



## Utilization of some selected summer seasonal plants in the rural areas of Bargarh District, Western Odisha, India

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### Abstract

The summer is a good season for fruits and vegetables gardening. Eating seasonal fruits and vegetables is beneficial for health. In spite of the scorching heat in summer, we can keep cool and healthy on the inside by eating seasonal summer vegetables and fruits. In this manuscript we had reported a total of 34 species belong to 33 species and 19 families. Highest numbers of seven are contributed from Cucurbitaceae; three species each from Areaceae and Moraceae; two species each from five family, viz. Anacardiaceae, Liliaceae, Myrtaceae, Rutaceae and Solanaceae; rest 11 families contribute one from each. Among the 33 plants, 16 (49%) trees species, 9 (27%) herbs species, five (15%) climber species and three (9%) shrubs were found. These plants can be further studied for their pharmacological activity and active compound.

**Keywords:** Bargarh, fleshy and watery, summer, seasonal vegetables and fruits

### 1. Introduction

There were six season in a year. The summer is a good season for fruits and vegetables gardening. Eating seasonal fruits and vegetables is beneficial for health. In spite of the scorching heat in summer, we can keep cool and healthy on the inside by eating seasonal summer fruits and vegetables. During summer we mainly depend on different fruits like watermelon, tomato, mango, lemon, cucumber, Indian Blackberry, coconut, jackfruit, pineapple, etc. Phytochemicals can be bound in the cell membrane in fruits and vegetables. During food processing like heating or freezing can interrupt the cell membrane to release of membrane bounded phytochemicals <sup>[1]</sup>. In addition, the amount of phytochemicals retained in fruits and vegetables depends on their stability through food preparation and processing before utilization, which is typically associated to their sensitivity towards oxidation, and the environmental conditions. The expediency, culture, price, appearance, and taste are the main influenced factors for the preference of consumers <sup>[2]</sup>. Due to global trade, these days consumers have access to a variety of vegetables and fruits exterior of their season coming from different parts of the globe. The local seasonal vegetables and fruits are cheaper as compare to imported vegetables and fruits. But the availability of the local seasonal vegetables and fruits are only for a short period of time. For that reason, to extend the self-life of seasonal vegetable and fruits must be processed. As there are more tribal people in western Odisha, there is more traditional use of different seasonal fruits and vegetables as medicines. This study reveals the utilization of some selected summer seasonal plants in the rural areas of Bargarh.

### 2. Materials and Methods

#### 2.1 Study Sites

Bargarh District lies on the western most corner of Odisha between 20 degree 43' to 21 degree 41' north latitude and 82 degree 39' to 83 degree 58' east longitude. The climate of Bargarh is classified as sub-tropical. In summer season the weather is almost hot and dry. Over the course of the year, the temperature typically varies from 56°F to 106°F and is rarely below 51°F or above 112°F. The hot season lasts for more than 2 months, from March end to June first, with an average daily high temperature above 101°F. Regarding the utilization of some selected summer seasonal plants in the rural areas of Bargarh a survey was conduct during 2019. The details of the plants are described with their local name, scientific name, family name, medicinal uses and edible purpose. The scientific name and family name was checked by using standard flora book <sup>[11]</sup>. The medicinal uses of the plants were cross checked by using available previous reports of Bargarh district <sup>[3, 4, 5, 6, 8, 9, 10]</sup>. The edible uses of different plants were cross checked by using previous report available of Bargarh District <sup>[7]</sup>. All these specimens were deposited in Herbarium of Department of Botany, Saraswati +3 Science College, Bghawanipatna, Odisha for future references.

### 3. Results and Discussion

In this manuscript we had reported a total of 34 species belong to 33 species and 19 families (Table 1, Fig. 4). Highest numbers of seven are contributed from Cucurbitaceae; three species each from Areaceae and Moraceae; two species each from five family, viz.

Anacardiaceae, Liliaceae, Myrtaceae, Rutaceae and Solanaceae; rest 11 families contribute one from each (Fig. 2). Among the 33 plants, 16 (49%) trees species, 9 (27%) herbs species, five (15%) climber species and three (9%) shrubs were found (Fig.3). The finding of present investigation deals that the fleshy and watery fruits was most commonly used by the rural people of Bargarh district during the summer season. They use seasonal fruits to avoid diseases, maintenance of good health and prevent water loss from the body.

