Séminaire Biologie des Plantes

Les séminaires ont lieu sur le Campus Montpellier SupAgro/INRA de La Gaillarde (2, place P. Viala Montpellier)

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Jeudi 17 novembre 2011
Salle 106 (Cœur d'Ecole) à 14h00

Alexander Gallé
(University of the Balearic Islands in Mallorca, Spain)

Leaf conductance for CO_2 diffusion – an update on its role during water stress and in controlling water use efficiency (WUE)

Leaf`s conductance for CO_2 diffusion is composed of stomatal (g_s) and mesophyll conductance (g_m). Despite the lack of knowledge about the factors controlling g_m, there is compelling evidence that g_m is finite and can change as rapid as g_s to varying environmental conditions. In fact, drought-induced limitation of photosynthesis can be strongly influenced by g_m, which makes g_m a key factor for the rate of photosynthetic recovery after relief of stress. Therefore, modifying the relationship between g_m and g_s provides the possibility to improve photosynthesis under sub-optimal growth conditions. Moreover, leaf intrinsic water use efficiency (WUE, i.e. carbon gain per unit water used) can be raised, as WUE depends on both, the ratio of g_m to g_s and on the ratio of net photosynthesis (A_N) to g_s. With regard to that and irrespectively of other approaches (e.g. improving Rubisco), WUE may be improved by i) increasing g_m while g_s remains unaltered, or by ii) maintaining g_m while g_s decreases.
Evidence for the latter scenario will be presented from data on mutants with altered stomatal responses to abscisic acid (ABA), which also present constitutive changes of maximum g_s. In addition, data from literature and unpublished results will be analyzed with regard to altered g_m/gs and A_N/g_s ratios among several species and growth forms, which also include aquaporin, carbonic anhydrase, chloroplast and mitochondrial re-arrangement mutant lines. Finally, the potential of increasing g_m/g_s ratios (via modifications of g_m, g_s or both) to improve WUE as well as its realization will be discussed.

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Séminaires prévus :
Jeudi 24 novembre : Sandrine Ruffel (contact : **{** HYPERLINK "mailto:ruffel@supagro.inra.fr" **}**)
Jeudi 8 décembre : Amandine Delteil (contact amandine.delteil@supagro.inra.fr)
Jeudi 15 décembre : Patrick Laufs (granier@supagro.inra.fr)