Genetic Diversity of Water Use Efficiecy in forest trees

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IUFRO 125th Anniversary congress 2017 - Side event

Seminar "Water use efficiency under drought"

18 September 2017

Centre Inra Grand Est - Nancy, Champenoux, France

Genetic diversity of Water use efficiency in forest trees

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Forest trees are organisms which can have very large geographic distributinos and therefore cover a large range of different environmental conditions. In forestry, comparative plantations have been used for a century to compare different provenances of trees for their growth. Such plantations have been used by ecophysiologists to use carbon stable isotopes to screen for variation in water use efficiency, and large population differences have been shown for many species, suggesting a genetic determinism for this traits and perhaps indicating local adaptations. Different crossings (open pollination, half-sibs, full-sibs) can be used to either estimate more precisely the genetic control on this trait (heritability) or to determine the genetic regions (QTL) as well as the genes underlying the observed variation. The running project H2Oak (https://www6.inra.fr/anr-h2oak/) takes this approach for *Q. robur L.* and *Q. petraea (Matt.) Liebl.* Recent advances will be shown and future approcahes will be discussed.