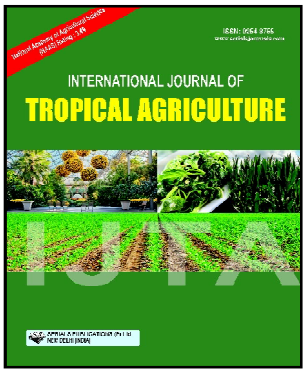

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A Brief Review of Some Indigenous Plants of Assam and their Future Prospects

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INTRODUCTION

The production and distribution of plant products have a profound influence on the economic and social life of the nations of the world, affecting both domestic conditions and international relations and even changing the course of the history. The maintenance of an adequate supply of food and raw materials for the use of industry is essential to the existence as well as the prosperity of any nation. The successful pursuit of agriculture in any area depends on the presence of certain environmental factors that are necessary for the crops concerned. Each species differs in its soil, moisture, temperature, and other requirements. Satisfactory growth and development can take place only if all these factors are present in proper amount. Other agricultural problems are physical rather than economic in nature and are concerned more with productivity than production. The practice of farming necessarily brings about the destruction of the natural vegetation, which has a protective functions. This induces conditions that results in the deterioration of the soil. It is essential that some sort of soil conservation be put into practice before it is too late.

The policies involved in soil conservation include the preservation of soil fertility, the prevention of erosion , the promotion of better land utilization, the stabilization, of eroded areas, and various types of crops adjustment. Since indigenous plants are those plants that found in a given area in geological times . They occur naturally or existed for many years in an area. They not only provide shelter and food for native birds and animals but also culturally significant as they provide link to the

past. So conservation of these native plants along with cultivated plants is very much important to conserve the ecosystem of the area.

Excavations in the Indus valley revealed that spices and herbs have been used even before 1000 BC. India is considered as kingdom of spices. There are 107 spices with 20 countries being involved in the production and Export (India 50 spices). Total annual average production of spices in India is estimated as 2.49 million tones (30% world production) Of the total production 90% domestic, 10% export - Indian export accounts for 30-40% world trade & nearly 20-37% of foreign exchange is from pepper alone. (black gold). India is the major producer of pepper, ginger, turmeric and seed spices. India enjoys monopoly in the export of spice oils and oleoresins. In Assam such plant are indigenous which will provide advantages and great opportunity to the regional people.

Considering this, we have undertaken the short review of some of the indigenous plants of Assam in Dibrugarh district and to highlight their future prospects.

MATERIALS AND METHODS

A systematic survey was carried out in 7 different selected villages of Dibrugarh district – Jokai, Bogibill Gaon, Garudhoria, Kalakhoa, Khanikar, Lezai, Borboruah.

The information of plants used by rural people of that area were gathered from the traditional practitioners and the local elderly people. The plants were collected and preserved for identification. These plants were studied and identified with the help of local flora and available literature. The voucher specimens were deposited in the herbarium of the Department of Biology, SSAD Jr College, Assam.

For this study we have undertaken following materials and some standard procedure.

Survey and collection of data, by selecting some localities of District of Assam. Along with maps.

Materials needed are : Scissors, Knife, Diggers, Plant press vasculum, Herbarium sheets, etc.

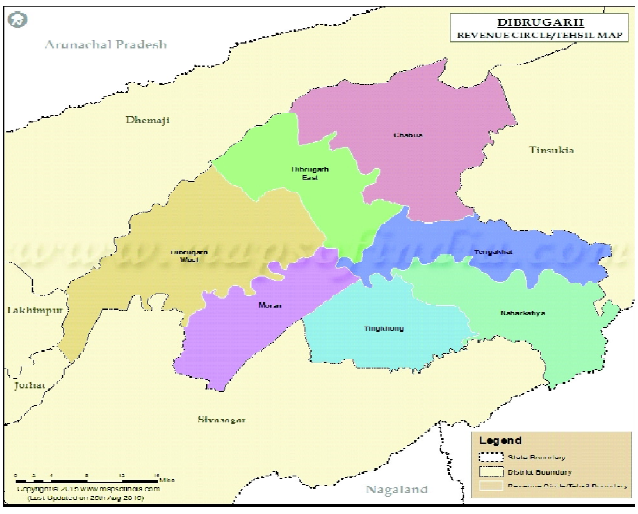
1) **Apparatus :** Clip board, 30m long measuring tape, grid quadrat of 0.5m, photo collection.

   a) Sampled areas are divided into a grid pattern, random sampling methods, DACFOR Scale associated with percentage.

