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Unlocking the Nutritional Potential: Exploring Overlooked Horticultural Crops in Odisha

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"If agriculture goes wrong, nothing else will have a chance to go right."

-M.S. Swaminathan

Introduction

Odisha, an agrarian state, relies heavily on agriculture for employment and has 48.8% of its workforce engaged in the sector. The state has a total cultivated land of 61.80 lakh hectares, with small and marginal farmers making up over 90% of the farming community. The state is divided into four zones and ten agro-climatic zones, offering vast potential for agricultural growth. Odisha, is also home to a variety of horticultural crops that often go unnoticed. While staples like rice and pulses dominate the agricultural scene, there exists a treasure trove of underutilized horticultural crops that hold immense potential for the region's agricultural and economic development. However, crops such as amla, star fruit, wood apple, custard apple and Mahua (Mohulo) often remain underutilized despite their adaptability to the local environment.

Diversity of Horticultural Crops

Odisha boasts a rich diversity of horticultural crops, contributing to the vibrant tapestry of its agricultural landscape.Odisha's horticultural diversity is both impressive and underexplored. Horticultural crops like amla, mahua, bel fruit etc not only showcase the region's agricultural

adaptability but also hold immense potential for nutritional enrichment and economic prosperity. On average 15% of total family income is received by selling these fruits by tribal households of Odisha. Collection and production of these horticultural crops are found higher in districts of Kandhamal, Koraput and among the tribals of Sambalpur and Mayurbhanj. These districts are reportedly selling more fruit than other districts of Odisha. Due to decline in the use of such crop species leads to erosion in traditional knowledge related to them. Another factors like increase in populationpressure and decline in per capita land availability it provides offer and scope to Indian fruit industry to commercialize and increase the production. The objective of this paper is to identify, estimate the nutritional value and to create awareness on potentiality and knowledge on such unutilized horticultural crops.

Description of some fruits

AONLA(*Emblica officinalis*)

Aonla or Indian gooseberry is indigenous to Indian sub-continent. India ranks first in the world in area and production of this crop. In Odisha it is also known as Amla. The fruits are used to make pickles, preserves, chavanprash, triphala, and the leather industry uses the bark, which is a rich source of tannin.Fruits can help treat a number of different health issues, including jaundice, coughs, haemorrhages, leucorrhoea, and digestive system diseases.Aonla stimulates the isolated cells that release insulin, lowering blood sugar levels in diabetes patients. Additionally, because it delays premature greying, hair loss, and pigmentation, it is a component of shampoos, hair tonics, and hair dyes.

BAEL (*Aegle marmelos*)

It is also known as Bela in Odia and it belongs to Rutaceae family and native to India, Pakistan and spread throughout South-East Asia. Main growing states are Uttar Pradesh, Bihar, West Bengal,

Rajasthan, Madhya Pradesh, Odisha.

The importance of bael fruit is growing, and as a result of the strong demand for fresh fruits and squash throughout the summer, fruit production is increasing in sections of eastern Uttar Pradesh, Haryana, and other regions of the nation.

The fruit pulp is eaten raw and processed to create a variety of value-added goods, the most popular of which are jam, sharbat, squash, and murabba. Fresh bael juice is available in markets around the states, particularly during the summer, and is used as a soft drink. Additionally, dried pulp is utilized throughout the nation. Pulp has several therapeutic uses and is frequently used to treat dysentery, diarrhoea, and other stomach problems. In the Indian System of Medicine, leaves, roots, and bark are also utilized extensively due to their therapeutic qualities. Fruits contain a crystalline component called "marmelosin" which has medicinal qualities (Mazumdar, 2004).

JAMUN (*Syzigium cumini*)

It is also known as Jamu Koli in Odia. It belongs to family Myrtaceae. The tree produces velvety black fruit with inseparable peel and pulp, and its dense foliage makes it a perfect choice for roadside plantations and wind breaks.Atypical mature tree produces 50 kilograms of highly perishable fruit annually.Fully ripe fruits are eaten fresh, taken as a dessert fruit and can also be processed into jam, jelly, squash, wine, etc. Leaves are used as fodder and seed powder reduces the sugar content in urine. It is also regarded as famine or distress fruit.It has been shown to have strong anti-oxidant, anti-bacterial, antigenotoxic, anti-inflammatory, and anti-HIV qualities and has been utilized in ayurvedic medicine to treat diabetes.

