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Responses of subalpine *Betula albo-sinensis* soil invertase activity to elevated atmospheric temperature and CO_2 concentration in Western Sichuan

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As an important component of forest ecosystem, soil enzymes play a vital part in biogeochemical cycle and below-ground ecological processes. Therefore, the responses of soil enzymes to global climate change, mainly due to deforestation and fossil fuel burning, attract more and more attention. Moreover, it has been proven that the responses of belowground and root development processes to climate vary with plant species and communities.

Taking the soil planted with subalpine *Betula albo-sinensis* seedlings in Western Sichuan as test object, this paper studied the responses of its invertase activity to elevated temperature (ET), elevated atmospheric CO_2 concentration (EC), and their combination (ETC) using a set of well designed close-top growth chambers. The results indicated that ET increased the soil invertase activity to a certain extent, being significant in May, June, September and October. EC also had a significant positive effect on the enzyme activity from May to October ($P < 0.05$), which was higher in rhizosphere than in non-rhizosphere soil, and in those planted with high density *B. albo-sinensis*. The response of soil invertase activity to ETC and shading differed with month, planting density of *B. albo-sinensis*, and distribution pattern of the enzyme.