

PLANTED FOREST VALUE: TREE BREEDERS CAN ENABLE NEW MARKETS

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Since forest tree genetic improvement began in the 1950s, breeders have increased wood yields by selecting for fast early growth and resistance to fungal diseases. For southern pines, planting improved families and managing them with good silvicultural practices increases stem yields more than 10 fold. Widespread adoption of these systems has dramatically increased the wood supply and enabled traditional wood based industries to expand and also enabled new markets for wood. New markets such as engineered wood and most recently electricity, biofuel and chemicals have implemented new technologies to take advantage of the abundant supply of wood from young pine trees at predictable prices. Thus, breeders focus on increased volume has enabled new markets for wood. Given this success and the fact that current markets still only directly value stem diameter and volume/wet mass, make it difficult for breeders to focus on non growth traits like wood properties. Moreover, the long development and growth cycles, as well as large deployment scales complicate justifications for improving wood properties. To overcome these challenges, development cycle times need to be dramatically shortened and credible ways to value wood properties for growers and wood processors need to be developed. Recent advances in DNA marker technologies and analytical methods offer the potential to dramatically shorten breeding cycles. However, identifying specific wood properties that justify investment in accelerated breeding and biotechnology remains a significant challenge. Case studies for valuing changes in juvenile wood mechanical and chemical properties will be presented.