

Appendix S2. Summary of the studies that have investigated the limiting role of K on plant growth under field conditions in grasslands and forests.

Grasslands				
Species	Site	Study type	Growth response to K	Reference
<i>Lolium perenne</i>	USA	Field fertilization	=	Ebdon <i>et al.</i> (2013)
<i>Festuca idahoensis</i> , <i>Ayropyron spicatum</i>	USA	Field fertilization	=	Krueger-Mangold <i>et al.</i> (2004)
<i>Carex sempervivens</i> , <i>Potentilla aurea</i>	Switzerland	Field fertilization	↑	Bassin <i>et al.</i> (2012)
<i>Eriophorum vaginatum</i>	Switzerland	Field observation and field fertilization	↑	Siegenthaler <i>et al.</i> (2013)
<i>Agrostis capillaris</i>	Greece	Field fertilization	=	Elisseou <i>et al.</i> (1995)
<i>Puccinellia maritime</i> , <i>Festuca rubra</i> , <i>Suaeda maritime</i> , <i>Spergularia maritime</i>	Germany	Field fertilization	=	Kiehl <i>et al.</i> (1997)
<i>Alopecurus pratensis</i> , <i>Anthoxanthum odoratum</i> , <i>Bellis perennis</i> , <i>Fritillaria meleagris</i> , <i>Plantago lanceolata</i> , <i>Poa trivialis</i> , <i>Ranunculus sp.</i> , <i>Rumex acetosa</i> , <i>Taraxacum sp.</i> , <i>Trifolium sp.</i>	Netherlands	Field fertilization	↑	Loeb <i>et al.</i> (2009)
<i>Meadow community</i>	Estonia	Field fertilization	↑	Sammul <i>et al.</i> (2003)
Forests				
Species and forest type	Site	Study type	Growth response to K	Reference
<i>Populus balsamifera x simonii</i> , <i>Populus deltoids x petrowskyana</i> . Boreal forest	Canada	Field fertilization	↑ or =	Des Roches <i>et al.</i> (2006)
<i>Populus sp.</i> Boreal forest	Canada	Field fertilization	=	Guillemette & DesRochers (2008)
<i>Acer saccharum</i> . Temperate forest	Canada	Field fertilization	↑	More <i>et al.</i> (2000)
<i>Acer saccharum</i> . Temperate forest	Canada	Field fertilization	↑	Ouimet & Fortin (1992)
<i>Picea glauca</i> . Boreal forest	Canada	Field fertilization	↑	Ouimet <i>et al.</i> (2013)
<i>Picea engelmannii</i> . Boreal forest	Canada	Field fertilization	=	Van den Driessche & Ponsford (1995)
<i>Pinus resinosa</i> . Temperate forest	USA	Field fertilization	↑	Comerford <i>et al.</i> (1980)
<i>Abies grandis</i> , <i>Picea</i>	USA	Field fertilization	↑ or =	Garrison <i>et al.</i>

