

## The Diversity of Indigenous Fruit Crops and Their Contribution to People's Nutrition and Food Security: Evidence from Assam

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### Abstract:

Indigenous fruit is high in vitamins and minerals. Such fruits are significant because they provide nutrients to the human body. Assam, a state in northeast India, is abundant in indigenous fruits. However, despite the enormous potential of cultivating such fruits in terms of marketing and profitability, the contribution of such local fruits is extremely low. The majority of indigenous fruits are found in Assam's hilly districts such as Karbi Anglong, Dima Hasao, North Cachar Hills, and others. These scarce indigenous fruits contain both nutritional and medicinal benefits. Small farmers in Assam may now improve their income, nutrition, and food security by diversifying their fruit crops towards indigenous fruits. With this background this paper is an attempt to show the existing scenario of widely accessible indigenous fruits, to know how such fruits contribute to food security and to find out the commercial potential of indigenous fruits.

**Key Words: Indigenous fruits, Nutrition, contribute**

### Introduction:

Assam, a North Eastern state, is abundant in indigenous fruits. Many areas in the state develop a variety of fruit crops. These diverse fruit crops are plentiful in Assam and are extremely useful in terms of nutrition and food security. The majority of Assamese people live in rural areas and their primary employment is agriculture. Rural folks have an extremely low level of per capita income. As a result, the rural population is unable to acquire market-available fruits. In such a situation Cultivation of indigenous fruits are not helpful for rural people but also provides a source of livelihood. Small farmers in various parts of the district have recently begun to cultivate such indigenous fruits since they have seen a high demand for them in their local market. The names of such indigenous fruits are Lemon (Nemu), Banana (Kol), Jujube (Bogori), Mouse Melon (Siral), Coconut (Narikol). Star Fruit (Kordoi). Peach (Ahom Bogori), Pineapple (Matikothal), Jackfruit (Kothal), Orange (Komola), Mouse Melon (Siral), Coconut (Narikol), Star Fruit (Kordoi), Peach

(Ahom Bogori), Pineapple (Matikothal) etc. (The words within bracket indicates the name of indigenous fruits in Assamese term). These fruits are known to play an important role in food and nutritional enhancement of human beings as they are rich source of vitamins and essential minerals. Apart from nutritive value, local fruits are being used in the ethno-medicines from time immemorial and provides significant source of livelihood support for many rural areas. The state's weather conditions are also ideal for the cultivation of fruit crops. The state's steep terrain is used to cultivate several varieties of seasonal fruits. Some Assamese fruits can only be found in the state's hilly regions. The rural population of the state have a high demand for such indigenous or locally accessible fruits. All of the fruits available locally are organic. As a result, rural population of the state have the opportunity to consume locally available fresh and juicy fruits. The rural people of Assam traditionally used these fruits as a medicine to cure diseases or GI disorders like dysentery, constipation, indigestion, stomach ache, stomach ulcer, worm infestation in children, piles, acidity or gastric trouble, Jaundice etc. Traditionally Assamese people used these fruits as medicine to treat ailments or GI problems such as dysentery, constipation, indigestion, stomach discomfort, stomach ulcer, worm infestation in children, piles, acidity or gastric difficulty, jaundice, and so on.

### **Literature Review:**

Most indigenous fruits available in North Eastern part of India are less known to people. All these fruits are organic one and generally consumed by the tribal people. These fruits contain minerals like Ca, Fe, P, Mn and nutrients like carbohydrates, proteins, and fats (Chandra 2017).

Karbi Anlong the hilly district of Assam is known for its wild edible fruit species. These fruits are commonly consumed by rural residents. According to the research, all of the fruits may be used as medications. Furthermore, these fruits have the potential to be the source of many future treatments (Dutta, Neog, and Teron 2021). According to the study, indigenous fruit crops grown in the North Eastern States are not currently traded. Market potential exists for these diverse fruit crops. If these fruits are widely cultivated and traded, the North Eastern states' economies will benefit (Barua et al. 2019).

### **Objectives:**

1. To show the existing scenario of widely accessible indigenous fruits
2. To know how the aforementioned indigenous fruits contribute to food security
3. To show the commercial potential of indigenous fruits.