A total of 209 ethnobotanical species used by tribal and nontribal communities of Bargarh district was reported by Sahu *et al.* 2010<sup>[3]</sup>. Sahu *et al.* (2013)<sup>[4]</sup> reported a total 117 number of medicinal plants belonging to 52 families are found which were used successfully by the native used by of Sohela Block, Western Odisha treat various disease and disorders of common people. Sahu and Sahu (2017a)<sup>[9]</sup> documented a total of 55 plants belonging to 33 families used for animal health care by the traditional peoples of Bargarh district, Odisha. Sahu and Sahu (2017b)<sup>[10]</sup> reported about 57 different important plant species belonging to 33 families are being commonly used for dental and oral health care in Bargarh district, western Odisha. In this paper they also reported, 24 are exclusively used for tooth stick, 24 for toothache due to caries, 16 for

gum diseases and 11 species for pyorrhea, used for oral health care. Sahu and Sahu (2019)<sup>[7]</sup> reported a total of 55 plant species belonging to 47 genera and 28 families have been recorded from the kitchen garden. Further the kitchen garden provides a number of benefits like food, shelter, medicine and also a source of income by selling a number of products and byproducts of plants. Many traditional crops grown in the kitchen gardens have a role in conservation and maintenance of the different plant species and such practices need to be strengthened. Sahu and Sahu (2020)<sup>[8]</sup> reported that 42 different plant species distributed in 39 genera belonging to 28 families are used by the tribal to treat various diseases and disorders of oral cavity, particularly in tooth decay. This study indicated the tribal communities of the villages still continue to depend on plant resources to meet their daily needs and use plant based formulations from generation to generation for treatment of health related problems. Sahu *et al.* (2020)<sup>[6]</sup> reported a total of 22 medicinal plants species belonging to 20 genera were used by the natives for the treatment of different diseases. Among the 22 plants; 12 species were tree, five herbs, four climbers and one shrub. The conventional medicinal plants were mostly used for different diseases like jaundice, malaria, tooth diseases, eye infection, headache, leprosy, diabetes, etc.

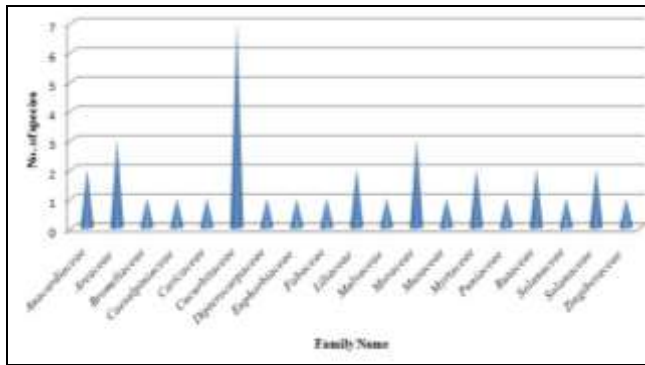
**Table 1:** List of some selected summer seasonal plants utilized in the rural areas of Bargarh district, Odisha