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MAHUA (*Madhuca indica*)

Mahua is also known as Mohulo in Odia. It belongs to family Sapotacae. The economy of the tribal people is significantly influenced by this tree, along with two other tree species called tendu (*Diospyrosmelanoxylon*) and chironji (*Buchananialanzan*), in several tribal areas of Rajasthan, Gujarat, Madhya Pradesh, Chhattisgarh, Jharkhand, eastern Uttar Pradesh, and Bihar. The goods of these species, which are gathered from the forests and sold at the neighbourhood market, provide for their subsistence. Mahua flowers have a great economic worth and are picked fresh first thing in the morning.

TAMARIND (*Tamarindus indica*)

Tamarind also known as Tentuli in Odia. It belongs to family Fabaceae. Tamarind is said to have originated in tropical Africa (Stewart and Brandis, 1992), and it is still widely used in Sudan. It is thought to have been brought to India from ancient times and is sometimes even described as native to the country. Regretfully, the specific term "indica" also contributes to the false impression that the product is Indian (Morton, 1987). It is found all over India, and the states of Maharashtra offer a great deal of diversity due to its cross-pollination.

Fruits	**Calories (Kcal)**	**Protein**	**Fat(g)**	**Carbohydrates(g)**	**Fibre (g)**	**Calcium (mg)**	**Phosphorous (mg)**	**Iron (mg)**	**Vita Min A(IU)**	**Ascorbic acid (g)**
Emblicaofficinalis	129	1.8	-	31.8	2.9	85	50	0.3	186	15
Aegle marmelos	137	1.8-	0.2-	28.1-	2.9	85	50	0.6	91.6	1.1

		2.62	0.39	31.8						
Syzigium cumini	62	0.7	0.15-0.3	14-16	0.3-0.9	8-15	15-16.2	1.2-1.62	80	5.7-18
Madhuca indica	-	1.37	1.61	22.69	-	45	22	1.1	512	40.5-42
Tamarindus indica	-	2-3	0.6	41.1-61.4	2.9	34-94	34-78	0.2-0.9	-	44

Food value of fruits (per 100 g edible portion

Nutritional and medicinal importance of such fruits:

Aonla

Fruits are rich source of vitamin C. These are abundant in phosphorus, calcium, and iron, among other vital elements. Aonla fruits have long been used medicinally; in Unani and the Indian System of Medicine, they are recommended in a variety of methods to improve health and immunity. The popular processing methods of murabba, chawanparash, and trifala help keep nutritional value. But recently, value addition has produced a number of new goods, including aonla sweets, jam, herbal jam, chutney, pickle, squash, juice, sharbat, vinegar etc. Fruit powder is also used in preparation of toiletries and cosmetics.

Bael

The fruit pulp is eaten raw and processed to create a variety of value-added goods, the most popular of which are jam, sharbat, squash, and murabba. Fresh bael juice is sold in markets around the states, particularly during the summer, and is frequently consumed. Additionally, dried pulp is utilized throughout the nation. Pulp has a number of therapeutic benefits and is frequently used to treat stomach problems like diarrhoea and dysentery. In the Indian System of Medicine, leaves, roots, and bark are also utilized extensively due to their therapeutic qualities.

Jamun

Jamun is a highly nutritious fruit that can be eaten raw or processed to make a variety of dishes. Fruit is a good source of carbohydrates, iron, protein, and minerals. Squash, sharbat, syrup, jam, jelly, wine, vinegar and juice are made from processed fruits. Powdered jamun seeds are beneficial for those with sugar intolerances because they contain a variety of alkaloids, including glycoside and jambosin, which prevent starch from being converted to sugars.

Mahua

Mahua fruits that are ripe and may be eaten raw or cooked are nutrient-dense. Since seeds are used to extract oil, they have significant economic worth. When it's solid at room temperature, kernel oil is used to make soap, detergents, and vegetable butter in addition to being used for skin care. The percentage of the kernel weight that is oil in the seed varies from 33 to 43%. The primary unsaturated fatty acid in pure oil that lowers cholesterol is linoleic acid. Oil has other uses as fuel. This seed cake works well as a fertilizer.

Tamarind

Fruit pulp can include up to 73% edible pulp, with tartaric acid and invert sugars being its main ingredients. Pulp is a great source of riboflavin, niacin, phosphorus, calcium, and thiamine. In India, tamarind pulp is used in a variety of ways depending on the region and the eating customs of the populace. Chutney, tamarind powder, puree, juice concentrate, jam, jelly, candies, pickles, and fruit leather are all made with this.

Conclusion

In conclusion, delving into the rich tapestry of unutilized horticultural crops in Odisha unveils a promising realm of nutritional abundance. As we unlock the potential of these overlooked gems, we pave the way for a more diversified and resilient food system. The nutritional benefits inherent in these crops offer not only sustenance but also a path towards addressing malnutrition challenges.