1925.
- [21] H.O. Saxena, M. Brahmam, **The Flora of Orissa.** Vol. I-IV, Orissa Forest Development Corporation, Bhubaneswar, 1996.
- [22] APG III, An update of the angiosperm phylogeny group classification for the orders and families of flowering plants, **Botanical Journal of the Linnean Society**, **161**(2), 2009, pp. 105-121.
- [23] R.B. Chhetri, *Ethnobotany of bio-fencing in Dhulikhel region in Nepal*, Ethnobotany, 17, 2005, pp. 176-178.
- [24] P.K. Subrahmanya, K. Raveendran, Traditional plant fencing and its conservatory nature in Kasaragod District, Kerala, India, Ethnobotanical Leaflets, 14, 2010, pp. 681-686.
- [25] M.A, Salam, T. Noguchi, M. Koike, Understanding why farmers plant trees in the homestead agroforestry in Bangladesh, Agroforestry Systems, 50, 2000, pp. 77–93.
- [26] R.R.B. Leakey, A.B. Temu, M. Melnyk, P. Vantomme, Domestication and Commercialization of Non-timber Forest Products in Agroforestry Systems, FAO, 1996.
- [27] J. Singh, S. Narain, *Ethnomedicinal account of Sonbhadra district*, Journal of Phytological Research, 20(2), 2007, pp. 255-264.
- [28] K.P. Saxena, S. Roy, Allium species: The potent medicinal herbs, Journal of Phytological Research, 20(2), 2007, pp. 303-308.
- [29] U, Jain, M. Chauhan, Important herbal wealth of tribal people of Pali (Rajasthan), Journal of Phytological Research, 22(1), 2009, pp. 143-150.
- [30] K.N. Reddy, C. Pattanaik, C.S. Reddy, V.S.Raju, *Traditional knowledge on wild food plants in Andhra Pradesh*, Indian Journal of Traditional Knowledge, 6(1), 2007, pp. 223-229.
- [31] S.D. Rout, *Ethnobotany of diversified wild edible fruit plants in Similipal Biosphere Reserve*, Ethnobotany, 19, 2007, pp. 137-139.
- [32] S. Binu, Wild edible plants used by the tribals in Pathanamthitta district, Kerala, Indian Journal [33] P.P. Sharma, R.J. Savant, Some less-known plants parts as supplementary foods, Inter Multidisciplinary Research Journal, 2(12), 2012, pp.12-13.
- [34] R.D. Girach, A, Aminuddin, M. Brahman, M.K. Mishra, Observations on ethnomedicinal plants of Bhadrak district, Orissa, India, Ethnobotany, 9, 1997, pp. 44-47.

- [35] S. Sankaranarayanan, P. Bama, J. Ramachandran, P.T. Kalaichelvan, M. Deccaraman, *Ethno botanical study of medicinal plants used by traditional users in Villupuram district of Tamil Nadu, India, Journal of Medicinal Plants Research 4, 2010, pp.1089-1101.*
- [36] A. Sinhababu, A. Banerjee, Ethno-botanical Study of Medicinal Plants Used by Tribals of Bankura Districts, West Bengal, India, Journal of Medicinal Plants Studies, 1, 2013, pp.98-104.
- [37] A. Kovoor, The Palmyra Palm: Potential and Perspectives, FAO Plant Production and Protection Paper, FAO, 1983.
- [38] H.N. Jagadish, K. Damodaran, S. A. Padmanabhan, B.S. Swathanarayana, X. Francis, S.Z.M. Kamal, H.G. Reddy, Studies on Palmyra Wood, IPIRTI Res. Rep. 69. 1993.
- [39] D. Depommier, The tree behind the forest: ecological and economic importance of traditional agroforestry systems and multiple uses of trees in India, Tropical Ecology, 44(1), 2003, pp. 63-71.
- [40] T.A., Davis, D.V. Johnson, Current utilization and further development of the Palmyra(Borassus flabellifer L. Arecaceae) in Tamil Nadu State, India, Economic Botany, 41, 1987, pp.247-266.
- [41] M.P. Rana, M.S. Islam, *The role of palm husbandry in the rural economy of the southeastern region of Bangladesh,* **iForest, 3,** 2010, pp. 39-43.
- [42] J. Beer, Experiences with fence line fodder trees in Costa Rica and Nicaragua, In: J. Beer, H.W. Fassbender, J. Heuveldop (eds.), Advances in Agroforestry Research, CATIE Technical Series. CATIE, Costa Rica, 1987, pp. 215–222.
- [43] B. Frank, E. Salas, Biomass dynamics of Erythrina landecolata as influenced by shootpruning intensity in Costa Rica, Agroforestry Systems, 57, 2003, pp. 19–28.
- [44] M.V. Gokhale, S.S. Shaikh, N.S. Chavan, Ensete superbum (Roxb) Cheesm: Potential plant species for ecorestoration programme, International Journal of Usufruct Management, 11(1), 2010, pp. 90-93.
- [45] B.A. Jadeja, N.K. Odedra, M.B. Shilu, Plants used as fencing in Porbandar District of Gujrat, International Journal of Agricultural Science, 3(1), 2007, pp.174-176.
- [46] P.B. Eyzaquirre, O. F. Linares, A new approach to the study and promotion of homegardens. People and Plants Handbook: Issue 7: Growing Diversity – People and Plant Genetic Resources, WWF-UNESCO-RBG, Kew, 2001, pp. 30–33.

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