Local Name	Scientific Name	Family	Medicinal Uses	Edible use
Aam	<i>Mangifera indica</i> L.	Anacardiaceae	Fruit is mainly used for Hypertension, dysentery, diarrhea and Piles.	Young mango are used for pickles, ripen are raw written.
Aamada	<i>Curcuma amada</i> Roxb.	Zingiberaceae	Rhizome taken raw, used in preparation of chatani	Piles, Cold and cough
Amrutbhanda	<i>Carica papaya</i> L.	Caricaceae	Fruit is used for improving digestion and Liver health	Young fruit is used as vegetable, ripe fruit eaten raw
Anla	<i>Emblica officinalis</i> Gaertn.	Euphorbiaceae	Fruit is used for Hepatoprotective, jaundice and inflammation.	Fruit eaten raw, pickles preparation
Bel	<i>Aegle marmelos</i> Correa.	Rutaceae	Gastrics, diarrhoea, dysentery, diabetes	Ripen fruit are used for soft drink
Bhendi	<i>Abelmoschus esculentus</i> L.	Malvaceae	Pulmonary tuberculosis	Young fruit are cooked as vegetables
Biagan	<i>Solanum melongena</i> L.	Solanaceae	Various parts of the plant are useful in the treatment of inflammatory conditions, cholera, bronchitis and asthma	Tender fruits are cooked as vegetable with potato, tomato.
Char	<i>Buchanania lanzan</i> Spreng.	Anacardiaceae	Diarrhoea, Mouth sore, Chronic Constipation	Ripen fruits and seeds are edible,
Dalim	<i>Punica granatum</i> L.	Puniaceae	Urinary infections, digestive disorders, skin disorders, arthritis,	Ripe fruits are consumed
Dumer	<i>Ficus glomerata</i> Roxb.	Moraceae	Diabetes, Dyspepsia, Asthma, Increase in Milk Secretation	Ripen fruit are edible
Jalsimi	<i>Cyamopsis tetragonoloba</i> (L.) Taub.	Fabaceae	Used as cooling, digestive, tonic, constipation, dyspepsia	Young fruit is used as vegetable
Jam	<i>Syzygium cumini</i> (L.) Skeels.	Myrtaceae	Diabetes / Dysentery, Hemorrhages, Leukorrhoea	Ripen fruits are edible
Janhi	<i>Luffa cylindrical</i> (L.) Roxb.	Cucurbitaceae	Iron deficiency, Anemia	Young fruit is used as vegetable
Kadel	<i>Musa paradisiaca</i> L.	Musaceae	Fruit is used for digestion and lower level of hypertension	Young fruits are cooked as curry and ripen fruits are edible
Kakudi	<i>Cucumis sativus</i> L.	Cucurbitaceae	Leaf juice is taken for curing dysentery.	Fruit is eaten raw and used as vegetable.
Kendu	<i>Diospyros melanoxylon</i> Roxb.	Dipterocarpaceae	Night Blindness, Constipation, Diarrhoea	Ripen fruit are edible
Khajur	<i>Phoenix sylvestris</i> Roxb.	Areaceae	Small stem is used as tooth brush to clean the teeth.	Ripen fruits are edible
Kunduru	<i>Coccinia grandis</i> (L.) Voight	Cucurbitaceae	Raw fruit is used for high blood pressure	Young fruit is used as vegetable
Lembhu	<i>Citrus limon</i> (L.) Osbeck	Rutaceae	Fruit juice is used for Dehydration and Kidney stone	Mature fruits are used for soft drink (sarbad).
Lesun	<i>Allium sativum</i> L.	Liliaceae	Bulb crushed with a little mustard oil is used for common cold, cough	Bulb used as a spice with soup and vegetable, it is eaten raw