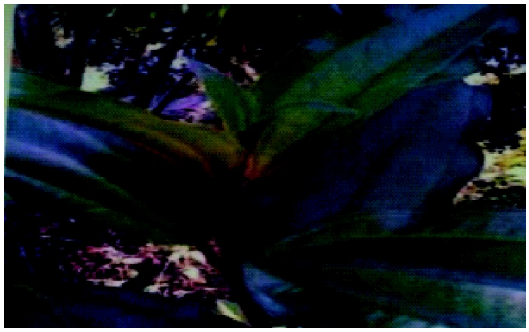
Abundance scale	*DACFOR*	*Coverage of organisms*
+	RARE	< 1 % COVER
1	OCCASIONAL (O)	1-5%
2	FREQUENT (F)	6-25%
3	COMMON (C)	26-50%
4	ABUNDENT (A)	51- 75%

2) $$\text{Plants Population Density} = \frac{\text{Total No of individuals in all quadrats (segments) studied}}{\text{Total No of quadrate studied}} \times 100$$

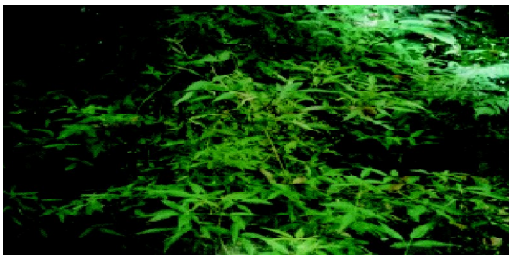
3) $$\text{Percentage Frequency} = \frac{\text{Total no of quadrates in which species occurred}}{\text{Total No of quadrates studied}}$$

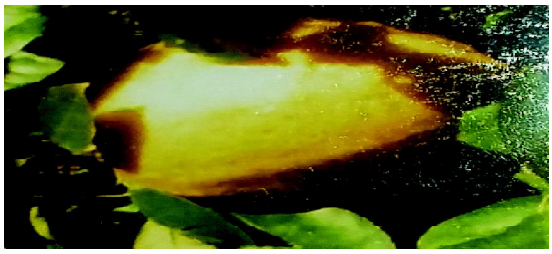
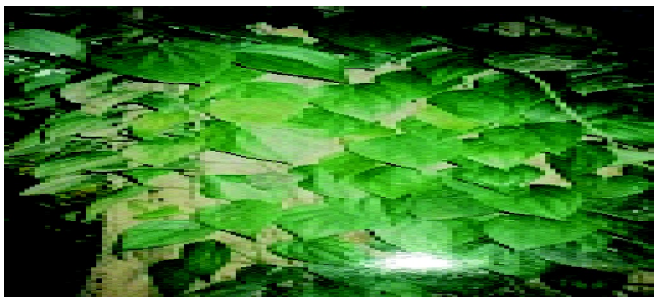


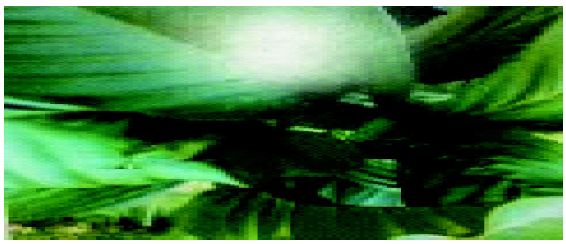
Sl. No	Figures	Family with Scientific Names
01		Noga Tenga (Myrica esculanta i)
02		Arjun (Terminalia arguna)
03	 Outenga (*Dillenia indica*)	Dilleniaceae Outenga (Dillenia indica)
04		Verbinaceae Nephaphu Colebrookianum
05		Karabi (Nerium indicum)
06		Babori Chrysanthenum green

07		Dhekia Diplazium esculentum
08		Malvaceae Tengamora Roselle plant Hibiscus sabdariffa
09		Ronga fout kala (Melostoma malabathrium
10		Chuka xaak Sorrel Rumex acetosa
11		Chilli (Capsicum annuum L.)

12		Pear Pyrus communis
13		Amaranthaceae Bach (Achyranthes aspera)
14		Oleaceae Olive (olea eauropea)
15		Euphorbiaceae Leteku (Baccaurea ramiflora
16		Zata makori (Sahima waliichi
17		Khutura xaak

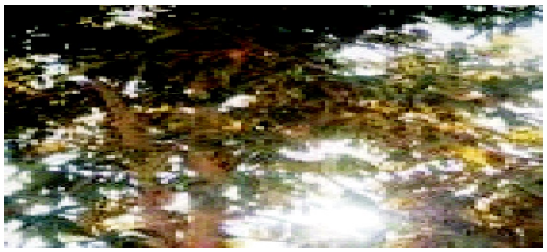
18		Pasatia (Vitex neguda)
19		Rutaceae Jamun (Syzygium cumini)
20		Rubiaceae Mosundori Skunk vine (Houttuynia corodata)
21		Fabaceae Tetali (Tamarindus indica)
22		Solanaceae Tita vakuri Solanum indicum
23		Rutaceae Bor tenga Citrus limon

