



REFERENCES

- Aloni R. (1991) Wood formation in deciduous hardwood trees. In Physiology of Trees, pp.175–197, Raghavendra, A.S., ed. Wiley, New York.
- Aloni R. (1992) The control of vascular differentiation. Int. J. Plant Sci. 153
- Aloni R, Ullrich C (2000) Vascularization is a general requirement for growth of plant and animal tumours
- Aloni R. (2007) PHYTOHORMONAL MECHANISMS THAT CONTROL WOOD QUALITY FORMATION IN YOUNG AND MATURE TREES
- Aloni R., Zimmermann, M.H. (1984) Length, width and pattern of regenerative vessels along strips of vascular tissue. Bot. Gaz.
- Baba K, Adachi K, Yokoyama T, Itoh T, Nakamura T (1995) Induction of tension wood in GA₃-treated branches of the weeping type of Japanese cherry, *Prunus spachiana*. Plant Cell Physiol 36:983-988
- Bowling AJ, Vaughn KC (2008) Immunocytochemical characterization of tension wood: gelatinous fibers contain more than just cellulose. Am J Bot 95: 655–663
- Ching-Cu Tsai, Ching-Te Chien, Ling-Long Kuo-Huang, Shiang-juun Chen (2006) Anatomical Characteristics of Artificially Induced Tension Wood in Seedlings of Honduras Mahogany
- Chow KY (1946) A comparative study of the structure and chemical composition of tension wood and normal wood in beech (*Fagus sylvatica* L.) Forestry 20: 62-77
- Chow P (1971) Fiber length variation in the role of an eccentric sweetgum tree. Forest Science 17: 186-189
- Clair B, Gril J, Baba K, Thibaut B, Sugiyama J (2005) Precautions for the structural analysis of the gelatinous layer in tension wood. IAWA J
- Clair B, Ruelle J, Beauchêne J, Prévost MF, Fournier M (2006) Tension wood and opposite wood in 21 tropical rain forest species 1. Occurrence and efficiency of the G-layer. IAWA J 27:329–338



- Clair B, Ruelle J, Thibaut B (2003) Relationship between growth stress, mechano-physical properties and proportion of fibre with gelatinous layer in chestnut (*Castanea sativa* Mill.). *Holzforschung*
- Clair B, Thibaut B (2001) Shrinkage of the gelatinous layer of poplar and beech tension wood.
- Côte, W. A Jr. and Day, A. C. (1965) Anatomy and ultrastructure of reaction wood in *Cellular Ultrastructure of Woody Plants* Côte, W. A (ed). Pp319-418, Syracuse University Press, New York
- Cronshaw J, Morey PR. (1968) The effect of plant growth substances on the development of tension wood in horizontally inclined stem of *Acer rubrum* seedlings. *Protoplasma* 65: 379–391.
- Dayan J, Voronin N, Gong F, Sun TP, Hedden P, Fromm H, Aloni R (2012) Leaf-induced gibberellin signaling is essential for internode elongation, cambial activity, and fiber differentiation in tobacco stems. *Plant Cell*
- De Jardin A, Laurans F, Arnaud D, Breton C, Pilate G, Leple JC. (2010) Wood formation in angiosperms. *Comptes Rendus Biologies* 333: 325–334.
- Du S, Uno H, Yamamoto F (2004) Role of auxin and gibberellin in gravity-induced tension wood formation in *Aesculus turbinata* seedlings. *IAWA Journal*
- Digby J, Firn RD (1995) The gravitropic set-point angle (GSA): the identification of an important developmentally controlled variable governing plant architecture. *Plant, Cell and Environment* 18: 1434–1440.
- Du S, Yamamoto F (2003) Ethylene evolution changes in the stems of *Metasequoia glyptostroboides* and *Aesculus turbinata* seedlings in relation to gravity-induced reaction wood formation. *Trees* 17:522–528
- Du S, Uno H, Yamamoto F (2004) Roles of auxin and gibberellin in gravityinduced tension wood formation in *Aesculus turbinata* seedlings. *IAWA Journal* 25: 337–347.
- Fang CH, Clair B, Gril J, Liu SQ (2008) Growth stresses are highly controlled by the amount of G-layer in poplar tension wood. *IAWA J*
- Funada R, Miura T, Shimizu Y, et al. (2008) Gibberellin-induced formation of tension wood in angiospermae trees. *Planta* 227: 1409–1414.



