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Appendix S3. Details of the field studies reporting the effects of various levels of water availability on ecosystemic K cycles across natural gradients or from climatic manipulation.

Site, community, species	**Study type**	**Main results (drought effects)**	**References**
Denmark, *Zea mays* cropland	Water availability manipulation	Decreases in plant K concentration	Bahrun *et al*. (2002)
China, *Zea mays* cropland	Water availability manipulation	Decreases in plant K uptake	Ge *et al*. (2012)
Iran, *Beta vulgaris* cropland	Water availability manipulation	No changes in plant K concentrations	Mahmoodi *et al*. (2008)
Czech Republic, *Picea abies* forest	Water availability manipulation	Decreases in foliar K concentrations	Grabarova & Martinkova (2001)
Tennessee, deciduous forest, soil	Water availability manipulation	Decreases in soil exchangeable K	Johnson *et al*. (2008)
Catalonia, Mediterranean shrubland, *Erica multiflora*	Water availability manipulation	Higher foliar K concentrations in summer	Rivas-Ubach *et al*. (2012)
Catalonia, Mediterranean forest, *Quercus ilex*	Water availability manipulation	Higher foliar K concentrations in summer	Rivas-Ubach *et al*. (2014)
Catalonia, Mediterranean shrubland, *Erica multiflora* and *Globularia alypum*	Water availability manipulation	Decreases in foliar K concentrations	Sardans *et al*. (2008)
Catalonia, Mediterranean forest, *Quercus ilex, Phillyrea latifolia, Arbutus unedo*	Water availability manipulation	No effects on K contents and concentrations in plants Increases of total soil K concentration Decreases of soluble K concentrations	Sardans & Peñuelas (2007)
Catalonia, Mediterranean forest, *Hypnum cupresiforme*	Water availability manipulation	Drought increased K concentration	Sardans & Peñuelas (2008)
Tibet, alpine wetland	Natural gradient	Soil moisture was negatively related with soil K availability	Wu *et al*. (2013)
New Hampshire, deciduous forest	Field observation	Reduction of the losses of K by leaching	Likens *et al*. (1994)