

# Perennial Indigenous Vegetable Crops- Rich but Neglected Sources of Nutrition and Health

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A variety of plants species have been gifted to the mankind by the Mother Nature for proper use and utilization that can fulfill all the dietary requirements. Ancient humans collected and ate variety of fruits and vegetables from wild. Many were domesticated for their parts being consumed as vegetables in various ways. In the last few decades, there has been an appreciable jump in the production and availability of commercially grown vegetables, however, most of them are annuals. According to recent report, a total of 1,097 vegetable species with different growth habits and uses are cultivated worldwide, but hardly 7% of these species are familiar to us (Meldrum *et al.*, 2018). Decreased biodiversity, intensive cultivation and off-season production of limited vegetable crops have led to increased biotic stresses and excessive application of chemicals for their management. The ill effects of plant protection chemical residues from commercial vegetable production are also alarming. In such a scenario, the establishment of nutritional gardens involving indigenous and perennial vegetable crops can play a vital role in ensuring nutritional security for the masses. There are a number of perennial vegetable crops indigenous to different parts of South Asian countries which remained underutilized despite their nutritional and medical richness. These crops can be raised naturally-organically, and have potential in ensuring the better human health. This article aims to provide brief overview of some potential but still under-utilized perennial vegetables and their importance.

## Drumstick (*Moringa oleifera*)

Drumstick belongs to the family Moringaceae and is considered to be the native North West India and African tropics. Due to its nutritional sumptuousness, it is also called as Miracle tree. Drumstick pods and leaves very rich in essential nutrients. The leaves contain high amounts of proteins, calcium, iron, zinc, selenium and magnesium. Fresh pods and seeds are a great source of oleic acid, a healthy fatty acid which is known to promote healthy heart. It has very high levels of vitamin B, different anti-oxidants. It helps lowering cholesterol and has antifungal, antiviral, antidepressant, and anti-inflammatory properties.

## Agase (*Sesbania grandiflora*)

Agase or Agethi is a perennial fast-growing tropical tree belonging to the family Leguminosae. Mainly two types exist in Agasi based on flower colour, one with white coloured flower and other with red colour flowers. The red group of leafy vegetables is considered more nutritious due to the presence of phenolic compounds but it has bitterness, therefore the white flower greens are mostly preferred as it is less bitter. The leaves, flowers and pods of *Sesbania grandiflora* are used for culinary purposes. Flowers are rich in magnesium, phosphorus, potassium, and selenium. Agathi leaves are the rich sources of vitamin A, vitamin C, folates, thiamin, niacin, calcium and phosphorus among all the green leafy vegetables. The leaves have anti-diabetic, anti-cancer, anti-bacterial properties, and help in lowering the cholesterol levels. It has a unique power of healing wounds, sprains, itches and

bruises. The root is used to cure malaria.

### **Rhododendron/ Burans**

*Rhododendron arboretum*, locally known as Burans or Gurans, belongs to the family Ericaceae, and it is the state tree of Uttarakhand and state flower of Nagaland. The juices and squashes made from burans flowers are a delicacy in summer season due to its cooling effect. Sauces are prepared from the flowers along with other herbs like mint. A wine made from the flowers, known as 'Guranse', is commonly drunk in parts of the Himalayas. Burans leaves and flowers have been reported to have various medicinal properties viz., anti-diabetic, antioxidant, anti-inflammatory, anti-microbial, anti-allergic etc.

### **Lasura (*Cordia dichotoma*/ *Cordia myxa*)**

Also known by the vernacular names like Gunda, dela, bhokar belongs to family Boraginaceae and is native of Indo-Malayan region. The unripe fruit of lasura has a sour taste. It is used in preparation of vegetable curry after splitting and removal of seeds. Fruits are also used in canning and pickling. The fruits are rich in carbohydrates, proteins and minerals like phosphorus, calcium, iron, zinc, manganese and copper. The fruits are considered useful in dry cough, chronic bronchitis, influenza and internal haemorrhage. They have diuretic, laxative, anthelmintic, anti-inflammatory, antibacterial properties, protect liver and lower the blood pressure. The leaf extract is reported to have anti-implantation activity and works as contraceptive drug. So, should be consumed wisely.

### **Kachnar (*Bauhinia variegata*)**

It belongs to the family Leguminosae and is native to South-East Asia. The flower buds and flowers are popularly used traditionally for culinary purposes in form of vegetable curry and pickles. The

open flowers are used to prepare cutlets. Different parts of Kachnar viz., flower buds, flowers, stem, bark, leaves and seeds have been used in various indigenous systems of medicine to cure various ailments in India. They are reported to have anti-inflammatory, anti-microbial, anti-tumour, anti-obesity and anti-diabetic activities. Bauhinia also has anti-oxidant compounds like quercetin and flavonoids.

