

The Relevance Of Indian Almond (*Terminalia Catappa*) In Landscape Design And Food Production In Nigeria – A Technical Note.

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ABSTRACT

Indian almond (*Terminalia catappa* L.) is a very important but neglected multipurpose tree. Apart from playing the primary role as shade plant, it produces profuse fruits whose epicarp and seed are highly cherished by children and adults. The wide and fresh leaves find use in wrapping and storing of some food items. The leaf that drops regularly due to senescence is a potential source of mulching material and compost manure in compound farms. The well developed root system acts as nutrient pump while pruning from the branches is a potential source for stakes and fuel wood for resource poor farmers. The potential of the plant as timber and a community forestry species is discussed. When closely planted, the tree could play a significant role as wind break to protect buildings and some plants vulnerable to wind damage. While planting the trees, safety distance from building and tarred roads need to be maintained to avoid cracking of walls and damage to tarred roads.

INTRODUCTION

The need for multipurpose trees in places of residence, learning, work and worship is continuously increasing as they enhance the comfort of the microclimate of an area and provide some economic benefits. Indian almond (*Terminalia catappa* L.) is a tree species commonly found in the homes, offices, schools and along the roads in urban and rural area of tropical rainforest zones of Nigeria. The tree is called by various names by different peoples in Nigeria. These include fruit tree probably due to the production of profuse fruits and umbrella tree may be due to its umbrella shaped canopy.

Indian almond fruits are highly cherished by children. The people of South Western Nigeria call it "ebelebo". Its consumption is popular among children for its tasty fruit and nuts. It is commonly found in compounds in all of the South West of Nigeria including Lagos probably because of its good establishment, fast growth and excellent shade. It is therefore necessary to highlight the rationale for widespread acceptability of *Terminalia catappa* in compounds.

Urbanization has far reaching implication on the survival of trees. Developments that are associated with urbanization bring about construction of roads, houses, schools, industries and places of worship. Multipurpose trees are useful in these locations for ecological balance. The mutual existence of trees and man is an ecological indicator of healthy living.

Description of *Terminalia catappa* tree.

Terminalia catappa is propagated by seed. The plant is favoured as an ornamental plant because of the brilliant colour of its foliage. The leaf is deep sombre green with hard texture, often more or less leathery. The upper surface of the leaf is glabrous. The species sheds its leaves twice a year in most areas, and in some, once a year. Leaf senescence starts with a brilliant red and yellow display of leaf colour before dropping. It remains without leaves only for a very short period because it does not shed leaves until new buds are ready to burst open so that the tree comes up with new leaves in about 2 or 3 days after the old ones have been shed off.

Branches of Indian almond produce a series of umbrella-shaped tiers. The branches are close to each other and they spread very well, hence the excellent shade. The tree starts to develop widespread branches at a tender age of about two years when it is just above a metre height and possesses thick concentration of leaves. It grows to about 30m in height. At times the ones planted near buildings and other structures have their height reduced through the process of removing apical buds. The plant has a tap root system. Wood (1970) reported that it is normally deep rooted in sandy soil. Sometimes shallow lateral roots develop in response to shallow water table, and this can lead to wind throw.

A study was carried out on the size of fruits and seeds of *Terminalia catappa* plants located in Anwai-Asaba. The trees number over twenty in the place. On the basis of their fruit sizes, they were classified into three groups namely: plants with large, medium and small fruit sizes. One tree was randomly picked

from each group, one hundred fallen fruits were collected from each of the plants. The selected trees were sufficiently isolated to prevent fruit from one plant to be mistaken for another plant. They were sun-dried to constant weights.

Twenty fruits from each of the identified trees were randomly picked, their fruit/seed length and width recorded. The range in fruit length for the trees are shown in Table 1. Fruit length of *Terminalia catappa* trees studied in Anwai-Asaba was 3.6 – 5.8cm with an average fruit length per tree ranging from 4.96 – 5.54cm. Fruit width ranged from 2.6 – 4.0 cm with average width ranging from 3.13 – 3.42 cm.

