BIOTECHNOLOGY OF REPRODUCTIVE ONSET: A NEW ERA FOR ACCELERATED TREE BREEDING?

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When compared with many annual crop plants, tree domestication is in its infancy. One of the main reasons for the slow progress towards tree domestication is that the lengthy juvenile period prevents trees from early sexual reproduction that is needed to develop pedigreed offspring. Thus, the control of reproductive onset is of great scientific and commercial importance. Recent functional genomics studies have begun providing a framework for how first time and seasonal reproduction are regulated in poplar (*Populus* spp.). In particular, *FT* and *TFL* genes and their associated networks in signaling pathways are providing great insights into reproductive onset and seasonal cycles of reproduction. Our objective in this presentation is to update the community on how genetic, physiological, and environmental factors collectively regulate the onset of reproduction in poplar. The discussion will include how this knowledge can be used by breeders and biotechnologists to speed breeding to improve tree growth and development.