Direct RESEARCH JOURNALS

Direct Research Journal of Biology and Biotechnology
Vol.5 (3), pp. 45-47, December 2019
ISSN 2734-2158
DOI: https://doi.org/10.26765/DRJBB198715403821
Article Number: DRJBB198715403821

http://directresearchpublisher.org/drjbb

Full Length Research Paper

Effect of Watering Regime and Pot Sizes on the Early Growth of *Triplochiton scleroxylon* (Obeche) (K. Schum) Seedlings

Okeleke, S. O., Akinbosoye, T. B. S., Oluwalana, T.*

Federal College of Forestry Jericho Ibadan.
*Corresponding author E-mail: oluwalanatoyin@gmail.com

Received 20 November 2019; Accepted 24 December, 2019

ABSTRACT: The study investigated the effect of watering regimes and pot sizes on the early growth of *Triplochiton Scleroxylond seedings.* Using complete randomize design. The watering regimes consist of Treatment W1 (watering once daily), Treatment W2(watering once in two days), Treatment W3 (watering once in two-three days). The pot sizes were: P3 (1820cm^2), P2 (595cm^3) and P1 (235cm^3). The data were subjected to analysis of Variance (ANOVA) on height, girth, a number of leaves and the result showed that were significant differences among the treatments at ($P<0.05$) in the three-parameter assessed. Treatment P_3W_1 had the highest mean height of 27.8cm while Treatment P_1W_1 had 15.6cm. In stem diameter, Treatment P_3W_1 had the highest stem diameter of 0.38mm, while Treatment P_1W_1 had the lowest, 0.30mm other Treatments irrespective of pot sizes performed poorly, and at the end of the study, it could be observed that there is a relationship between watering and pot sizes on the stem girth increase of the species. On the number of leaves, Treatment P_3W_1 had the highest number of leaf count of 17.6, while Treatment P_1W_1 had 14.0. From the study, it was observed that there were interactions between the pot sizes and the daily watering regime on the early growth of *Triplochiton Scleroxylon seedings.* The study recommended that watering daily should be adopted with pot size (1820cm^3) under the condition of this study for the normal growth of the species.

Keywords: Early growth, pot sizes, *triplochiton scleroxylon,* watering regime

INTRODUCTION

Generally, tree consist of the most important access to mankind and it plays a vital role in maintenance of an ecosystem, at the same time the forest contributes significantly towards food supply provided proper exploitation and satisfactory conservation are carried out.

The natural forest in Nigeria is fast diminishing both in size and quality due to extensive human activities, and there has been progressive decline in the area of forest estate because of encroachment due to uncontrolled and indiscriminate felling of forest trees and also converting of forest land to other uses such as agriculture, roads, buildings and factories.

However, with effective policy, planning and accurate management they can be increased and sustained. The leaves and backs of many tropical forest trees serve as a source of drugs, resins, gum, latex, seed, fruit, pulp wood and other purposes and among such valuable tree is *Trilochyton Scleroxylong* and the tree is from *sterculaceae family*.

Timbers obtained from the forest have significant role to play in nation's economic development, it has various benefits to human existence; the benefit ranges from usefulness of timber for interior and exterior decorations in homes and industries. The day to day demand for plywood, veneer and planks needed for construction purpose; have led to the increase in the exploitation of both time and non timber products (Oats, 1995). Without its replacement, it is a threat to the world, because the livelihood of millions of rural dwellers depends on forest resources, and the need to meet their ever-increasing demand for forest resources products has led to many afforestation projects by the government and world organizations (Burdon, 2001) *Triplochyton Secleroxylon,* popularl called Obeche is an economically important tree, and it has greatly contributed to the economy of Nigeria and its features prominently in international and other forms of organized trade. It is domestically used for constructional works in veneer and house utensils.

Table 1: Analysis of Variance (ANOVA) showing the effect of different watering regime and pot sizes on the growth of *Triplochiton Scleroxylon.*

Source of variance	Df	Sum of square	Mean of square (MS)	F.cal	F.tab	Freq.
Treatment	8	8335.40	1041.93	10.7	2.18	0.05
Error	36	3494.40	97.07			
Total	44	11829.80				

