

Research Article

Collection and Conservation of Local Types of *Moringa (Moringa oleifera (L.)* Trees for Good Sources of Traditional Vegetable

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Abstract

With an objective to conserve the best local types for future generation and purpose of these trees protected from extinction due to national high ways road expansion by the government and local bodies. The collection was made in and around our college about 15 km radius found small tree uniformly good *Moringa* types are cultivating as kitchen garden tree in front and backside of the home where tribal areas of Tiruvannamalai district. Continues concentration of tagged trees for three years study related to growth habits, fruiting capacity, taste of fruits and market value of fruits, the green pod yield assessment was recorded from the marked trees. Among the tagged trees over three years study, the Vahavachanur 1. Perunduraipattu3, Michealpuram 5, Moongilduraipattu 1 and Vanapuram 3 trees qualities are better for organoleptically culinary vegetable purpose and also Vzhavachanur1 tree found offseason bearing than other areas trees including selected trees. The off season bearing trees were marked among tagged trees. The organoleptic test was also carried out in the selected trees and best trees were selected and planted in the college premises for follow up study. The culture VVNR-019-001 local is identified for best performing genotype. It is a selection from the Vzhavachanur village of Thiruvannamalai, District. This *Moringa* is perennial, short type, cluster bearing, annual type and drought resistant with the high yield of 600-800 fruits per year and it is most suitable for culinary , vegetable soup, green leafy,

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powder making and also suitable for cattle feed . It is drought resistant, heavy fruit-bearing, pest and disease resistant types with retaining all the leaf and fruit qualities.

Keywords: Drought tolerant; *Moringa* annual type; More number of fruits; Off season bearing; Good quality; Short fruit type

Introduction

Moringa (Moringa oleifera (L.)) belonging to the family moringa-ceae is a softwood tree, native of India, occurring wild in the sub-Himalayan regions of Northern India and now grown worldwide in the tropics and sub-tropics. The cultivation of *Moringa* in India occurs mainly in the southern states of Tamil Nadu, Karnataka, Kerala, and Andhra Pradesh. Principally perennial types have been known for cultivation for a very long time. However, perennial types are best with many advantages to give year around yield. In India it is grown all over the subcontinent for its tender pods and also for its leaves and flowers. The pod of *Moringa* is a very popular vegetable in South Indian cuisine and valued for their distinctly inviting flavor. The tree has vitamins, minerals and medicinal values. *Moringa* attracted very strong place among Tamil family through Tamil cinema. Generally the moringa tree is used in Sidha Medicine. Mostly consumed as leafy vegetable including pods for culinary purpose. It is having medicinal value. It has lot of nutrients like carbohydrate, fibre, protein , fat and salt apart from these VitaminA, Vitamin E, Vitamin K, VitaminC, Vitamin B1 thiamin,B12, Vitamin B6 and Ribofavin. Minerals like potassium, calcium, magnesium, Iron and Zinc are present in the *Moringa* plants. Vitamin C or ascorbic acid is an essential water soluble vitamin present in moringa support to cure that has been found to be low in IBD patients, The wound healing effects of vitamin C are particularly important source available in *Moringa*. During road expansion traditional types of *Moringa* has been removed by the road workers , to review same genotypes for future human use the conservation is necessarily has been done in nearby Agricultural College and Research institute.

Materials and Methods

In locally available traditional types of 150 trees were marked in 10 villages namely Vzhavachanur, moongilthuraipattu, Michealpuram, Kottaiyur, Sadhakuppam, Vanapuram, Perunduraipattu, Anthoniyarpuram, Vadaponparappi, and Thandrapattu and 15 genotypes were selected and marked given number to each tree from 1 to 15 bearing their respective village names. The observations were taken namely perennial type, long bearing period of Januray to April and May, height with primary branches, No. of secondary branches, Branching pattern, open crown of drooping, fragile branches Leaves colour, leaves type compound, with tripinnate, length of leaves, number of leaf segments, no of leaf lets, Length of leaf segment, leaflet size, leaf shape, No. of flower per inflorescence. Types of flowers monoecious and bisexual, petals colour. Flowers size and length, flower growth habit, Flower colour with base and anthesis time. Number of fruits per

cluster, Pods types, colour of fruits, length of fruits. Pod taperness. Pod weight, Pod girth, Pod splitting nature and off season characters were carried out for past three years. Finally, based on the visual observation eight trees namely Vahavachanur 1,3,8, Perundurai-pattu3,5, Michealpuram 5, Moongilthuraipattu 1 and Vanapuram 3 were selected from five villages, the number has given VVNR-019-001, VVNR-019-002, VVNR-019-003, VVNR-019-004, VVNR-019-005, VVNR-019-006, VVNR-019-007 and VVNR-019-008 according to the yield performance of trees for the past three years. Purity also retested in our college. Matured branches were removed from the selected trees and planted at isolated area of our college. The spacing for trees between 5 meter gaps around trees.