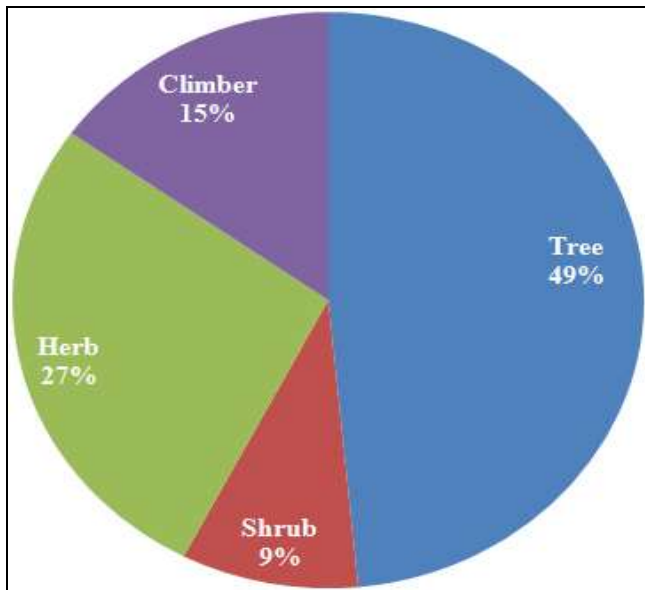
				with food
Maja	<i>Psidium guajava</i> L.	Myrtaceae	Fruit is used for diabetes, hypertension and diarrhea	Both the mature and ripen fruits are edible.
Makhan	<i>Cucurbita maxima</i> Duch.	Cucurbitaceae	Antidiabetic, antiobesity, antioxidant, diuretic, seeds oil is used to reduce the size of prostate.	Leaf and flower are use as vegetable, fruit used in curry preparation
Mircha	<i>Capsicum frutescens</i> L.	Solanaceae	Upset stomach, intestinal gas, stomach pain, diarrhea, toothache, migraine headache, cluster headache	Fruit eaten raw with food and vegetable
Nadia	<i>Cocos nucifera</i> L.	Arecaceae	Coconut milk is diuretic, kidney problems, oil is used to treat rheumatism, back pains, ointment to maintain smooth, soft skin	Coconut water is used as thirst quencher; Tender fruit of coconut is edible.
Panas	<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Fruit is used for anaemia, Hypertension and healthy digestion	Young fruit are cooked as vegetables, ripe fruit are eaten raw
Patalghanta	<i>Lycopersicon esculentum</i> Mill.	Solanaceae	antioxidant, cardiovascular disease, osteoporosis, lower cholesterol levels, reduce migraine	Ripen fruit is used as vegetable and chatney
Potol	<i>Trichosanthes dioica</i> Roxb.	Cucurbitaceae	Leaves and fruits have also been used for treating alcoholism and jaundice	Young fruit is used as vegetable
Sapuri panas	<i>Ananas comosus</i> (L.) Merr.	Bromeliaceae	unripe fruit improves digestion, increases appetite and relieves dyspepsia; ripe fruit is both diuretic and a digestive tonic	Young shoots are eaten in salads or curries; ripen fruit is used for making juice, also used in fruit salad.
Tal	<i>Borassus flabellifer</i> L.	Arecaceae	Palm fruit is used as anticancer property	Palm fruit is edible
Tarbhuj	<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	Cucurbitaceae	Seeds are used in the treatment of urinary tract infections, bed wetting, hypertension, diabetic, diarrhoea	Ripen fruit is edible also used in fruit salad.
Tenda	<i>Praecitrullus fistulosus</i> (Stocks) Pangalo	Cucurbitaceae	Anthelmintic, antioxidant activity	Young fruit is used as vegetable
Tentel	<i>Tamirindus indica</i> L.	Caesalpiniaceae	Cough, Fever, Headache, Scorpion bite, toothache, Syphilis, Urine complaints	Ripe and tender fruit are consumed and used for pickle making
Tut	<i>Morus indica</i> L.	Moraceae	Worms, convalescents, Anemia	Ripen fruits are edible
Uel	<i>Allium cepa</i> L.	Liliaceae	Bulb used for insect bites, ulcers, sunstroke, blood purity, arthritis	Bulb used as a spice with soup and vegetable, it is eaten raw with food; leaves are cooked and eaten.



**Fig 1:** Photographs of *Punica granatum* L. (a), *Artocarpus heterophyllus* Lam. (b), *Ananas comosus* (L.) Merr. (c), *Mangifera indica* L. (d), *Carica papaya* L. (e), *Buchanania lanzan* Spreng. (f), *Citrullus lanatus* (Thunb.) Matsum. & Nakai (g), *Aegle marmelos* Correa. (H), *Capsicum frutescens* L. (i), *Cucurbita maxima* Duch. Flower (j), *Solanum melongena* L. (k), *Cyamopsis tetragonoloba* (L.) Taub. (l), *Trichosanthes dioica* Roxb. (m), *Praecitrullus fistulosus* (Stocks) Pangalo (n), *Coccinia grandis* (L.) Voight (o) and *Cucumis sativus* L. (p).



**Fig 2:** Families of Seasonal fruits in the rural areas of Bargarh district, western Odisha.



**Fig 3:** Diversity of plant species by habit

#### 4. Conclusion

The seasonal fruits are generally fresher and give a better test as compared to fruits that grown on other season. The people of rural areas of Bargarh district mainly depend on seasonal vegetables and fruits. The seasonal vegetables and fruits are available for a short period of time. It can be concluded that the rural people of Bargarh district who have rich traditional knowledge and documentation of knowledge has provided information from the area. These plants can be further studied for their pharmacological activity and active compound. Awareness regarding scientific and systematic collections of medicinal plants may be done by responsible authority for commercial purposes, which can be beneficial for the local inhabitants.

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#### 6. Author's contribution

ARS conceived the project, designed the experiment, conducted the field survey interpreted the results, and contributed to the writing of the manuscript and MS, SM, SNP analyzed and contributed to the writing of the manuscript. All the authors have contributed towards the final version of the manuscript by writing and editing.

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