**IAWA Journal - Volume 19(1)**

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| **Author(s):** | Marc Herman; Pierre Dutilleul; Tomas Avella-Shaw |
| **Title:** | **Intra-Ring and Inter-Ring Variations of Tracheid Length in Fast-Grown Versus Slow-Grown Norway Spruces (Picea Abies)** |
| **Source:** | IAWA Journal, Volume 19, Issue 1 |
| **Publication Year:** | 1998 |
| **Pages:** | 3-23 |
| **Keywords:** | growth rate effects; Picea abies (L.) Karst.; Gaussian non-linear model; Correlation; yearly ring width; Norway spruce; temporal trajectory; intra-ring and inter-ring variations of tracheid length; yearly mean tracheid length |
| **Abstract:** | Our study was conducted on 40 Norway spruces [Picea abies (L.) Karst.] from a stand located in the Belgian Ardennes. Twenty trees were randomly sampled from a slow-growth category, and twenty others from a fast -growth category. The hypothesis under testing is fourfold: increased tree growth rate may affect 1) the intra-ring weighted frequency distribution of tracheid length, 2) the inter-ring variation (from pith to bark) of the parameters describing this frequency distribution, 3) the interring variation of the mean tracheid length, and 4) the correlation between yearly mean tracheid length and yearly ring width. |
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| **Author(s):** | Junji Matsumura; Rudolf E. Booker; Lloyd A. Donaldson; Brad G. Ridoutt |
| **Title:** | **Impregnation of Radiata Pine Wood By Vacuum Treatment: Identification of flow Paths Using Fluorescent Dye and Confocal Microscopy** |
| **Source:** | IAWA Journal, Volume 19, Issue 1 |
| **Publication Year:** | 1998 |
| **Pages:** | 25-33 |
| **Keywords:** | flow path; impregnation; sapwood; fluoresceindye; resin canal; Radiatapine; pre-steaming; heartwood; confocal microscopy; ray parenchyma; bordered pit |
| **Abstract:** | Radiata pine sapwood and heartwood were dried with or without presteaming and then impregnated by vacuum treatment with water, toluidine blue and fluorescein. Sapwood uptake was 0.571 g/cm3 and was not affected by pre-steaming. As expected, the uptake by heartwood that had not been pre-steamed was very low. Pre-steaming increased liquid uptake from 0.113 g/cm3 to 0.438 g/cm3. When the uptake by pre-steamed heartwood from radial, tangential and transverse surfaces was compared, the greatest increase was from the radial surfaces, suggesting that pre-steaming of heartwood resulted in changes to the tangential liquid flow pathways. The liquid flow pathways in sapwood consisted ofaxial and radial resin canals, ray parenchyma cells in both fusiform and uniseriate rays. Penetration into tracheids was also observed. Without pre-steaming, there was limited liquid flow into heartwood, and this was generally confined to resin canals and ray parenchyma. Pre-steaming of heartwood increased penetration of dye into the resin canal network, presumably due to removal or redistribution of resin. Fluorescein was also evident in bordered pits between tracheids, suggesting that one of the ways that pre-steaming increased heartwood treatability was by altering the condition ofbordered pits to allow greater conduction. The combination of fluorescein dye and confocal microscopy was found to be a particularly effective way of visualising flow patterns, as it was possible to examine thick sections, which avoided microtome damage at the section surface. Examination of dry wood also minimised the possibility of dye redistribution. |
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| **Title:** | **Review** |
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| **Author(s):** | Steven Jansen; Erik Smets |
| **Title:** | **Vestured Pits in Some Woody Gentianaceae** |
| **Source:** | IAWA Journal, Volume 19, Issue 1 |
| **Publication Year:** | 1998 |
| **Pages:** | 35-42 |
| **Keywords:** | Vestured pits; Gentianales; Gentianaceae; Loganiaceae |
| **Abstract:** | Vestured pits are reported for the first time in representatives of four genera of Gentianaceae, namely Lisianthius, Macrocarpaea, Symbolanthus and Tachiadenus. All vestures observed were small to very small and occur at the roof of the pit chamber near the outer pit aperture. Some species also show sparsely vestured inner pit apertures. The loganiaceous genera Anthocleista and Fagraea, often included in Gentianaceae, were also investigated. |
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| **Author(s):** | S. Noshiro; P. Baas |
| **Title:** | **Systematic Wood Anatomy of Cornaceae and Allies** |
| **Source:** | IAWA Journal, Volume 19, Issue 1 |
| **Publication Year:** | 1998 |
| **Pages:** | 43-97 |
| **Keywords:** | Comaceae; Alangiaceae; Hydrangea; cladistic analysis; Garryaceae; wood anatomy; latitudinal trends; Nyssaceae |
| **Abstract:** | The wood anatomy of Comaceae, Alangiaceae, Garryaceae, and Nyssaceae constituting the Comales in the sense of Cronquist (1981, 1988) is described in great detail and subjected to a cladistic analysis. A microscopic identification key to the woods studied is given. The alliance includes seventeen genera, mostly of trees and shrubs, very rarely herbs. Although wood anatomically fairly homogeneous, variation exists in both qualitative and quantitative characters. Some of the latter show distinct latitudinal trends within individual genera, and character states have only been recognised taking their latitudinal dependencies into account. The character states ultimately recognised in these continuously varying quantitative characters coincide with intergeneric or intersectional gaps. The cladistic analysis based on a datamatrix with twentyone characters (Table 3) and using Cereidiphyllum, Daphniphyllum, and Hamamelis as outgroups yielded a strict consensus tree with a quadrichotomy with two monophyletic clades, Hydrangea panieulata (a representative of the closely allied Hydrangeaceae) and Daphniphyllum (Fig. 81). One weakly supported clade includes Alangium, Camptotheea, Cornus, Curtisia, Davidia, Diplopanax, Mastixia, and Nyssa without any robust lineages among them. The other genera, Aralidium, Aueuba, Corokia, Garrya, Griselinia, Helwingia, Melanophylla and Toricellia, constitute a second, well-supported clade. Two Hydrangea taxa included in the analysis nest in the second clade and a basal branching respectively. The wood anatomical diversity pattern thus supports a family concept of Comaceae including Cornus, Curtisia, Diplopanax, Mastixia, Alangiaceae, and Nyssaceae, and exclusion of the genera in the other clade. There is remarkable agreement between some of these wood anatomical r~sults and recent cladistic analyses of rbcL sequences by Xiang and co-workers. The infrageneric classification of Cornus, Alangium and Nyssa is also discussed. |
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| **Author(s):** | Editors IAWA Journal |
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| **Source:** | IAWA Journal, Volume 19, Issue 1 |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Wood Anatomy News** |
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| **Author(s):** | Editors IAWA Journal |
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