**Existing Scenario of Widely Accessible Indigenous Fruits:**

According to the data from the First Advance Estimates of Area and Production of Horticulture Crops (2021-22), Areca Nut has the highest area under production out of all the fruits in Assam. It is equal to 67.16 thousand hectares; however, in terms production the highest production of fruit is banana (1108.00 million tonnes) followed by Pineapple, Jackfruit, Papaya and Guava. Sonitpur district produces the maximum litchi in Assam and contributes 18.67% to the state's output basket. In terms of indigenous fruit production, the hilly district Dima Hasao leads the way with 12.66% in Assam. There is enormous potential for increase in area and production of indigenous fruits in Assam. Currently, indigenous fruits cover barely 4900 hectares. Dima Hasao has the highest proportion of such fruits, followed by Dhuburi, Darang, Jorhat, and Kamrup (M), Udalguri etc. There is need to increase in the area of cultivation of indigenous fruit crops in Assam. In terms of fruit harvests, Assam alone produced 15.49 percent of the national product. The available fruit crops in different areas of Assam are diverse. The existing indigenous fruit diversity in Assam is shown in Table1. These fruit crops involve both nutrition and medicinal value. Based on the randomly conducted survey in the hilly and plain districts of Assam it is found that all the surveyed districts growing banana. The amount of production of different fruits in 2020-2021 are shown in Table 2.

**Table 1: Indigenous Fruits Diversity of Assam**

Source: Statistical Handbook of Assam, 2020

**Table 2: Amount of fruit crops in Assam in 2020-21 (in percentage)**

Source: Compiled by the researcher after collecting data from department of Directorate of Horticulture &amp; Food Processing, Assam.

SL. No	Districts	Opportunities of Indigenous Fruits based on Raw Materials
1	Baksa	Banana, Papaya, Coconut, Litchi
2	Barpeta	Banana, coconut
3	Bongaigaon	Banana, Jackfruit, Okra
4	Cachar	Banana, Pineapple, Jackfruit
5	Chirang	Banana, Pineapple, Coconut
6	Darrang	Banana
7	Dhemaji	Banana, Jackfruit
8	Dhuburi	Banana
9	Dibrugarh	Banana, Jackfruit, Okra
10	Dimahaso	Banana, orange, Jackfruit, Papaya, Pineapple, Litchi
11	Goalpara	Banana, Pineapple, Coconut
12	Golaghat	Banana, Coconut
13	Hailakandi	Banana, Pineapple, jackfruit
14	Joorhat	Banana, Okra, Coconut
15	Karbi angling	Banana, Pineapple, Orange
16	Kamrup (M)	Banana, Orange, jackfruit
17	Kamrup ®	Banana, pineapple, Papaya, Orange
18	Karimganj	Banana, Jackfruit, Papaya, Okra
19	Kokrajhar	Banana, Papaya, Coconut
20	Lakhimpur	Banana, Jackfruit
21	Morigaon	Banana, Jackfruit, Okra
22	Nowgaon	Banana, Papaya, Coconut
23	Nalbari	Banana, Coconut, Litchi
24	Sivsagar	Banana, Jackfruit, Okra
25	Sonitpur	Banana, Coconut, Papaya, Pineapple, Litchi
26	Tinsukia	Banana, Orange, Litchi
27	Udalguri	Banana, Jackfruit, Pineapple

Fruits supply an abundance of vitamins and minerals to the human body. In general, eating fruits fresh