<i>contorta</i> , <i>Pseudotsuga</i> <i>menziesii</i> . Boreal and temperate forest				(2000)
<i>Pinus echinata</i> . Temperate forest	USA	Field fertilization	↑	Gleeson & Good (2003)
<i>Pinus resinosa</i> . Temperate forest	USA	Field fertilization	↑	Heiberg <i>et al.</i> (1964)
<i>Acer saccharum</i> , <i>Acer</i> <i>rubrum</i> , <i>Betula</i> <i>alleghaniensis</i> . Temperate forest	USA	Field fertilization	↑ or =	Lea <i>et al.</i> (1980)
<i>Pinus resinosa</i> . Temperate forest	USA	Field fertilization	↑	Kawana <i>et al.</i> (1969)
<i>Juglans regia</i> . Temperate forest	USA	Field fertilization	=	Ponder (1998)
<i>Pseudotsuga</i> <i>menziesii</i> . Boreal forest	USA	Field fertilization	=	Shaw <i>et al.</i> (1998)
<i>Pinus resinosa</i> . Temperate forest	USA	Field fertilization	↑	Shepard & Mitchell (1990)
<i>Pinus rigida</i> . Temperate forest	USA	Field observation	↑	Voigt <i>et al.</i> (1964)
<i>Pseudotsuga</i> <i>menziesii</i> . Boreal forest	USA	Field fertilization	=	White <i>et al.</i> (2012)
<i>Acer saccharum</i> . Temperate forest	USA	Field fertilization	↑	Wilmot <i>et al.</i> (1996)
<i>Pinus taeda</i> Sub-tropical forest	Mexico	Field fertilization	=	Lazaro-Dzul <i>et al.</i> (2012)
<i>Iriartea deltoidea</i> , <i>Faramea</i> <i>parvibractea</i> , <i>Warszewiczia</i> <i>coccinea</i> . Tropical forest	Costa Rica	Field observation	↑ or =	Baribault <i>et al.</i> (2012)
<i>Alseis blackiana</i> , <i>Desmopsis</i> <i>panamensis</i> , <i>Heisteria</i> <i>concinna</i> , <i>Sococea</i> <i>affinis</i> , <i>Tetragastris</i> <i>panamensis</i> . Tropical forest	Panama	Field fertilization	↑	Santiago <i>et al.</i> (2012)
<i>Cavanillesia</i> <i>platanifolia</i> and other dominant tree species. Rainforest	Panama	Field fertilization	↑	Wright <i>et al.</i> (2011)
<i>Eucalyptus grandis</i> . Tropical forest	Brazil	Field fertilization	↑	Almeida <i>et al.</i> (2010)
<i>Eucalyptus grandis</i> . Tropical forest	Brazil	Field fertilization	↑	Epron <i>et al.</i> (2011)
<i>Eucalyptus grandis</i> . Tropical forest	Brazil	Field fertilization	↑	Sette <i>et al.</i> (2010)
<i>Eucalyptus grandis</i> . Tropical forest	Brazil	Field fertilization	↑	Laclau <i>et al.</i> (2009)
<i>Pinus sylvestris</i> Temperate forest	Netherlands	Field fertilization	↑	Arnold & Vandiest (1993)
<i>Picea sitchensis</i> . Boreal forest	Scotland	Field fertilization	↑	Bradbury & Malcolm (1977)

<i>Betula pendula</i> . Temperate forest	Sweden	Field fertilization	↑	Ericsson & Kähr (1993)
<i>Pinus brutia</i> . Temperate forest	Greece	Simulated K deficiency	=	Hanley & Fenner (1997)
<i>Pinus sylvestris</i> . Boreal forest	Finland	Field fertilization	↑	Holopainen & Nygren (1989)
<i>Picea abies</i> , <i>Pinus sylvestris</i> . Boreal forest	Sweden	Field fertilization	=	Jacobson & Petterson (1999)
<i>Pinus sylvestris</i> . Cold temperate forest	Sweden	Field fertilization	↑	Sikström <i>et al.</i> (2010)
<i>Pinus radiata</i> . Temperate forest	Australia	Field fertilization	↑	Smethurst <i>et al.</i> (2007)
<i>Pinus pinaster</i> . Temperate forest	France	Simulated K deficiency	↑	Triboulot <i>et al.</i> (1997)
<i>Pinus sylvestris</i> , <i>Fagus sylvatica</i> . Temperate-boreal forest	Germany	Field fertilization	↑	Uebel & Heinsdorf (1997)
<i>Picea abies</i> . Temperate forest	Denmark	Field fertilization	↑ or =	Vejre <i>et al.</i> (2001)
<i>Pinus sylvestris</i> . Boreal forest	Sweden	Field fertilization	↑	Wallander & Wickman (1999)
<i>Eucalyptus grandis</i> Tropical forest	Zimbabwe	Field fertilization	↑	Gotore <i>et al.</i> (2014)
<i>Pinus patula</i> . Tropical forest	Zimbabwe	Field fertilization	=	Gotore <i>et al.</i> (2014)
<i>Pinus patula</i> . Tropical forest	South Africa	Field fertilization	↑	Crous <i>et al.</i> (2009)
<i>Dryobalanops lanceolata</i> . Tropical forest	Borneo	Field Fertilization	↑	Brearley (2005)
<i>Pinus radiata</i> . Temperate forest	New Zealand	Field fertilization	↑	Sun & Payn (1999)
<i>Ceriops tagal</i> , <i>Avicenna marina</i> , <i>Rhizophora stylosa</i> . Mangrove forest	Australia	Field fertilization	↑	Yates <i>et al.</i> (2002)