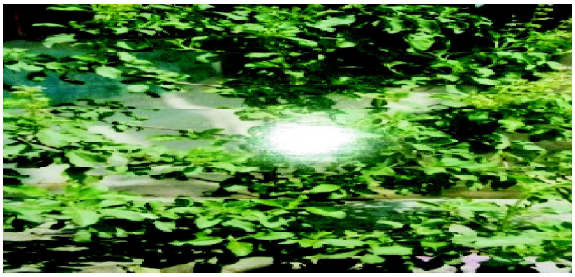
24		Sealkata (Argimoni maxima)
25		Methi (Fenugreek- Trigonella foenum- graecum
26		Rutaceae Jora Tenga (Citrus medica)
27		Combretaceae Hilikha Terminalia chebula
28		Piperaceaejaluk (Piper nigrum)

29		Dhapaitita Andrographis paniculata
30		Cane Calamus sp
31		Rutaceae Lemon (Citrus aurantifolia)
32		Bor kothona
33		Pandanaceae Kataki phul Pandanus odorifer
34		Malvaceae Noni Morus alba

35		Rutaceae Mushombi Tenga Citrus sinensis
36		Soru sun barial
37		Sterculiaceae Devils cotton Ulat kamba (Abroma augusta)
38		Nyctaginaceae Ponownua Boerhavia diffusa
39		Scrophulariaceae Brahmi Herpestis monniaria
40		Araceae Horu poni Lemna minor L

41		Euphorbiaceae Castor Ricinus communis
42		Mimosoideae Mimusa pudica Albizia julibrissimd-waziz
43		Tita phoal Enanthenum indicum
44		Oxalidaceae Kordoi yenga Averrhoa carabola
45		Water spinach Kolmou saakI pomoea aquatica
46		Rutaceae Wood Apple Aegle marmelos

47		Mora pat Corchorus capsularis
48		Pani khutura Portulaca sp
49		Combretaceae Hilikha Terminalia chebula
50		Wood apple Aegle marmelos
51		Anacardiacea Kaju badam Anacardium occidentale

52		Labiatae Boga tulsi Ocimum sanctum
53		Lythraceae Dalim, Pomogranate
54		Verbenaceae Posotia (Vitex neguda)
55		Meliaceae Neem (Azadirachta indica)
56		Sapha

57		Mitha pat Acanitum napellus
58		Tara pat Alpinia nigra L
59		Commelinaceae Kona shimolu Tropical spiderwort Commelina benghalensis
60		Rubiaceae Vhadallota Skunk vine Paederia foetida
61		Tita Pat C. capsularis
62		Aparajita (Cletoria ternate) Apeaceae

63		Umbelliferae Apiaceae Manimuni (Centella asiatica)
64		Arecaceae Coconut Cocos nucifera
65		Aeraceae Kasu pat Colocasia esculenta
66		Mataka Eichhornia crassipes
67		Verbenaceae Posotia Vitex neguda
68		Pedaliaceae Til Sesamum indicum

69		Durun Lucas aspera
70		Zingiberaceae Tarmeric Curcuma longa
71		Mango plant Amchur Mangifera indica
72		Luraceae Bay leaves Cinnamomum tamala
73		Temarind Fabaceae Tetali (Tamarindus indica)

74		Lamiaceae Podina Mint (Mentha piperita L.)
75		Rutaceae Curry leaves Murraya koenigii
76		Gingiberaceae Ginger Zingiber officinale
77		Apiaceae Corinder Coriandrum sativum
78		Zingiberaceae Elaisi Cardamon Elettaria cardamomum
79		Fabaceae Methi Fenugreek Trigonella foenum-graecum

80		Luraceae Dalseni Cinnamon Cinnamomum verum
81		Elaisi Cardamon Elettaria cardamomum
82		Liliaceae Onion Alium cepa
83		Solanaceae Chilles Capsicum annum
84		Brassicaceae Mustard Brassica nigra
85		Liliaceae Garlic Allium sativum

86		Apiaceae Sofguti Fennel Foeniculum vulgare

RESULT

Some of the common indigenous spices plants and condiments plants found in Dibrugarh district are shown in Table a.