- Goswami L, Dunlop JWC, Jungnikl K, Eder M, Gierlinger N, Coutand C, Jeronimidis G, Fratzl P, Burgert I (2008) Stress generation in the tension wood of poplar is based on the lateral swelling power of the G-layer. *Plant Journal* 65(3): 353–361.
- Harada H, Shimaji R, et al. (1976) 『Mokuzai no kagaku』, 216-223, Morikita press
- Jin H, Kwon M (2009) Mechanical bending-induced tension wood formation with reduced lignin biosynthesis in *Liriodendron tulipifera*
- Jiang S, Furukawa I, Honma T, Mori M, Nakamura T, Yamamoto F (1998a) Effects of applied gibberellins and uniconazole-P on gravitropism and xylem formation in horizontally positioned *Fraxinus mandshurica* seedlings. *Journal of Wood Science* 45(1): 1–6.
- Jiang S, Honma T, Nakamura T, Furukawa I, Yamamoto F (1998b) Regulation by uniconazole-P and gibberellins of morphological and anatomical responses of *Fraxinus mandshurica* seedlings to gravity. *IAWA Journal* 19(1): 1–10.
- Jiang S, Li Y, Chen X, et al. (2006) Control of negative gravitropism and tension wood formation by gibberellic acid and indole acetic acid in *Fraxinus mandshurica* Rupr. var. *japonica* Maxim seedlings. *Journal of Integrative Plant Biology* 48: 161–168.
- Jiang S, Xu K, Wang Y, Ren Y, Gu S. (2008) Role of GA3, GA 4 and uniconazole-P in controlling gravitropism and tension wood formation in *Fraxinus mandshurica* Rupr. var. *japonica* Maxim. seedlings. *Journal of Integrative Plant Biology* 50: 19–28.
- International Association of Wood Anatomists (1975): 「Multilingual Glossary of Terms used in Wood Anatomy」 A1 - A21
- Kaeiser M, Boyce SG. (1965) The relationship of gelatinous fibers to wood structure in eastern cottonwood (*Populus deltoides*). *American Journal of Botany* 52: 711–715.
- Krisnawati, H., Kallio, M.H., and Kanninen, M. (2011) *Swietenia macrophylla* King. Ecology, silviculture and productivity. CIFOR, Bogor, Indonesia
- Lamb FB (1966) Mahogany in Tropical America: its Ecology and Management. University of Michigan Press, Ann Arbor.



- Leticia S, João L, Thayanne N et al. (2008) Anatomical characterization of tension wood in *Hevea brasiliensis* (Willd. Ex A. Juss.) Mull. Arg.
- Little CHA, Pharis RP (1995) Hormonal control of radial and longitudinal growth in the tree stem. In: Gartner BL (ed) Plant stems. Academic Press, San Diego, pp 281–319
- Little CHA, Savidge RA (1987) The role of plant growth regulators in forest tree cambial growth. *Plant Growth Regul* 6:137–169
- Martawijaya H, Kallio M, Kanninen M (2011) *Swietenia macrophylla* King Ecology, silviculture and productivity
- Mayhew, J.E. and Newton, A.C. 1998 The silviculture of *S. macrophylla*. CABI Publishing, New York.
- Mellerowicz EJ, Sundberg B (2008) Wood cell walls: biosynthesis, developmental dynamics and their implications for wood properties.
- Mokugawa Y, Nobuchi T, Sahri MH. (2008) Tension wood anatomy in artificially induced leaning stems of some tropical trees. In: Nobuchi T, Sahri MH. eds. The formation of wood in tropical forest trees: a challenge from the perspective of functional wood anatomy. Serdang: Penerbit Universiti Putra Malaysia, 76–88.
- Nakamura T, Saotome M, Ishiguro Y, et al. (1994) The effects of GA3 on weeping of growing shoots of the Japanese cherry, *Prunus spachiana*. *Plant and Cell Physiology* 35: 523-527
- Nakamura, T., M. Saotome & H. Tanaka. (1995) Weeping habit and gibberellin in *Prunus*. *Acta Horticulturae*
- Necesaný V (1955) Occurrence of the reaction wood form the taxonomic point of view. *Sbornik Vysoké Školy Zemědělské a Lesnické Fakulty v Brně* 3: 131-149
- Nobuchi T, Muniany and Mohd D, Sahri H (2011) Formation and anatomical characteristics of tension wood in plantation-grown *Hevea Brasiliensis* (Willd.) Muell.-Agr.



Nugroho WD, Yamagishi Y, Nakaba S, Fukuwara S, et al (2012) Gibberellin is required for the formation of tension wood and stem gravitropism in *Acacia mangium* seedlings

Nugroho WD, Nakaba S, Yamagishi Y et al. (2013) Gibberellin mediates the development of gelatinous fibres in the tension wood of inclined *Acacia mangium* seedlings

Nugroho WD, Nakaba S, Yamagishi Y et al. (2018) Stem gravitropism and tension wood formation in *Acacia mangium* seedlings inclined at various angles

Okuyama T, Yamamoto H, Yoshida M, Hattori Y, Archer RR (1994) Growth stresses in tension wood. Role of microfibrils and lignification. Ann Sci For 51:291–300

Onaka F (1949) Studies on compression and tension wood (in Japanese). *Wood Research: Bulletin of the wood research Institute, Kyoto University Japan* 1: 1-88