Result and Discussion

All eight genotypes namely VVNR-019-001, VVNR-019-002, VVNR-019-003, VVNR-019-004, VVNR-019-005, VVNR-019-006, VVNR-019-007 and VVNR-019-008 showing same expressions for parental characters. There is no variation. Among eight genotypes, one genotype VVNR-019-001 somewhat better for early regeneration flowering and fruiting. The observation was made in VVNR-019-001. The best genotype namely VVNR-019-001 is botanically scored as follows *Moringa oleifera* (L.) selection was starts with open pollination in Thiruvannamalai District. It is perennial type and has long bearing period of Januray to April and May. It can grow upto 4-5 m height with primary branches is 3-5 Nos. No. of secondary branches are 15. Nos. with branch length of 2m. The tree has an open crown of drooping, fragile branches. Branching pattern is upright. Leaves are pale green, compound, with tripinnate, 35- 65 cm long, number of leaf segments are 3 - 5 with 150 to 350 leaf lets. Length of leaf segment is 10.2 - 14.5 cm and leaf is 2.5 cm long, 2.0 cm wide, lateral ones somewhat elliptic, terminal one obovate and slightly larger than the lateral ones. No. of flower per inflorescence cluster is 140. The flowers are fragrant and bisexual, surrounded by five unequal, thinly veined, yellowish-white petals. The flowers are about 1.0-1.5 cm long and 2.0 cm broad. They grow on slender, hairy stalks in spreading or drooping later flower clusters which have a length of 25 cm. Flower type is irregular and colour is white with greenish base and anthesis time is 6.00 am to 12.00 pm. Number of fruits per cluster is 5 -10. Pods pendulous (Figure 1), brown, triangular, splitting lengthwise into 3 parts when dry, 42 cm long, 1.8 cm wide, containing about 18 seeds embedded in the pith. Pod tapering at both ends, 9 ribbed seeds dark brown with 3 papery wings (Figure 2). Vegetable pod colour is green. Pod weight of 100 g with 4 cm girth with the yield of 500-800 fruits per year (Figure 3).



Figure 1: *Moringa* VVNR-019-001 green pods and matured pods.



Figure 2: *Moringa* VVNR-019-001 matured seeds.



Figure 3: *Moringa* VVNR-019-001 single tree bearing more number of pods.

Trees can be maintained upto 10 years. The above characters almost elaborately explained as *M. oleifera* is a fast-growing, deciduous tree that can reach a height of 10-12 m and trunk diameter of 45 cm. The bark has a whitish grey colour and is surrounded by thick cork. Young shoots have purplish or greenish white, hairy bark. The tree has an open crown of drooping, fragile branches and the leaves build up feathery foliage of tripinnate leaves. The flowers are fragrant and hermaphroditic, surrounded by five unequal, thinly veined, yellowish white petals. The flowers are about 1.0-1.5 cm long and 2.0 cm broad. They grow on slender, hairy stalks in spreading or drooping flower clusters which have a length of 10-25 cm. Flowering begins within the first six months after planting. In seasonally cool regions, flowering only occurs once a year between April and June. In more constant seasonal temperatures and with constant rainfall, flowering can happen twice or even all year round. The fruit is a hanging, three sided brown capsule of 20-45 cm size which holds dark brown, globular seeds with a diameter around 1 cm. The seeds have three whitish papery wings and are dispersed by wind and water. In cultivation, it is often cut back annually to 1-2 m and allowed to re grow so the pods and leaves remain within arm's reach in wikipedia.org/wiki/*Moringa oleifera* and also reported revealed the same results by [1-5]. Plant parts are Leaves, Flowers, Seeds, Pods, Roots, Bark, Gum, Oil from seeds in drumstick report have been agreed by [6].

The above characters were agreed with the many *Moringa* workers [7-9] reported moringa is an nutrient to the human [4,10] reported

Moringa as vegetable crop. Ramachandran et al., “Drumstick (*Moringa oleifera*) is a multipurpose Indian vegetable [11]. Rashid et al., revealed *Moringa oleifera* oil a possible source of biodiesel [12]. Sogbo reported as *Moringa* leaf farming is revenue to the growers [13,14]. *Moringa* leaf having Antioxidant activity and total phenol content.

Conclusion

The traditional local types of *Moringa* genotypes were evaluated for many characters and protected and conserved extinction *Moringa* trees at Government Agricultural College for future generation use. Off season bearing with high yielding types were conserved.

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