

NITROGEN METABOLISM IN FOREST TREES

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Forests are essential components of the ecosystems covering approximately one-third of the Earth's land area and playing a fundamental role in the regulation of terrestrial carbon sinks. Forest trees are also of significant economic importance, as they are used for timber and paper production worldwide. A sustainable management of forest resources is needed to preserve natural forest and to meet the increasing international demands in the production of wood and the other forest-derived products. New advances and developments in biotechnology will contribute to accelerate the domestication of important traits for forest productivity. It is critical to identify the fundamental constraints on forest productivity to addressing these constraints with modern genomic tools. Nitrogen availability extremely low in forest ecosystems, and consequently, forest trees have evolved adaptive mechanism and biotic interactions to guarantee the strict economy of this essential nutrient. Nitrogen assimilation and recycling play a key role in the tree growth and biomass production and we firmly believe that knowledge on nitrogen metabolism will lead to approaches aimed at increasing forest productivity. In our laboratory, we are interested in studying nitrogen metabolism and its regulation the conifer maritime pine (*Pinus pinaster* Aiton), a forest tree species of great economic and ecological importance in the Mediterranean area and relevant model for conifer genomic research in Europe.

Current research efforts are focused on improving the understanding of the response of conifer trees to ammonium availability and the transcriptional control of ammonium assimilation into amino acids. An overview and update of our research programme will be presented and discussed. Research supported by Spanish Ministry of Economy and Competitiveness and Junta de Andalucía (Grants BIO2012-33797, PLE2009-016 and research group BIO-114).