The fruits which were used for fruit size studies were carefully broken open with the aid of a hammer and the seeds extracted. Average seed weight recorded were 0.67g, 0.62g and 0.51g for trees 'A', 'B' and 'C' respectively. Therefore 100 seed weight of *Terminalia catappa* trees found in Anwai-Asaba ranged from 51-67g.

Table 1: Fruit and seed characteristics of *Terminalia catappa*

		Tree A	Tree B	Tree C
Fruit Length (cm)	Range	3.6-5.9	4.7-6.6	4.3-5.8
	Average	4.96	5.54	5.08
Fruit Width (cm)	Range	2.6-3.5	3.1-4.0	2.8-3.6
	Average	3.15	3.42	3.13
Seed Length (cm)	Range	2.2-2.9	2.2-2.8	1.7-2.4
	Average	2.49	2.43	2.17
Seed Width (cm)	Range	0.5-0.6	0.6-0.7	0.5-0.8
	Average	0.51	0.62	0.67

THE RELEVANCE OF INDIAN ALMOND IN AGRICULTURE AND HORTICULTURE

The use of *Terminalia catappa* results in the promotion of good health and aesthetic benefits in addition to economic gains. The edible fruits of Indian almond are eaten by man, animals and birds. The taste of the fruit varies with the variety and season. It is usually sweeter during the dry season and tends to be acidic during the raining season. In spite of the varying degrees of taste, it still commands a very high level of acceptability, particularly among children of school age. It is not unlikely therefore that the fruit provides this age group some of the basic

minerals and vitamins that may be lacking in their carbohydrate dominated diet. Fruits of Indian almond are also consumed by adults.

When the fruits are fairly dry, they are gathered and cracked to remove the nuts. These nuts have nutty-taste and are eaten raw.

Compact canopy is achieved by growing the plants fairly closely. This has the potential for breaking the speed of wind thereby protecting the adjoining crops. This could be very useful for protecting such vulnerable crops as plantain from lodging.

Wood of Indian almond tree is not popular for use as fuel. This is most likely due to the unavailability in large quantities of broken dry branches at any point in time. People in the whole of South West of Nigeria including Lagos where the plant has gained popularity hardly cut down branches of trees with the intention of using them as fuel wood when they dry up. It is promising as a good source of fuel wood. There is often a high yield of wood within a season. When the height of the tree becomes a threat to nearby facility, pruning from the branches become a good source of fuel wood. Alternatively, the long branches could be cut during the early rains and used as stakes for climbers such as yam, climbing beans and fluted pumpkin. The use of Indian almond as livestock is not too common because the recovery rate after pruning is high, such that the canopy may shade out the companion crops. However, it is not uncommon to find fluted pumpkin producing few and sizable fruits after a tortuous search for sunlight.

Use of *Terminalia catappa* (L.) as timber is not popular because of its profuse branching and the high value given to the fruits. However, two of its close relatives, *T. ivorensis* and *T. superba* have been reported as potential timber materials in Nigeria (Phillip, 1977).

It is likely that if it is closely planted the branching will be highly reduced. Its high acceptability as shade tree in compounds is likely to enhance its integration in community forestry, which is yet to be a popular practice in Nigeria.

The deep root structure of the plant helps it as a nutrient pump where it retrieves leached nutrients for efficient utilization of the adjacent crops.

Leaf-fall occurs on a daily basis from the tree, even though sparse, often resulting in high level of biomass generation over a relatively long period. This could provide materials for mulching and compost manure in compound farms. Occasional dropping of leaves and continued replacement of leaves will enable it to maintain an excellent canopy. This is further enhanced by the pruning the branches.

THE ROLE OF INDIAN ALMOND TREES IN COMPOUNDS

Profuse leaf production from Indian almond enables it to provide sufficient shade suitable for resting during hot afternoons. Permanent concrete seats are often

constructed under the shade of Indian almond for people to take refuge from the heat of the sun. Apart from shade production, the leaves are also used for wrapping and storing such produce as kolanuts, puddings and fermented foods.

