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STUDIES OF WOOD DIMENSION ON SOME ANGIOSPERM SPECIES FROM NANDURBAR DISTRICT

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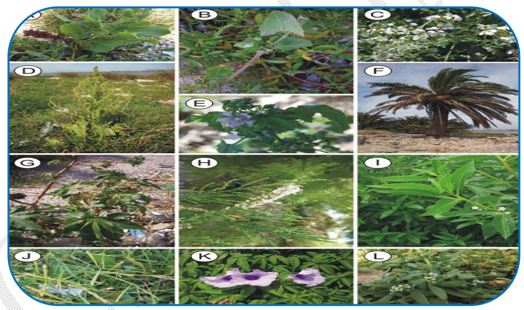
ABSTRACT :

In the present study of 13 different angiosperm plants, the wood had been covered by the Nandurbar district. It is a part of the Deccan Plateau that is located in the northern part of the state of Maharashtra between 21 N at 21.32N latitude and 73.34 E at 74.3 E longitudes for its study of the dimension of wood. Melia azedarach shows the highest value for the cross sectional area of the heartwood of 484.95 cm where the cross section of Acacia ariculiformis of the sapwood was recorded at least 8.01 cm, among all wood sections.



KEYWORDS : *Heartwood, sapwood, Angiosperm dimensions and Wood.*

INTRODUCTION

Wood formation is a complex biological process, involving five major developmental steps, including (1) cell division from a secondary meristem called the vascular cambium, (2) cell expansion (cell elongation and radial enlargement), (3) secondary cell wall deposition, (4) programmed cell death, and (5) heartwood formation (Wacker JP 2010). However, wood is susceptible to dimensional changes attributable to moisture, which considerably limits its use in some applications (Rowell RM 2005). Wood is produced by a vascular cambium, a layer of cell division at a time, but we know from general experience that in many forests there are large cohorts of cells that produce more or less together, and these cohorts act more strongly to save the tree. The living cells of the sapwood are also agents of heartwood formation. Heartwood forms a nucleus with an approximately conical shape in the trunk. Once its formation begins, the diameter and height of the core continue to increase the life of a tree (Ramsden *et. al.,* 1997). The mechanism of heartwood formation is not clearly known despite the efforts of several works to clarify the problem (Homan *et. al.,* 2004). The majority of the information regarding heartwood formation revolves around conifers and knowledge about the process of heartwood formation in the angiosperm in the poor (Deore and Ramaiah, 2012).

The effects of wood modification processes on the chemical and mechanical properties of wood have been extensively summarized and reviewed (Rowell RM 2005). The decrease of equilibrium moisture of wood due to heat treatments leads to an improvement of wood dimensional stability. One of the first studies to report this improvement was performed by Burmester (1973) who stated that at the optimal pressure and temperature it was possible to reduce the deformation caused by swelling by 75% in oak, 60% in beech, 55% in pine, and 52% in spruce. Latter studies by Giebeler (1983) mentioned that the swelling decreased between 50% and 80% for beech, poplar, pine, spruce, and birch with treatments at temperatures between 180 to 200ºC in an inert gas atmosphere. In experiments by

Dirol and Guyonnet (1993) with spruce, fir, and poplar, the radial and tangential swelling was always smaller in treated wood, decreasing for more severe treatments (Rowell RM 2005).

MATERIAL AND METHODS

There are wide variation between sapwood and heartwood from two plants of same species. The redial extent of heartwood formation in evergreen tree viz. *Acacia articulate, Acacia nilotica, Lagerstroemia lanceolata* and *Prosopis julifera*. Were in deciduous tree viz, *Albizia lebbeck, Anogessus latifolia, Azadiracta indica, Diospyrus melanoxylon, Lagerstroemia parviflora , Melia azedarach* L., *Pterocarpus marsupium Roxb and Zizphus xylopyra* (Retz.) has been measured in cm. The redial extent of heartwood is comparatively narrow in deciduous tree than evergreen species. The cross sectional area of sapwood and heartwood in different species has been calculated for their different dimensions and size.

RESULTS AND DISCUSSION

Among all 13 plants cross section of sapwood and heartwood were recorded into cm.

Table. 1. Cross section area of sapwood and heartwood

Sr.no.	Plant Name	Sapwood (cm)	Heartwood (cm)	Cross Section Area of Sapwood (cm)	Cross Section Area of Heartwood (cm)
1	*Acacia ariculiformis* A. Cumm.	1.5	9.2	8.01	259.81
2	*Acacia nilotica* (L.) Del	1.7	9.3	8.05	263.04
3.	*Albizia lebbeck* (L) Willd.	2.5	10.1	16.22	341.12
4.	*Anogessus latifolia* (Roxb. Ex DC)	2.6	10.8	22.19	357.62
5.	*Azadiracta indica*A.Juss.	3.3	9.4	33.09	270.08
6.	*Diospyrus melanoxylon* Roxb.	2.9	10.3	40.68	328.44
7.	*Eucalyptus citridora* H. K. F	2.7	10.9	25.95	386.12
8.	*Lagerstroemia lanceolata*Wall.ex.w.	3.1	10.9	25.87	389.35
9.	*Lagerstroemia parviflora*Wall.ex.w.	2.8	8.90	27.52	256.72
10.	*Melia azedarach* L.	1.3	13.8	24.5	484.95.
11.	*Prosopis julifera* DC	2.4	11.2	26.45	391.20
12.	*Pterocarpus marsupium* Roxb.	2.1	10.4	38.76	392.40
13.	*Zizphus xylopyra* (Retz.)	2.1	8.70	25.46	423.0

CONCLUSION

In the current study of the Nandurbar forest area, it has been found that 13 different species have been studied between sapwood and heartwood dimensions. In *Acacia ariculiformis*, the cross sectional area of the sapwood was recorded with 8.01 cm and among all of the cross section, the area of heartwood was recorded 259.81 cm. The highest value for the area of the cross section of the sapwood was recorded in *Diospyrus melanoxylon* and is 40.68 cm. The *Melia azedarach* wood shows the highest value for the cross-sectional area of the heartwood which is 484.95 cm among all woods

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