

Do heat and smoke increase emergence of exotic and native plants in the matorral of central Chile?

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Abstract

We studied the effect of heat shock and wood-fueled smoke on the emergence of native and exotic plant species in soil samples obtained in an evergreen shrubland of central Chile, located on the eastern foothills of the Coastal Range of Lampa. Immediately after collection samples were dried and stored under laboratory condition. For each two transect, 10 samples were randomly chosen, and one of the following treatments was applied: 1) Heat-shock treatment. 2) Plant-produced smoke treatment. 3) Combined heat-and-smoke treatment. 4) Control, corresponding to samples not subjected to treatment. Twenty-three species, representing 12 families, emerged from the soil samples. The best-represented families were Poaceae and Asteraceae. All of the emerged species were herbs, 21 were annuals, and 14 were exotic to Chile. Fire-related triggers used in this study did not increase the emergence and/or abundance of exotic species with respect to natives in soil samples. Interestingly, this study provides evidence that heat-shock can increase the emergence of native herbs.