Plants in Alpine regions: cell physiology of adaption and survival strategies

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Abstrak

This book brings together experts from different fields, who used a broad spectrum of methods to investigate the physiological and cellular adaptation of alpine plants from the tree line to the upper limits. Some articles link alpine plant physiology with physiological adaptations observed in polar plants.
Tolerance against often high light intensities (including UV), cold or freezing temperatures, in addition to the need for fast tissue development, flowering, and propagation that is managed by alpine plants are to some extent underrepresented in recent research. This volume considers ice formation and winter conditions in alpine plants, the fate of cryophilic algae and microorganisms, cell structural adaptations, sexual reproduction in high altitudes, the physiology of photosynthesis, antioxidants, metabolites, carbon and nitrogen, and the influences of microclimate (temperatures at the plant level, heat tolerance), UV light, weather and ozone. Further information on life processes in alpine extreme environments may additionally yield new insights into the range of adaptation processes in lowland plants.