

中法人工林杨树木材性质的研究*

Final Scientific Report of PRA Cooperation project nb. N.BT00-04 “Poplar Plantation”

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The two years (2001 - 2002) bilateral cooperation project of PRA (nb. N.BT00-04) was implemented completely by Lab. Wood Science & Technology, Forest Utilization College, Anhui Agricultural University, China and Lab. Mécanique et Génie Civil (UMR CNRS 5508), Montpellier University 2, France. The contents and results are summarized in the following three parts.

Part 1: Studies on the variation of selected wood properties for plantation Poplar

In the study, 6 trees of plantation poplar I-69 (*Populus deltoides* CV. I-69/55), growing in the forest station in the suburb of Tianchang city Anhui Province were selected as the materials. The research fields covered the anatomical features, the tissue proportion, the microfibrillar angle, the ring width, the basic density, the fiber saturation point, the shrinkage, the wood color properties, the mechanical properties and the influence in wood properties of the fertilization.

Part II: Microdensity variation of plantation poplar

In this part, the radial rods (from pith to north and south) in six trees of poplar 69 at five heights (0.0 m, 1.3m, 3.3m, 5.3m, 7.3m) except for the fifth tree (only 0.0 m, 1.3m) were selected as samples. The research fields covered: 1/ Mean values of wood density in poplar 69; 2/ Radial variation of wood density of 6 poplar trees; 3/ Axial variation of wood density, earlywood density, latewood density, ring width and latewood density in 6 trees; 4/Density variation within a growth ring

Part III: Studies on Growth Stress and tension wood properties of Poplar

One poplar tree (I-69 clone) with a lean of 20° from the beaches of Yangtse river in China, and 3 poplar trees (clones I214, IMC) from Spain (Solsona) were selected as material. After measuring the growth stress a breast height in the field, the trees were cut and taken back to the laboratory to process into small physical mechanical samples, which were taken back to France to measure colour, density, shrinkage and MOE, MOR. It shows that in poplar, the larger growth stress with tension wood occurrence is associated to smaller fiber saturation point and larger MOE or longitudinal shrinkage. For the 3 Poplar tree tested, the peripheral variation of density is small, while that of axial shrinkage is considerable and follows very closely that of the growth stress indicator (ICC). MOE, in the green state, had few variations for the Spanish poplars but exhibited some variation for the Chinese clone. It should be noted that MOE for the tension wood is nearly the same for the 3 clones: it is normal wood that is lower for I69, compared to other trees. Furthermore, green and dry MOE are very closely connected .

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