### **Jack fruit and bread fruit**

Jack fruit (*Artocarpus heterophyllus*) is a large tree belonging to the family Moraceae with Indo-Malayan origin. It bears large fruits with average weight of 12-18 kg. It is a composite fruit and popular mainly at ripe stage for its yellow to orange multiple bulbs inside, that are relished for characteristic aroma and taste. However, the immature unripe fruits also referred to as young jackfruit have mild flavour and used for preparation of curries. A core is present in the middle starting from stem end which is surrounded by bulbs / arils containing seeds and rags between the bulbs. The texture is meat like and is used as meat substitute in many countries like Indonesia. It is rich in carbohydrates, proteins, potassium, magnesium, Vitamin C and dietary fibre and sugars. The seeds of jackfruit are rich in soluble and insoluble fiber and prebiotics besides being rich in carbohydrates (38%) and proteins (6.6%). There is another related species of jack, called as breadfruit (*Artocarpus altitis*), native to Indonesia, where fruits are smaller than jackfruit (approx. 4 kg) and seedless, used at unripe stage for culinary purposes or may be processed in form of flour. These contain very low fats and rich in vitamin B, vitamin C and potassium.

### **Tamarillo / tree tomato**

Tamarillo (*Solanum betaceum*) is a small tree or shrub belonging to the family Solanaceae. It is a

native of South America, however, distributed in various regions throughout the world including sub-tropical regions of India, Nepal, China, Myanmar and Philippines. It is less adapted to hot humid tropical lowlands. It is fast growing and grows up to 5 feet in height with a life span of around 12 years. The fruits are egg shaped, 4-10 cm long and 2-4 cm in diameter. The fruit colour may be yellow, orange, red or purple sometimes with dark longitudinal stripes on fruit. The fruits are used in curries, sauces and in toasts and burgers. They are rich in vitamin A, vitamin C, calcium, magnesium and iron.

Tamarillo contains chlorogenic acid that helps in reducing the level of blood sugar. Its antioxidant properties help in reducing oxidative stress in the liver and pancreas. Consumption of tamarillo fruit has also been reported good for cure of inflamed tonsils.

### Perennial beans

Winged bean (*Psophocarpus tetragonolobus*) is herbaceous climber belonging to the family Leguminosae, with tuberous roots. It is also known as four angled bean due to the shape of its pods. It has perennial habit though cultivated as an annual crop. It grows abundantly in the hot, humid equatorial countries of South and Southeast Asia. All the parts of the plant *i.e.* tender leaves and shoots, flowers, immature pods, mature seeds, and tubers are used in the East-Asian cuisine. Due to its abundant uses and health benefits, it is also referred to as “supermarket on a stalk”. Immature Winged bean pods are very rich sources of Vitamin A, B-complex, Vitamin C, iron, copper, manganese, calcium, phosphorus, and magnesium. The tender leaves are also nutritionally rich and used as fodder purpose also. The mature seeds have very high protein content comparable to soybean.

Runner bean (*Phaseolus coccineus*) or scarlet runner bean is another perennial climber of the same family with tuberous roots. Here the pods are knife shaped. All the plant parts are consumed in various forms.

### Perennial cucurbits

Most of the members of the family Cucurbitaceae are annuals, few of them grown extensively globally. However, the cucurbits like Ivy gourd (*Coccinia grandis*), pointed gourd (*Trichosanthes dioica*), spine gourd (*Momordica dioica*), and chow-chow (*Sechium edule*) are perennial and under-utilized crops. The first three crops are dioecious, while chow-chow is a monoecious climber. Once established, these vines continue yielding for few years with limited inter-cultural operations, though training of vines is required. The fruits of these cucurbits are used in curries and have cooling effects. These are considered good for the diabetics.

### Chekurmanis

Chekurmanis (*Sauropus androgynus*) is a perennial shrub that grows wild in South East Asia. It belongs to the family Euphorbiaceae. Leaves of chekurmanis are commonly used in Malaysia, but in India it is used only in some parts in Southern states. The leaves have very high protein as compared to any other leafy vegetables as high as 22.0g/ 100g (Platel and Srinivasan, 2017). The leaves also have high dietary fibre content and very rich in calcium, iron, zinc,  $\beta$ -carotene, vitamin C and vitamin E, due to which it is also referred to as “multivitamin plant”.

### Basella

Also known as Indian spinach or Malabar spinach, it belongs to the family Basellaceae. It is distributed in tropical and sub-tropical regions of Asia and Africa. The slender stem may be a twining vine or semi-erect

which may grow 4-8 m long. The leaves are simple and fleshy, cordate in shape, 3-12 cm long and wide. The leaves along with stem are used in culinary purposes. There is variation with respect to colour. *Basella alba* possess green leaves and stems, while in *Basella rubra*, the veins in the leaves and stems have dark pink colouration. It is very high quantities of vitamin A, vitamin C, iron, manganese, calcium and copper. It has got several medicinal properties viz., hypoglycemic activity, anti-inflammatory, useful in treatment of gastrointestinal problems, ulcer and wounds.

### Conclusion

There are many perennial species that are widely distributed and adapted to the climatic conditions of India and countries of South-east Asia, various parts of which are consumed as vegetables. These are highly rich in nutrients and possess medicinal properties too. Steps may be taken to establish “nutrition gardens” at village and community levels involving few plants of different perennial vegetable species. Most of these are propagated vegetatively and therefore true to type uniform plants can be obtained. Once established, these can survive with limited cultural operations and are not much susceptible to the biotic stresses. These crops have proved themselves to be climate resilient. This may prove helpful in solving hidden hunger problems even in the area where people cannot afford to buy sufficient quantities of costly vegetables. Owing to

possibility of managing the perennial vegetables organically, they become more valuable in providing the health building substances for proper growth and development of populations. There is a need to revisit the traditionally grown vegetables and reintroduce them to the new generations to reap maximum benefits from nature’s wealth.

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