In view of the versatility of this tree, there has been an increase in its exploitation from the tropical high forest of Nigeria. Generally, in order to ensure a sustainable yield of Obeche in Nigeria, there is need to ensure a sustainable yield of this species in Nigeria thus, there is need to establish a vigorous planting stocks for such a plantation. *Triplochyton Scleroxylon* is a white wood as an imposing-but untidy tree with a massive crown of heavy branches bearing thick foliage of hand-shaped leaves like those of a plane (oats, 1999). It is among Nigeria's most valued forest tree species. It is an indigenous and one of the largest deciduous forest tree in west tropical Africa. It is recognized by its palmately lobed leaves and winged fruit. This tree commonly attained a height of about 46m and 15m in diameter in high forest zone, as it occurs between longitude 11°E to 24°/W and latidutionally; in the north, it occur in 9^{o} 5'N in Gabon, and the distribution is mainly conferred to the south areas of west Africa where the relative heavy two peak rainfall occurs and fell within 1000mm to 2400mm per annum. The systems of matured trees are often heavily buttressed but usually free from branches and clear timber in large dimension is therefore obtained. The young tree has a cylindrically shaped crown bearing – foliage almost to the ground, self pruning gradually modifies this to a high circular crown which finally becomes flat-topped when the trees are old. The timber is light and evenly grained and strong, the light weight is about 384gms, specific gravity is 0.36-0.40 (Aalback, 2001). Its flowers are hermophordite or polygamous in cymose, penicles are up to 7.5cm long, a large tree to about 66m high and 7m in girth with large buttress and cylindrical bole. It has a grey bank, relatively smooth with shallow fissures in very big trees, commonly found in deciduous rain forest areas of Nigeria. The specie is heavily exploited in Nigeria, Ghana and other West African Countries and plantations of this species tend to the successful in Ivory Coast. The species is threatened by habitat degradation while it faces similar problems elsewhere in West Africa Triplochylon Scleroxylon is of high quality and it is widely used for constructional works, furniture and match industries. It is used for flooring, veneer, and other cabinet works and for a long period of time, wood has been used for structural materials in construction works, pulp and paper production and other purposes, and it is necessary to study the importance of Tripochilon Scleroxylon even from wood waste especially saw dust which is usually waster off by combustion (Aalback, 2001).

MATERIALS AND METHOD

Seed collection

The seed of *Triplochiton Sceleroxylon* were obtained from FRIN seed store.

Experimental site

The experiment was carried out at West African Hardwood Improvement Project, a division of FRIN. The area is located on latitude 10° 26N and longitude 30° 15E with a rainfall of about 114 mm-152mm (FRIN Metrological station).

MATERIALS USED

Material used were black polythene pot (45 pots), measuring cylinder, washed and sterilized sand, measuring ruler, Germination tray, 2mm sieve, Water, Verneer caliper.

RESULTS AND DISCUSSION

Since f calculated is greater than F tabulated, in (Table 1), shows that there is significant difference among the treatment in the effect of watering regimes and pot sizes on the height growth of *Triplochiton Scleroxylon*, the implication of this is that water is very essential for the growth of this species. From the analysis of variance in (Table 2), F calculated is greater than f tab, it shows that there is significant difference among the treatments in the effects of watering regimes and pot sizes on the leaf count of *Triplochiton Scleroxylon,* the implication of this is that water is very essential for leaves formation and this species. Table 3 shows that f calculated is greater than f tabulated this shows that there is significant difference among the treatments in the effect of watering regimes and pot sizes on the girth of *Triplochiton Scleroxylon,* this indicate that water is very essential for stem diameter formation of the species.The graph above shows the leaf number after 12 weeks of potting however, optimum number of leaves were observed on treatment P3W1 with mean leaf number of 17.6 followed by treatment P2W1 having the mean leaf number of 15.4. Stephen (1990), observed that the frequency of watering significantly influence the taller seedlings and higher values were recorded in plants that were watered daily

Table 2: Analysis of Variance (ANOVA) showing the effect of different watering regime and pot sizes on the number of leaves of *Triplochiton Scleroxylon.*

Source of variance	Df	Sum of square	Mean of square (MS)	F.cal	F.tab	Freq.
Treatment	8	5410.04	676.26	130	2.18	0.05
Error	36	3494.40	51.88			
Total	44	7277.64				

Table 3: Analysis of Variance (ANOVA) showing the effect of different watering regime and pot sizes on the stem diameter of *Triplochiton Scleroxylon.*

Source of variance	Df	Sum of square	Mean of square (MS)	F.cal	F.tab	Freq.
Treatment	8	0.89	0.11	7.9	2.18	0.05
Error	36	0.5065	0.014			
Total	44	1.3965				

having consistency in shoot elongation and dry weight production, this conformed the result. According to Bigsby (2001), water ensures the breakdown of soil itself into substances that can be assimilate by part of roots for proper growth of leaves, high stem diameter and leaf relative turgidity increases by frequency of water supply.

Conclusion

The results showed that watering daily has significant effects on the growth of *T. Scleroxilon* in terms of height, girth and leaves count. This result confirmed that watering of a *T. Scleroxilon* everyday proved most successful at the nursery stage with pot size (1820cm^3). Also watering once in two days performed well as it had a good performance with medium pot size (595cm^3) while the smallest pot size with daily watering came next. Watering once in two days and once in three day were observed to be harmful to the normal growth of the plant irrespective of the pot sizes and this indicate the importance of water supply in the early growth of *T. Scleroxylon* daily.

Recommendation

For a good seedlings' development of *T. Scleroxylon* watering daily with pot size (1820cm^3) is recommended.

REFERENCES

Aalback A (2001). Farmer's Tree Planting and Access to Germplasm in the Southern Highland of Tanzania, Southern African Forestry Journal, No. 191, Pp.75-87.

Burdon RD (2001). Genetic Aspect of Risk Species Diversification, Genetic Management and Genetic Engineering. New Zealand Journal Vol. 5 Pp. 20-25.

Bigsby H (2001). Prudence, Prejudice or Paranoia, New Zealand Journal Vol. 46 Pp 2-4.

Oats JF (1995). The Danger of conservation by Rural Development A case study from Forest of Nigeria Volume 29, page 115-122.

Oats JF (1999). New Data on the History of the Plateaus Forest of Okomu, Southern Nigeria, an Insight into how Human Disturbance.