

From grapevines to extreme environments ... and back?

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Abstract (250 words)

I performed my PhD in grapevine physiology under the supervision of Dr. H. Medrano, standing in the vineyards from pre-dawn to sunrise during many hot, wet and sunny days with my colleagues J.M.E. and J.B. I also spent many days and nights facing ticks year-round working in Mediterranean macchias with J.Gu. and M.M. Later I was able to supervise PhD students on grapevines – like A.P. and M.T. – and on Mediterranean vegetation – like J.Gal. With the incorporation to the group of M.R.-C. ‘the puzzle’ was completed and, combining the aforementioned studies, we could conclude (more than 20 years ago) things like: (1) stomatal conductance is the best proxy for ‘water stress’ in studies on photosynthesis; (2) steady-state chlorophyll fluorescence retrieves photosynthesis under saturating light; (3) photoinhibition is not a major photosynthetic limitation under water stress; (4) mesophyll conductance instead is; and (5) mesophyll conductance is a major driver of leaf water use efficiency.

In view of these achievements which arose from the study of grapevines extended to other species, we realized that most current knowledge on plant ecophysiology is build on studies in temperate and Mediterranean species. Impelled especially by R.E.C. and in company of J.Gu., J.Gag., M-J.C-M., M.C., F.C and others we started studying plants in remote sites like Antarctica, Himalaya, Andes, etc ... What we found there and why it may imply the ‘and back’ to agriculture is the object of this talk, which is intended as a homage to my supervisor and friend Hipólito Medrano on his retirement.

Keywords: ecophysiology, photosynthesis, stress tolerance, mesophyll conductance