

Effect of normal and elevated CO₂ levels on the growth of some invasive weeds in Turkey

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Climatic changes can severely impact the biological and physical components of our earth. Invasive species are considered a threat to native species owing to their competitiveness. The changing climate particularly the increasing CO₂ levels in the atmosphere can increase the proliferation of invasive weeds. The information regarding the response of invasive weeds to increasing CO₂ levels will be useful for formulating the management plans for these species. We supposed that the increasing atmospheric CO₂ can improve growth of invasive weeds in Turkey. The effect of normal (400 ppm) and elevated CO₂ (800 ppm) levels was evaluated on the growth and dry matter accumulation of some important invasive weeds in Turkey. The invasive species tested included *Avena barbata*, *Bromus tectorum*, *Capsella bursa-pastoris*, *Poa bulbosa*, and *Carduus nutans*. These invasive weeds were grown under normal and elevated CO₂ in a controlled environment glasshouse and the data regarding the plant height, chlorophyll, fresh weight, dry weight and number of leaves per plant was recorded. The results indicated that *C. nutans* and *P. bulbosa* were not affected by increased CO₂ levels in terms of plant height, chlorophyll, fresh weight, dry weight and number of leaves. *C. bursa-pastoris* was negatively affected by the increased CO₂ levels having lower height, fresh and dry weight at higher CO₂. *A. barbat* and *B. tectorum* were positively influenced by the increased CO₂ level. A significant increase in the dry matter accumulation of both weeds was recorded when grown under the elevated CO₂ levels. In conclusion, the invasive species will respond variably to the changing climate. Hence, some of these will not be affected, the others will have negative effects on their growth, and some will increase their growth in

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response to changing climate. The information is important for managing the invasive weed species under the scenario of changing climate, especially the increasing CO₂ levels in the atmosphere.

Keywords: Invasive weeds; climate change; growth; dry matter.

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