

PDF - COMPARATIVE INVESTIGATION OF THE GERMINATION AND EARLY GROWTH OF TWO AGROFORESTRY TREE SPECIES IN THE NURSERY - researchcub.info ABSTRACT

The comparative investigation of the germination and early growth of two Agroforestry tree species in the nursery was studied. Seeds of *Annona reticulata* were collected from a compound in Benin City, while the fruits of *Annona muricata* were purchased from New Benin Market. On the 6th of June 2012 a portion of land at the nursery of the department of forestry and wildlife faculty of agriculture university of Benin, Benin city Nigeria was cleared. 350 polyethene bags of smallest size that were stocked with white sand already washed was introduced to the cleared site 182 seeds of *Annona reticulata* was sown into 182 polyethene bags on the 6th June 2012. While on the 7th June 2012 a total number of another 350 polyethene bags of smallest size was introduced to the project site again. Immediately after this the polyethene bags were arranged in sects of 50's and replicated twice in the horizontal and seven times in the vertical. On the 14th of June a total number of 237 seeds of *Annona muricata* was sown into 183 polyethene bags. So in all a total of 410 seeds were sown.

Germination of *Annona reticulata* started on the 19th June 2012 which is 13 days interval after it was sown, and germination ended on the 7th of July, out of the 182 seeds of *Annona reticulata* sown, only 9 germinated so it had a germination percentage of 4.95%.

Germination of *Annona muricata* started on the 13th July 2012 which is 19 days interval from when it was planted, and ended on August 26th a total of 164 seeds germinated as against the total number of 237 seeds that was sown, so the germination percentage was recorded as 69.2%.

Measurement of the stem diameter collar diameter, height, number of leaves, of the seedlings of the two species *Annona reticulata* and *Annona muricata* under the various treatment and replications started on the 13th of August 2012 and ended October 8th 2012. Measurement of these dimension of the developing seedlings for both species were carried out on a weekly basis, thereafter the mean value of the various value for stem diameter, height collar diameter and no leaves for each species *Annona reticulata* and *Annona muricata* was again later documented, in the course of the experiment.

CHAPTER ONE

1.0 INTRODUCTION

A forest is a large wooded area having a thick growth of trees and other plants. The importance of trees and shrubs to man, animal, and the environment are numerous. Trees and other plants of the forest act as a filter which cleans the air we breathe. Clean air is of great value to human health. Chacolo and Pineae (1991), Smith (1978) and Desanto (1976).

The term phytoremediation is a word for the absorption of dangerous chemicals and other pollutants that are harmful into less harmful forms, Pollard (1977). They also further sewage farm chemicals reduce road side spills and clean water runoff into streams. Noise pollution is known to be controlled by trees, Chacolo and Pineae (1991). Apart from facilitating climatic modification Muller (1998), trees are source of fuel wood, cline Cole (1990) and shepherd (1990) landscape enhancement, Fortmann and Riddell (1985) one can derive useful substances from trees such as spice, fibre, medicine which are non-timber species Smith (1992). Trees are sources of timber. They facilitate to some extent food security and improved nutrition, Thannan (1987). The intensity of solar energy radiation that reaches our vicinity is controlled to some extent by trees through solar energy blocking offered by these trees Muller (1988). Apart from all of these trees are also known to produce oxygen, enable wind break, carbon (iv) oxide-sequestering and Green house effect,

GoGreen (2009).

Agroforestry, compound tree planting protection plantation, aesthetic plantation, production plantation are practices that enhance the raising of tree crops by various people and communities. Agroforestry is a system of land use in which harvestable trees and crops are grown among or around crops or on pasture land as a means of preserving or enhancing the productivity of the land. It is defined as a method of farming integrating herbaceous and tree crop.

The system has advantage over Conventional Agriculture and Forest production method. In many ways, for example, it offers increased productivity economic benefits, social outcomes in the ecological goods and services provided.

Biodiversity in Agroforestry Systems is typically higher than conventional Agricultural Systems. With two or more interacting species in a given land area it creates a more complex habitat that can support a wide variety of birds insects and other animals.

The potential Impact of Agroforestry centres on the following:

Reducing poverty through increased production of wood and other tree products for home consumption and sale, Thannan (1987). Agroforestry contributes to Food Security by restoring the soil fertility for food crops. It provides cleaner water through reduced nutrient and soil runoff in water bodies Go Green (2009). It counters global warming and the risk of hunger by increasing the number of subsequent production of fruits nuts and edible oils, Thannan (1987).

It reduces deforestation and pressure on wood lands through provision of farm grown fuel wood, thus becoming a source of fuel wood, Cline Cole (1990) and Sherperd (1990). It enables the reduction in need for useful biochemical substances such as alkalioids and tannins, Smith (1992).

Through Agroforestry more diverse farm outputs improved nutrition is possible Thannan (1987). In situation where people have limited access to good health facilities, it produces growing space for medicinal plants.

Physical support system is another system of agroforestry in this grapes and other like crops are raised along side with pruned trees. Variation of the physical support system depends upon the type of vine.

These trees enable wind break.

Features of Agroforestry tree varies in respect to the kind of Agroforestry system practiced. In alley cropping the desirable features are ease of establishment, fast growing; good sprouting, and ability to fix nitrogen. Heavy palatable foliage, deep rooted system, ease of propagation, adaptability to close spacing. For home gardens the species involved have the following features like the desired amount of shade, deep rooting. Features of species used in live fencing include tolerance of minor injuries, fast growing, compatibility with animal and perennial crops, provides fodder, fire resistant, possess thorns and can be propagated vegetatively. For wind break the desired features of the species are wind resistant, deep spreading root system, small open crown, ease to propagate, species used in improved fallow system share some features such as high nitrogen content in tissue. Fast biomass production, trees and raising of livestock system of Agroforestry possess the following features such as high protein, high nutrient content, palatability, free of toxic substances and sprout well, Nair (1989).

The raising of tree crops are of multi-purpose function one of which is the eradication of desert encroachment which is already prevailing in the North so the demand for wood and wood product is increasing due to increasing population, Amebo (2004). The raising of trees can be carried out in various ways in which Agroforestry, compound tree planting and many others are aspect of it.

The use of any tree in agroforestry or compound treeplanting would depend on some qualities particularly tree size and ease ofhandling. Germination and early growth are aspects of seed handling that canencourage or discourage a tree planter.

1.1 Objectives of Study

This study has the following objectives:

To investigate the germinative capacity of two Agroforestryspecies *Annona reticulata* and *Annona muricata*.

To study early growth development of the two species in theNursery.

1.2 Scope of Study

The study revolves around the germination and growth of *Annona reticulata* and *Annona muricata* in the Nursery.

1.3 Justification of Study

Annona reticulata and *Annona muricata* are trees that havenumerous socio-economic and environmental benefits to man, being small in sizeand amenable to compound and agroforestry planting, it is worthwhile to examinethem in terms of Silivicultural requirement with a view of promoting theirplanting and use by more people.

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