

Phyllanthus Indofischeri Bennet – A Wild Edible Fruit with Multifarious Uses

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Introduction:

Non-timber forest products (NTFP) such as seeds, fruits, roots, flowers are important source of income and livelihood for Indigenous people living in and around forests. (Panayotou et al., 1992 and Ganesan R. 2003). The extraction and use of non-timber forest products (NTFPs) have had historical and current importance in cultures of indigenous people and in local economics. With increase in market demand, NTFPs today have been playing a role in large-scale commercial income generation and employment in many parts of the world (Sinha and Bawa 2002). Due to lack of knowledge on their distribution or overexploitation or population status, may lead to the species vulnerable to extinction. (Ganesan R. 2003). *Phyllanthus indofischeri* Bennet is a species endemic to peninsular India and globally vulnerable (Thyagarajan,1998; Kiemer, 2003 and Chattopadhyay, 2006). Due to commercial importance of these fruits and preferred marble green color with less dark spots due to fungal attack make these *Phyllanthus indofischeri* more vulnerable. C.E.C. Fischer in 1906 first collected *Phyllanthus indofischeri* from North Coimbatore and described as *Emblia fischeri* Gamble. (Ganesan, 2003). Following the rules of nomenclature, *Emblia fischeri* should have been renamed as *Phyllanthus fischeri* pax. But already existed for an African Species of *Phyllanthus*. Therefore, the Indian species was renamed as *Phyllanthus indofischeri* Bennet. (Ganesan, 2003). It has different common names depending on the region Perunelli (Tamil), Chittiusiri (Telugu).

Origin and distribution

It is found in hilly areas in high altitudes above 350m. Limited to peninsular India, Karnataka, Tamilnadu and velugonda hills of Nellore district of Andhra Pradesh and it is endemic to Deccan Plateau of certain drier forest areas of Southern India found in scrub forests. (Gamble 1925).

Description

Deciduous tree which grows up to height 5-12m tall. Bark is smooth in younger trees, fissured with square or rectangular flakes in older trees, grey, terete branches, glabrous, tubercled with persistent scars of previous year branchlets, branchlets are pale brown 3-5 per tubercle, acropetal, deciduous, subtended by minute scales, scales puberulous, 1.5-2.2 mm long, floriferous part of branchlets are thick with prominent floral and bract scars restricted to lower portion of branchlets thick with prominent floral and bract scars restricted to lower portion of branchlets, young branchlets are 5-9 cm long and with floriferous portion is up to 3.5 cm long. Stipules are brown, pinkish triangular and minute, scaly 1-1.5 mm long, acuminate, fimbriate to laciniate along margin. Leaves are alternate, distichous, obtuse rounded or subcordate at base less than 50 per branchlet, elliptic or oblong. Leaf blades 2.8X0.5-1.3cm, sub-sessile, entire, acute, coriaceous, glabrous, glaucous beneath, or retuse at apex. Lateral nerves 5-7 pairs, looping along margin, prominent beneath obscure above. Flowers fascicled, in leaf less portion branchlets, acuminate at apex, bracts triangular, laciniate to fimbriate along margins. Pedicels filiform, 2-3mm long, sub-fleshy perianth lobes 6, oblong to obovate, imbricate, papery, 1.5-2mm long, obtuse at apex, laciniate along margins, glabrous, with a globose gland at base, pale green. Disc fleshy, enclosing three-fourth of ovary, 6-angled, irregularly lobed. Ovary globoid, style arms 3, each 6-8 mm long, slender, flat, bifid at apex curved, glabrous beneath. Stamens 3, yellow, filaments united into a column, 1-2 mm long, vertically dehiscing anthers 1-2mm long. Pedicellate male flowers, many restricted to lower portion of floriferous branchlets. Sessile female flowers usually 1-3, surrounded by numerous male flowers, protogynous, restricted to upper portion of floriferous branchlets. Fruits drupaceous, fleshy 2.5-4cm, globose, across, pale green, seeds 6, grey. (Ganesan 2003; Rao 2011). Fruits and seeds have been used in pickles, herbal medicines, cosmetics, jams as well as dyeing and tanning. Seed extracts used in hair oils and medicines (Sinha and Bawa, 2002).



Propagation

Among various Conservation methods, *in-vitro* propagation is generally followed or enhance the biomass and conserve the germ plasm especially when population members are low in wild (Anitha, 2014) and also to maintain plant genetic resources. In-vitro propagation methods are essential they are becoming increasingly important for rare and endangered plant species. (Sudha *et al.*, 1998). Anitha 2014 in her study reported the effective procedure for *in-vitro* conservation of *Phyllanthus indofischeri* through embryo culture. Embryos from mature seeds were used as explants. Although germination was achieved on MS medium containing various Plant growth regulators, maximum response was observed on MS medium with added BAP 2.0 mg/l+IBA2.5mg/land GA₃ 0.1mg/l and observed plantlets formation.

Marketing:

According to fruit harvesters, the marble green color with less dark spots due to fungal attack makes the fruits more valuable. Preferred colour of this fruit can make it more exploited and vulnerable. Also, the market demand for Indian goose berry fruits is forcing collectors to harvest *phyllanthus indofischeri*.

Fruit collectors, tempt by money, cut the threes the major branches to maximize collection and also during a religious festival called 'Utthana dwadasi' held at end of monsoon season, huge number of people in Karnataka and Andhra Pradesh worship the fruiting branches along with tulsi (*Ocimum sanctum*) believing that this fruiting branches will bring prosperity to their families. On this day of festival large loads of lopped branches of *Phyllanthus indofischeri* with young fruits are sold in local market. Due to high increase in demand, it has been cultivated on large scale. It has been introduced in cultivation as a horticultural variety under name 'Krishna' in Tamilnadu and 'Champakad large' in Kerala. In addition, Horticultural varieties with good traits have been released for large-scale farming to meet the demand from the international market. However, large quantities of fruits of *Phyllanthus indofischeri* are still harvested from wild in different parts of India (Ganesan, 2003).

Conservation:

Phyllanthus indofischeri Bennet. is a vulnerable medicinal plant and listed in IUCN (The International Union for Conservation of Nature). It is facing threat from habitat loss and also from excessive fruit collection that impedes its regeneration. Scrub and dry deciduous forests in peninsular India have been extensively cleared for agriculture in the past. Present the



rest of other patches of these forests are under threat due to forest fire, grazing conversion to monoculture plantations, encroachment and unsustainable collection of NTFPs (non-timber forest products) and fuel wood (Rawat 1997; Ganesan, 2003)

Conclusion:

The above-mentioned facts reveal that the species have a good economic potential. Since *Phyllanthus indofischeri* is a significant NTFP species with distribution in a few pockets of forests of Deccan plateau in Southern India, indiscriminate collection can lead this species to rapid extinction. Bringing awareness to NTFP collectors about its vulnerability to extinction and restricted distribution might encourage them to adopt non-destructive collection practices. Efforts have begun in this direction by Forest department by involving indigenous people and local NGO (Non-governmental organization) (Bawa, 1999). These agencies are trying to reduce the level of damage of tree while harvesting and to improve the regeneration of *Phyllanthus indofischeri*.

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