OCCURRENCE OF *SHOREA ROBUSTA* GAERTN. F. WOOD UNDER THE RIVERBEDS OF GREATER DINAJPUR DISTRICT

Sal (Shorea robusta Gaertn. f.) is an important timber species of Dipterocarpaceae. This species has the widest distribution amongst the dipterocarps, from North-west India to Eastern India, Sikkim, Nepal and Bangladesh (Thiselton Dyer 1874, Tran Van Nao 1974, and Khan 1984). In Bangladesh it is known as *sal* or *gazari,* and occurs naturally in forests under Gazipur, Madhupur, Sherpur, Dinajpur and Comilla districts. Small patches of natural *sal* forest also occurs at Saltilla of Sylhet and Mainamoti of Comilla district. There are also *sal* plantations in Dhaka, Dinajpur and Sylhet districts (Das 1976)

One timber, locally known as *panniya sal,* is available in the timber markets and saw mills of Dinajpur, Panchagarh and Thakurgaon districts which is usually collected excavating the river beds of those areas. This collected *sal* timbers remained under "pani" (water) for which it is called *panniya sal.* It is used for constructional purposes in those areas and supposed to be similar to that of *sal (Shorea robusta).* It is excavated from the river beds of 3-8 m deep. The local traders take lease of the river beds for collecting *panniya sal.* It is found in the form of logs in different sizes, from 6-15 m long at different depths in the same area. The lease holders excavate the logs of *panniya sal* during the dry season. The excavation is very time consuming and expensive. The timber merchants think that once the whole area of greater Dinajpur district was covered by the natural *sal* forest and this forest has gone under soil due to natural calamities like earthquake in the past. As all the logs of *panniya sal* are in good condition, which indicates the logs might be of recent origin and drifted by river from their place of origin.

The surface of *panniya sal* logs are very corrugated or rough and is blackish in colour. It is light in weight compared to *sal.* Recently the woods of *panniya sal* were collected from Panchagarh district. It has been preserved in the Xylarium of Bangladesh Forest Research Institute, Chittagong (CHITw). The wood of *panniya sal* has been identified as *Shorea robusta* by studying the anatomical characters.

The specific gravity was determined on oven dry weight and oven dry volume. Gross features of *panniya sal* were studied under naked eye and with hand lens. Microtome sections of true cross, radial and tangential surfaces were cut with a sliding microtome. Permanent slides both unstained and stained with hematoxylin were prepared following the standard procedure. The minute anatomical features of the wood were studied under the microscope. Comparing the gross and minute anatomical features of *panniya sal* with those of *sal (Shorea robusta),* it was confirmed as *Shorea robusta.* The anatomical features of the *panniya sal* were further compared with literatures of Das (1976), and Pearson and Brown (1932).

The specific gravity of *panniya sal* was i. e., 0.71-0.87 (Das 1976), 0.82 (Pearson and Brown 1932) and 0.68-0.82 (CSIR 1972). As the logs of *panniya sal* remained

burried under river bed for a long time it is likely that water soluble extractives might have been leached out. This may be one of probable cause of lower specific gravity of *panniya sal* in comparison to *sal*.

The gross and minute anatomical features of *panniya sal* based on samples collected from Panchagarh district are given below.

Gross features :

Colour : Sapwood and heartwood were indistinct in the samples examined due to long water soaking. Wood greyish brown to reddish brown with darker streaks caused by interlocked grain.

Growth rings : Indistinct, concentric lines of gum ducts sometimes give the impression of growth ring.

Pores : Diffuse porous, evenly distributed, pores mostly solitary and in radial multiples of 2-3; pores heavily tylosed, indistinct to fairly distinct to naked eye; pore size 3(0.05-0.1 mm), 4(0.1-0.2 mm) and 5(0.2-0.13), mostly 4(0.1-0.2 mm).

Rays : Rays fine, in between the fine rays there are finner rays, indistinct to faintly distinct to naked eye after moistening, clearly visible under lens as whitish lines, closely spaced, evenly distributed, uniformly thickened, fine rays mostly 3(0.05mm), finner rays less than 3 (less than 0.05 mm).

Parenchyma : Indistinct to naked eye, distinct under lens, mostly aliform, aliform confluent and also diffuse, fine lines of terminal parenchyma present.

Wood : Wood moderately hard and heavy, dull, heavily interlocked grain, medium coarse textured, without any characteristics odour and taste. Ripple marks absent.

Vertical gum ducts : White concentric lines of vertical gum ducts present at intervals.

Minute anatomy :

Vessel : Round to oval, mostly oval, moderately thick walled, perforation plate simple, end walls horizontal to slightly oblique, intervessel pits small, numerous, alternate, diameter 5.2-10.4 µm, pit vestured, ray vessel pits similar to intervessel pits.

Fibre : Thick walled, polygonal to circular in cross section, not arranged in radial tiers, non-septate spiral checks observed under high magnification, pits few, minute and simple, yellow gummy infiltration present.

Parenchyma : Strand parenchyma mostly 4-celled, rhomboid crystal present in short strand (2-4 celled), sometimes strand long.

Rays : Mostly multiseriate, uniseriate rays also present, multiseriate rays 2-5, mostly 3-4 celled, homogeneous, kribs' type III, dark brown gummy infiltration copious in the ray cells, crystals not observed.

Gum ducts : Gum ducts encircled by a single layer of epithelium, thin walled; epithelial cells often arching into the cavity of the gum duct.

Wood Samples Examined : *Panniya sal* by name. Date of collection 10.2.91. Collected from saw mills of Panchagarh district.

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Plate 1. Cross section of "Panniya sal" (*Shorea robusta* Gaertn. f.) X 170.

Plate 2. Tangential section of "Panniya sal" (*Shorea robusta* Gaertn. f.) X 270 showing dark brown infiltration in ray cells.

Plate 3. Radial section of "Panniya sal" (*Shorea robusta* Gaertn. f.) X 270 showing crystals in parenchyma cells.