

S7/P77: LETTUCE (*LACTUCA SATIVA*) RESPONSE TO ABIOTIC STRESS CAUSED BY AS, CU, CD AND NACL

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Lettuce (*Lactuca sativa*) is a highly consumed vegetable and one of the most popular salad crops in the whole world. Its global production has been increasing over the years, but as this crop can accumulate several potentially toxic elements (PTE), it can be a cause for concern regarding food safety issues.

We analysed the effect of different PTE, like As, Cu, Cd and NaCl on the growing performance of lettuce, over time (up to a maximum of 42 days of growth under toxic conditions). The concentrations used ([As]=50 µM, [Cu]=100 µM, [Cd]=100 µM, [NaCl]=25 mM) were chosen to induce a detectable effect in the plant metabolism (although sometimes the effects were not visible) but not to cause its death.

As expected, the content in the PTE increased over time, although for the samples collected at the last 2 time periods (day 35 and 42) their concentrations tended to stabilize. Lettuce plants were able to grow under these conditions for the described period and remained visibly healthy except for the ones growing under NaCl, where stunted growth and chlorosis were apparent.

We measured induced oxidative stress by the levels of hydrogen peroxide detected. For NaCl contamination, a decrease in H₂O₂ was detected while for As, Cu and Cd the levels of H₂O₂ increased with time, compared to the control and this could be due to the higher levels of these metals in the plant that overwhelmed antioxidative stress defensive mechanisms.

To evaluate lipid peroxidation the MDA content was measured. An increase in MDA levels was only detected for NaCl (earlier in the treatment) and Cu (only after day 35). Chlorophyll content also decreased for all PTE, mainly after 28 days of growth under contamination.

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S1/P79: IMPACT OF CLIMATE CHANGE ON A HIGH MOUNTAIN ECOTONE IN TENERIFE. CANARY ISLANDS.

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This study aims to analyse the ecophysiological behavior of species which share with *Pinus canariensis* the timberline ecotone in Tenerife (*Spartocytisus supranubius*, *Adenocarpus viscosus* var. *viscosus*, *Descourainia bourgeana*, *Pterocephalus lasiospermus*, *Erysimum scoparium* var. *scoparium* and *Scrophularia glabrata*). These transition areas are highly sensitive to environmental changes and their study gives great information for the assessment of climate change. We study these species living in this area as part of the pine forest understory and also in an adjacent area without the pine forest influence. It seeks to determine what kind of strategies does each of the studied species to withstand extreme temperatures, excessive radiation and water stress. The study was done in an open *P. canariensis* forest growing at 2070 m a.s.l. in Teide National Park, Tenerife, Canary Islands. Meteorological parameters were monitored continuously in a clearing at the edge of the experimental plot, besides differences in microclimatic conditions were monitored in both sites (open area and understory) with minikin sensors. The field site is characterized by a Mediterranean climate with an alternation of a warm and dry period from June to September and a cold and wet period from October to May. We present here the results of morphology, chlorophyll fluorescence parameters, tocopherol and photosynthetic pigment concentrations (HPLC analysis) measured during a year. The parameters evaluated show thick leaves with small leaf area, high dry matter content and small values of SLA which correspond to alpine plants. These characters are modulated by climate conditions in the understory with significant differences. The xanthophylls cycle was operative in sunny days in all species as an energy dissipation mechanism to avoid damage to the photosynthetic apparatus. When meteorological conditions were more severe this cycle was more marked and the fluorescence parameters indicated the beginning of small disturbances. The carotenoids/chlorophylls ratio was high, typical of sun exposed leaves. These are preliminary results of a greater study in which we tried to obtain knowledge of the behaviour of the studied species in relation to meteorological constrains in order to determine what might happen to these plants according to the climatic predictions for the islands along the 21st century.

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