

## A NOTE ON THE OUTTURN OF PIT-PROPS FROM BABUL (*ACACIA NILOTICA*) TREES IN RIVERAIN FOREST OF SINDH

Mohammad Ayaz

Babul (*Acacia nilotica*) is one of the main tree species in riverain forests of Sindh province of Pakistan. The timber of babul has many uses but one of its major uses is pit-props in mining industry mainly in Balochistan. Supplies of pit-props are also supplemented by Babul raised on the farms in central Sindh as small plantations (Hurries).

Low yield of pit-props was complained by the Sindh Forest Department and reason appraised was probably low recovery due to high felling and conversion losses. To investigate this, the forests of Bindi Dareja, Ding and Azizpur in Sukkur Forest Division were visited. Timber outturn data (logs, pit-props and wastage of timber as bends, forks, breakage and decay etc.) on 40 trees of babul, with respect to tree size and age were recorded during normal felling operation. The trees ranged from very young to fully mature with an average DBH of 37 cm (10-102 cm) and age gradation of 5-6, 20-25 and 40-45 years. Volume of stumps was calculated as function of average diameter and height above the ground. The volume of timber, pit-props and waste portions were calculated by Hubers's formula. Volume of all parts was added up to get the total tree volume. The data were grouped according to forest and age of the trees and their weighted mean values are given in Tables 1 and 2.

Table 1 show that on the average, a babul tree with an average DBH of 37 cm produced 80.6% as timber, 9.1% as pit-props, 7.3% wasted in other forms and 3.0% is left on the ground as stumps.

Table 2 gives the outturn of timber pit-props and wastage in babul trees of different age and size. It is clear that the proportion of timber as logs and pit-props in babul varied with age of trees. With increase in age the timber outturn of pit-props decreased with the same trend from 29.1% to 4.6%. Stump

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<sup>1</sup> Director, Forestry Research Division, Pakistan Forest Institute, Peshawar.



percentage and wastage due to defects did not show any consistent relation to size and age. Wastage of timber due to defects (mainly bends and forks) remained high varying between 11.1 and 16.2% mainly due to heavy branching of babul trees.

Table 1. Outturn of timber from babul trees

Name of the forest	Compartment No.	No. of trees	Av. DBH (cm)	Trees parts			
				Stump (%)	Timber (%)	Pit-props (%)	Wastage (%)
Ding	A-2, A-4	18	28	3.3	57.8	24.3	14.6
Azizpur	B-3	18	40	5.6	74.7	3.7	16.0
Bindi Dareja	B-2	4	64	1.7	88.5	8.1	1.7
Mean		37		3.0	80.6	9.1	7.3

Table 2. Outturn of babul timber with respect to age and size

Age of trees (years)	No. of trees	Av. DBH (cm)	Trees parts			
			Stump (%)	Timber (%)	Pit-props (%)	Wastage (%)
5-6	15	14	5.0	54.8	29.1	11.1
20-25	11	36	3.4	65.7	14.7	16.2
40-45	14	60	6.0	77.0	4.6	12.4

This study revealed that the low production of pit-props from babul trees is more a silvicultural and management problem rather than felling and conversion. Outturn of timber and pit-props from babul is adequate in view of harvesting methods and size specifications. The results also showed that young crop of babul yielded maximum quantity of pit-props and a good proportion of timber as well. For the increased production of pit-props, to meet the demand of mining industry, it is recommended that the babul trees should be grown at a closer spacing and shorter rotation of 5-6 years. For this purpose a separate, "Pit-prop Working Circle", must be constituted in areas having good soil and moisture conditions in the riverain forests of Sindh.



The economics analysis of growing babul on short rotation to utilize quick growth potential of young crops for the production of pit-props needs to be carried out.

However, pit-props from younger trees of babul, grown at shorter rotation, have a high percentage of sapwood and are liable to early decay by insects and fungi. Therefore, proper chemical preservation of such pit-props is recommended before putting to any use.