Sl.No	Districts	Litchi	Banana	Pineapple	Orange	Papaya	Assam Lemon	Guava	Jackfruit	Mango	Coconut	Areca nut	Indigenous Fruits
1	Cachar	3.98	6.14	8.82	2.69	3.92	24.26	2.26	7.73	4.86	2.361	4.53	2.62
2	Hailakandi	2.08	1.97	7.36	2.98	3.56	26.68	3.41	2.24	2.62	0.82	12.79	1.15
3	Karimganj	1.35	2.01	0.36	0.44	0.93	2.94	3.27	43.63	1.33	2.22	3.92	2.77
4	Goalpara	7.87	9.25	3.27	2.27	5.54	1.88	3.58	5.97	3.08	3.86	2.60	1.48
5	Dhuburi	2.71	2.02	0.16	2.42	1.01	2.51	2.35	2.66	2.63	3.97	1.34	9.01
6	Kokrajhar	2.72	2.64	3.30	2.21	4.88	3.18	2.13	3.04	1.92	2.98	3.58	2.90
7	Bongaigaon	3.16	1.36	1.76	1.19	3.78	2.73	4.21	6.35	1.91	3.09	1.27	5.16
8	Kamrup (R)	3.32	4.91	11.13	12.60	5.12	3.57	2.81	6.18	5.96	7.77	9.45	1.34
9	Nalbari	5.32	2.30	0.45	0.048	4.28	6.46	2.60	5.07	5.30	9.52	3.35	5.15
10	Barpeta	4.75	3.62	0.55	1.95	7.13	3.00	5.34	4.9	4.72	11.72	3.31	1.29
11	Darang	3.84	2.50	0.77	1.78	1.94	1.30	5.64	5.68	5.14	2.84	1.06	8.16
12	Sonitpur	18.67	9.60	4.64	2.37	8.30	5.73	3.76	8.30	4.62	8.45	5.91	3.24
13	Nagaon	5.04	5.92	1.40	0.27	7.49	3.74	6.6	4.85	1.48	14.37	12.85	4.18
14	Morigaon	3.63	4.17	0.34	7.89	1.55	4.65	3.95	3.79	7.11	4.12	1.83	1.78
15	Baksa	1.79	2.39	2.10	1.38	4.79	3.97	3.83	2.01	2.55	2.75	3.24	2.11
16	Chirang	2.55	1.70	5.32	6.28	2.44	38.66	3.68	2.74	1.98	3.08	2.98	0.83
17	Kamrup (M)	2.73	1.29	1.70	8.93	0.64	3.08	6.20	4.77	3.54	1.21	0.71	6.12
18	Udalguri	4.06	1.71	3.74	4.18	2.44	6.38	3.55	0.96	4.53	0.91	2.96	5.49
19	Jorhat	1.46	4.03	0.65	4.45	2.98	2.63	4.87	4.39	4.54	4.84	2.86	6.53
20	Golaghat	4.31	6.88	1.24	5.07	3.66	4.24	2.18	1.88	8.29	3.92	4.48	1.39
21	Sivsagar	2.42	2.78	0.76	1.26	2.82	3.41	5.42	3.52	7.32	2.02	1.78	5.59
22	Lakhimpur	1.77	5.06	0.81	3.48	2.25	3.76	6.12	0.77	0.81	1.31	1.65	0.20
23	Dhemaji	0.12	2.83	0.89	1.35	2.29	4.03	0.23	0.08	0.10	0.09	0.79	0.10
24	Dibrugarh	3.47	1.34	0.46	4.59	2.09	3.75	5.24	2.71	3.03	0.10	0.69	1.62
25	Tinsukia	2.9	3.54	1.58	1.07	1.63	5.06	4.53	1.76	4.90	0.77	7.51	4.63
26	Karbi Anglong	1.77	3.95	12.87	12.0.2	7.01	3.75	1.28	0.54	1.27	2.16	0.88	2.48
27	Dima Hasao	1.90	4.03	23.55	3.01	7.78	4.32	1.21	2.74	4.458	0.05	1.67	12.66

provides the most nutritional benefit. Fruit consumption is especially crucial for women of reproductive age. In Assam, the area under cultivation of fruits, primarily by small farmers, has recently increased. In Assam, the area under fruit cultivation has expanded from 107,700 hectares in 2015-2016 to 167,192 hectares in 2020-2021. Fruit output in Assam rises from 1,727,595 MT to 2,983,674 MT between 2015-2016 and 2020-2021. Similarly, Assam's average fruit output per acre

rises from 98,621kg in 2015-2016 to 128,967 kg in 2020-2021. Assam's agriculture is mainly based on cereal base products which affects the children in many parts of the state of Assam. These children are lack of the consumption of fruits which contain vitamins and minerals. According to the National Family Health Survey (NFHS) report for 2020, around 35% of children are stunting and 68% are anaemic. Furthermore, the figures for non-pregnant and pregnant women are 66% and 54%, respectively. From a marketing standpoint, the state of Assam has enormous potential to enhance fruit production. Because of their geographical location, social and cultural customs, the majority of Assamese people prefer fish and meat to fruits. They are unaware of the health advantages of eating fruits. People's purchasing power is limited. There is also a lack of nutrition and food security awareness programmes.

**Comparison:** It's clearly shown in the study that all districts are not equally rich in indigenous fruits. Some districts are rich while some are somewhat poor in indigenous fruits. But it's noteworthy that indigenous fruits are available in all districts. Fruits have contribution to both food security and nutrition in all districts. Hilly districts are usually rich in indigenous fruits.

### Conclusion:

Indigenous fruit is a crucial part of Assam. These fruits have important contribution to nutrition and food security. The study shows that almost all of the households have trees of indigenous fruits. These fruits engage a crucial part in food security. Areas of indigenous people in Assam are very rich in indigenous fruits. In Assam hilly areas are highly rich in different indigenous fruits which contribute to their food security. A broad study can be further made on the contribution of indigenous fruits in Assam.

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