

Effects Of An Extended Drought Period On Grasslands At Various Altitudes In Switzerland: A Field Study.

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ABSTRACT

From recent investigations it can be concluded that extreme events (e.g. heat waves, extreme drought periods) will become more relevant in Central Europe during the next decades (Schär *et al.* 2004). The effects of an artificial drought period (installation of rain shelters for 10 weeks) on physiological traits of representative grasslands species was investigated at two altitudes (400 and 1000 m a. s. l.) in Switzerland. The net assimilation rate (P_n) and stomatal conductance (g_s) were affected in *Phleum pratense* and in other gramineae at both altitudes, while these effects were in dicots (*Rumex obtusifolius*, *Trifolium repens*) relevant only at the higher altitude. The decline of P_n was paralleled by a decrease of g_s , but the intrinsic efficiency of photosystem II was not affected by the treatment. The still high P_n of *Rumex* in lowland under drought may explain the dominance of this plant at the end of the drought period. Differences in the species composition and differences in reversible and irreversible damages caused by drought in the various species may contribute to the overall response of grasslands in a site-specific manner.