At seedling stage the plant maintains its evergreen leaves and soon develops spreading (umbrella-shaped) branches. This trait enhances its aesthetic value. Even when the plant is old, trimming or pruning the big and small branches restores the beauty of the plant in its environment. The plant remains evergreen even at the peak of the dry season while the shedding and regeneration of leaves go on both in the rainy and dry seasons.

Terminalia catappa can provide a sustainable nursery shed for raising seedlings and cuttings of flowers, fruit trees and other useful plants. The problem of regular reconstruction and expansion of nursery sheds may not arise because the area that comes under *Terminalia catappa* shade expands with time.

Shade provided by the umbrella tree benefits livestock such as pigs, rabbits, and poultry as they find it a sanctuary during heat stressed periods. When shade trees are planted around livestock production structures or when livestock houses are located near shade trees, the cool environment has the potential to cut off direct rays of the sun thereby reducing heat stress. Chiere (1990) recommended that extreme temperature for rabbits can be tempered by different measures. Trees around the building often provide shade that decrease the amount of heat that penetrates during the day, and somehow decrease the amount of heat that escapes during the night through radiation.

They also lessen the impact of wind and rain. Some of these trees can even provide some feed for the animals. During night periods, fowls on free range roost on the branches. This shields them from predators.

The presence of almond trees provide a conducive environment for man. Houses and other structures are protected from direct sunlight, thus lowering temperature in and around the houses. A plant with profuse leaf production purifies the air by making use of carbon dioxide, which is given out by man and providing man with highly needed oxygen for respiration. These dual roles make the presence of plants such as the almond tree near homes invaluable.

Closely planted almond trees are effective for wind break for houses, industries, parks, schools, churches, hospitals and recreation centres. To avoid cracking of walls of buildings and damage to tarred roads by almond trees, safety distance is recommended which gives overlapping and umbrella-shaped branches. Shade so provided finds use as artisan workshop, children play grounds, village squares and meeting point for rural sedentary sports.

Main stem and the major branches of the umbrella tree could provide timber if allowed to grow and develop. Chudnuff (1984) reported that the wood

machines fairly easily and can be used for furniture, cabinet-work, flooring,

decorative veneer, and general light constructions. When the plant is trimmed or cut down, the trunk and branches could be dried and used as fuel wood.

Its excellent spreading ability enable it to cast required shade even when safety distance has been maintained. A well established tree provides a place for rest, acts as store for heat sensitive farm produce.

CONSTRAINTS IN THE USE OF INDIAN ALMOND

When the roots of the plant grow very close to buildings they become very large and could constitute a threat to the foundation wall of buildings. Some roots often grow into access roads and interfere with the movement of man and vehicles. Where the root grows into tarred road, it causes cracks and subsequently damages the roads.

Trees planted in small compounds require regular pruning to prevent them from growing out of proportion. Without pruning, the height and canopy of the plant becomes wild; this could lead to the overlap of branches over the roof of houses and eventually set the process of rusting of galvanized corrugated iron sheets type of roof as a result of deposited leaves. As a deciduous tree, leaf litter sometimes constitute a nuisance where regular sweeping of compounds is a tradition. The labour for clearing constitute enormous cost.

Almond tree may serve as harbinger for dangerous reptiles such as snakes when the immediate surrounding is un-kept and bushy. This problem is aggravated when the leaf litter piles up under the tree.

CONCLUSION

Multipurpose use of the tree and its general acceptability in landscape design puts the plant in a prominent position of acceptability in community forestry. In Nigeria, community forestry is not yet given attention. Almond tree is strongly recommended in urban forestry to be a source of fuel wood. As a good shade tree, almond should be popularized in avenue planting in streets especially in cities and towns, which are in dearth of trees.

Academic institutions especially primary and secondary schools should encourage the planting of the tree. It will provide school children excitement in the act of harvesting the fruits, which will provide them with the required shade during break periods in addition to deriving vitamins and minerals from the fruits.

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