Orwa C, Mutua A, Kindt R, et al. (2009) Agroforestry Database: a tree reference and selection guide version 4.0. World Agroforestry Centre, Kenya

Panchin AJ, de Zeew C (1980) *Textbook of wood technology*. Fourth edition. McGraw-Hill Book Company, New York

Prodhan AKMA, Funada R, Ohtani J, Abe H, Fukazawa K (1995a) Orientation of microfibrils and microtubules in developing tension-wood fibres of Japanese ash (*Fraxinus mandshurica* var. *japonica*). *Planta* 196:577–585

Prodhan AKMA, Ohtani J, Funada R, Abe H, Fukazawa K (1995b) Ultrastructural investigation of tension wood fibre in *Fraxinus mandshurica* Rupr. var. *japonica* Maxim. *Ann Bot* 75:311–317

Ridout BG, Pharis RP, Sands R (1996) Fibre length and gibberellins A₁ and A₂₀ are decreased in *Eucalyptus globulus* by acylcyclohexanedione injected into the stem. *Physiologia Plantarum*

Ruelle J, Clair B, Beauchêne J, Prévost MF, Fournier M (2006) Tension wood and opposite wood in 21 tropical rain forest species 2. Comparison of some anatomical and ultrastructural criteria. *IAWA J* 27:341–376



- Ruelle J, Yoshida M, Clair B, Thibaut B (2007) Peculiar tension wood structure in *Laetia procera* (Poepp.) Eichl. (Flacourtiaceae). *Trees* 21:345–355
- Saotome M, Ogiwara E, Omi T, Yokoyama T, Nakamura T (1995). Cellulose and lignin contents in GA-treated branches of Prunus species. *J. Jpn Women's Univ. Fac. Sci.* 3, 69–71.
- Sheng Du, Hiroki Uno & Fukuju Yamamoto (2004) ROLES OF AUXIN AND GIBBERELLIN IN GRAVITY-INDUCED TENSION WOOD FORMATION IN *AESCULUS TURBINATA* SEEDLINGS
- Shiokura, T. & C.B. Lantican. 1987. Anatomical structure of AlbiziaJalcataria grown eccentrically. *Mokuzai Gakkaishi*
- Shiow Y. Wang, Tung Sun, and Miklos Faust (1986) Translocation of Paclobutrazol, a Gibberellin Biosynthesis Inhibitor, in Apple Seedlings
- Soerianegara I and Lemmens R (1993) Timber trees: Major commercial timbers
- Sultana RS, Ishiguro F, Yokota S, Iizuka K, Hiraiwa T, Yoshizawa N (2010) Wood anatomy of nine Japanese hardwood species forming reaction wood without gelatinous fibres. *IAWA Journal* 31: 191-202
- Timell TE (1986) Compression wood in gymnosperms. Springer, Heidelberg.
- Urakami, T., Ito-Yoshida, C., Araki, H., Kijima, T., Suzuki, K. and Komagata, K. (1994). Transfer of *Pseudomonas glumae* to *Burkholderia* as *Burkholderia* spp. and description of *Burkholderia vandii* sp. nov. *Int. J. Syst. Bacteriol.*
- Wang Q, Little CHA, Sheng C, Od'en PC, Pharis RP (1992). Effect of exogenous gibberellin A4/7 on tracheid production, longitudinal growth and the levels of indole-3-acetic acid and gibberellin A4, A7, and A9 interminal shoot of *Pinus Sylvestris* seedlings.
- Wang Q, Little CHA, Od'en PC (1995). Effect of laterally applied gibberellin A4/7 on cambial growth and the level of indole-3acetic acid in *Pinus sylvestris* shoots.
- Wang Q, Little CHA, Od'en PC (1997). Control of longitudinal and cambial growth by gibberellins and indole-3-acetic acid in currentyear shoots of *Pinus sylvestris*.



Yamamoto H, Yoshida M, Okuyama T (2002) Growth stress controls negative gravitropism in woody plant stems. *Planta* 216:280–292

Yamamoto H, Abe K, Arakawa Y, Okuyama T, Gril J (2005) Role of the gelatinous layer (G-layer) on the origin of the physical properties of the tension wood of *Acer sieboldianum*.

Yoshida M, Nakamura T, Yamamoto H, Okuyama T (1999) Negative gravitropism and growth stress in GA₃-treated branches of *Prunus spachiana* Kitamura f. *spachiana* cv. *Plenarosea*. *J Wood Sci* 45:368–372

Yoshizawa N, Inami A, Miyake S, Ishiguro F, Yokota S (2000) Anatomy and lignin distribution of reaction wood in two *Magnolia* species. *Wood Science and Technology* 34: 183–196

Zobel B, Talbert J (1984) *Applied Forest Tree Improvement*. Wiley, New York, US.