Common name	*Scientific name*	*Family*	*Spice of common*
Black pepper	Piper nigrum	Piperaceae	Berry / fruit
Long pepper	Piper longum	Piperaceae	Berry / fruit
Ginger	Zingiber officinale	Zingiberaceae	Rhizome
Garlic	Alum sativum	Liliaceae	Bulb / cloves
Turmeric	Crucuma longa	Zingiberaceae	Rhizome
Cinnamon	Cinnamomum zeylanicum	Lauraceae	Bark
Bay leaves	Laurus nobilis	Lausaceae	Leaves
Fennel	Foeniculum vulgare	Apiaceae	Seeds / fruit
Amchur	Mangifera indica	Anacardiaceae	Fruit
Mustard	Brassica nigra	Brassicaceae	Seed
Condiments			
Fenugreek	Trigonella foenum gracicum	Fabaceae	Seeds & leaves
Coriander	Coriandrum sativum	Apiaceae	Seeds & leaves
Tamarind	Tamarindus indica	Fabaceae	Pod/ fruit
Chillies	Capsicum annum	Solanaceae	Fruit
Onions	Alum cepa	Liliaceae	Bulb
Mint	Mentha longifolia	Lamiaceae	Leaf
Tea	Camellia sinensis	Camelliaceae	Leaves/ shoots
Coconut	Cocos nucfera	Palmaceae	Endocarp
Arecanut	Areca catechu	Pamae / Arecaceae	Nuts

Benefits

Some of the benefits of value added products over raw spices are —

1) Long lasting flavours
2) More volume ca
3) Easy to carry
4) Long lasting flavours
5) More volume can be handled / per unit area
6) Easy to store, free from bacterial contamination.
7) Increases foreign exchange as they are used in food industry, preservatives and pharmaceutical industry

Value added products from different spices

1) Black pepper – Oleoresin, Green pepper in Brine, dehydrated green peppers, canned green pepper, white pepper powder etc.
2) Paprika – Colour, paprika flavour
3) Ginger – Powder, wines, dry ginger starch from spent ginger preserves, gingiber in oil oleoresin
4) Turmeric – Natural pigments, curc uminoids, oleoresins
5) Coriander – Powder, oleoresins
6) Cumin – powder, oleoresin
7) Fennel – sugar coated fennel, oleoresin, whole etc
8) Fenugreek – powder, dried fenugreek leaves etc
9) Tree spices – obesity regulators, stimulators, nutraceuticals (cinnamon, cassia nutmeg, cloves)
10) Chillies – powder, pickles, paste, oleoresin, oil, brined chilli, sauces.

Functions

1. Appetizers
2. Add flavour to insipid foods
3. Antioxidant, Antimicrobial / Antibiotic Ex: Turmeric in nature
4. Natural colourant Ex: paprika, turmeric, saffron.
5. Stimulate Salivation, acid secretion and digestive enzymes, Ptyalin CHO digestion.
6. Aids in digestion – reduce flatulence
7. Anti-inflammatory Ex: Turmeric, Ginger
8. Anti-diabetic Ex: Fenugreek
9. Hypo cholesterolenic - Garlic
10. Anti mutagenic & Anti carcinogenic Ex: Turmeric, chilli capsicum
11. Food preservation Piperin (pickling) Ex: mustard, Ginger
12. Improve immunity Garlic powder
13. Pungency Chillies
14. Preservative / Emulsifying agent Ex: Mustard powder
15. Souring agent Ex: Tamarind, Amatur
16. Thickening agent Ex: Poppy seeds

Nutritional Importance

Fe:- Cumin, mace, pepper, tamarind

Ca:- Cumin, pepper, clove

P :- Cumin, fenugreek, nutmeg, clove, mace

K :- Turmeric, coriander, fenugreek, cumin

Na:- Corriander, chillies, cloves

Vit. A & C:- Corriander, chillies, cloves

Thiamine:- Chilli, cumin, nutmeg, fenugreek

Riboflavin:- Chilli, cumin, garlic, cardamon

Niacin:- Cumin, Turmeric, chilli, pepper, mace, nutmeg

DISCUSSION

There are so many products that can be obtained from these spices plants if cultivation is done in proper agriculture methods following standard modern technology in an area like upper Assam. Besides rice cultivation, it will provide better economy and will generate self-employment opportunity among the younger generation in this region.

Spices Board, (Govt of India- a statutory Commodity Board under the Ministry of Commerce & Industry) intends to provide technical support to the Government of Assam for establishment of a Spices Park in Assam. In this regard, Expression of Interest (EOI) is invited from interested and technically qualified project management consultancy service providers for preparation of a Detailed Project Report (DPR).

The Spices Park, is aimed at providing infrastructure facilities for processing and value addition for export of spices, in the major spice growing states and envisages to achieve inclusive development of the spice growing centers. Assam, being a key state for the "'Look East Policy' of the Govt. of India, holds enormous potential to become the spices processing hub as well as a significant player in spice exports from the North East. The state, besides a major producer of spices, is home to a wide range of flora and fauna and is renowned for its tourist destinations. The proposed site for the Spice Park is the Horticulture farm, belonging to the Department of Horticulture, Assam in Kathiatoli area of Nagaon district. The Spices Park project in Assam is conceived to address the needs of each category of the target stakeholders and hence proposes to have facilities like demonstration plot, Quality Testing infrastructure for basic parameters, warehousing and cold storage, information cum facilitation center etc. in addition to the commercial processing and value addition facilities.

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