S2 Table: Overview of all effect sizes (correlations) mentioned in studies of root failure (Note: factors can be labelled horizontal and vertical)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Root failure | Variables1 | Anchorage strength  | Root depth | Root failure | Root spread | Root soil plate depth | Root soil plate length | Root volume | Soil type | Stem volume | Turning moment | vertical radius root plate (width) |
| Author(year) | Species |  |  |  |  |  |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Pinus contorta Bol.* | Age |  |  |  | 0.659(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Pinus contorta Bol.* | Age |  |  |  | 0.427(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Pseudotsuga menziesii (Mirb)* | Age |  |  |  | 0.500(< 0.05) |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Pinus sylvestris L.* | Angle of stem at maximum moment applied |  |  | -0.513(< 0.01) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Picea abies L. Karst.* | Angle of stem at maximum moment applied |  |  | -0.406(< 0.05) |  |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Alnus rubra Bong.*  | Average branch |  |  |  | 0.518(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Pseudotsuga menziesii (Mirb)* | Average branch |  |  |  | 0.567(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Thuja plicata Donn.*  | Average branch |  |  |  | 0.594(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Tsuga heterophylla (Raf.) Sarg.* | Average branch |  |  |  | 0.661(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Alnus rubra Bong.*  | Average root diameter |  |  |  | 0.260(> 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Pseudotsuga menziesii (Mirb)* | Average root diameter |  |  |  | 0.282(< 0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Thuja plicata Donn.*  | Average root diameter |  |  |  | 0.182(> 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Tsuga heterophylla (Raf.) Sarg.* | Average root diameter |  |  |  | 0.208(> 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), Canada | *Pseudotsuga menziesii (Mirb)* | Bark thickness |  |  |  | 0.512(< 0.05) |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Acer rubrum L.*  | Branch crown radius |  |  |  | 0.97(< 0.01) |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Fraxinus pennsylvanica Marsh.*  | Branch crown radius |  |  |  | 0.99(< 0.01) |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Gleditsia triacanthos var. Inermis L. C.K. Schneid.*  | Branch crown radius |  |  |  | 0.99(< 0.01) |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Magnolia grandiflora L.* | Branch crown radius |  |  |  | 0.98(< 0.01) |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Populus × generosa A.Henry* | Branch crown radius |  |  |  | 0.74(< 0.05) |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Quercus virginiana Mill.*  | Branch crown radius |  |  |  | 0.23(> 0.05) |  |  |  |  |  |  |  |
| (Mueller & Cline, 1958), USA | *Prunus serotina Schur.; Ulmus americana L., Acer sacharum Marsh.; Liriodendron tulipifera L.* | Combined calcareous till |  | -0.426(>0.05) |  | 0.732(< 0.01) |  |  | 0.656(< 0.01) |  |  |  |  |
| (Mueller & Cline, 1958), USA | *Prunus serotina Schur.; Ulmus americana L., Acer sacharum Marsh.; Liriodendron tulipifera L.* | Combined fragipan |  | 0.910(< 0.01) |  | 0.556(< 0.05) |  |  | 0.639(< 0.05) |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Pinus sylvestris L.* | Crown area |  |  | 0.875(< 0.01) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Picea abies L. Karst.* | Crown area |  |  | 0.893(< 0.01) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Betula spp.* | Crown area |  |  | 0.827(< 0.05) |  |  |  |  |  |  |  |  |
| (Stokes et al., 2007), France | *Fagus sylvatica L.* | Crown biomass (kg) |  |  |  |  |  |  |  |  |  | 0.8124(< 0.027) |  |
| (Stokes et al., 2007), France | *Picea alba Mill.* | Crown biomass (kg) |  |  |  |  |  |  |  |  |  | 0.9592(< 0.002) |  |
| (Smith, 1964), USA | *Alnus rubra Bong.*  | Crown length |  |  |  | 0.407(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pseudotsuga menziesii (Mirb)* | Crown length |  |  |  | 0.546(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Thuja plicata Donn.*  | Crown length |  |  |  | 0.545(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Tsuga heterophylla (Raf.) Sarg.* | Crown length |  |  |  | 0.659(0.01) |  |  |  |  |  |  |  |
| (Danjon, Fourcaud, & Bert, 2005), France | *Pinus pinaster Ait.* | Crown ratio |  |  |  |  |  |  |  |  | 0.62(<0.05) |  |  |
| (Smith, 1964), USA | *Picea glauca (Moench) Voss* | Crown width |  |  |  | 0.9476(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pinus contorta Bol.* | Crown width |  |  |  | 0.9359(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pinus contorta Bol.* | Crown width |  |  |  | 0.711(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pinus contorta Bol.* | Crown width |  |  |  | 0.707(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pinus contorta Bol.* | Crown width |  |  |  | 0.505(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pinus ponderosa Lawsoniana*  | Crown width |  |  |  | 0.9028(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pseudotsuga menziesii (Mirb)* | Crown width |  |  |  | 0.7301(0.01) |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Acer rubrum L.*  | DBH |  |  |  | 0.82(0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Alnus rubra Bong.*  | DBH |  |  |  | 0.610(0.01) |  |  |  |  |  |  |  |
| (Gerhold & Johnson, 2003), USA | *Amelanchier 'Cumulus'* | DBH |  | 0.5477(0.0001) |  | 0.8718(< 0.05) |  |  |  |  |  |  |  |
| (Gerhold & Johnson, 2003), USA | *Amelanchier 'Snowcloud'* | DBH |  | 0.5477(0.0001) |  | 0.8718(< 0.05) |  |  |  |  |  |  |  |
| (Gerhold & Johnson, 2003), USA | *Amelanchier, Malus, Pyrus, Syringa* | DBH |  | 0.5477(0.0001) |  | 0.8718(< 0.05) |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Betula spp.* | DBH |  |  | 0.809(< 0.05) |  |  |  |  |  |  |  |  |
| (Stokes et al., 2007), France | *Fagus sylvatica L.* | DBH |  |  |  |  |  |  |  |  |  | 0.8718(< 0.011) |  |
| (Gilman, 1989), USA | *Fraxinus pennsylvanica Marsh.* | DBH |  |  |  | 0.97(0.01) |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Gleditsia triacanthos var. Inermis L. C.K. Schneid.*  | DBH |  |  |  | 0.79(0.05) |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Magnolia grandiflora L.*  | DBH |  |  |  | 0.99(0.01) |  |  |  |  |  |  |  |
| (Gerhold & Johnson, 2003), USA | *Malus 'Harvest Gold'®* | DBH |  | 0.5477(0.0001) |  | 0.8485(< 0.05) |  |  |  |  |  |  |  |
| (Gerhold & Johnson, 2003), USA | *Malus 'Professor Sprenger'* | DBH |  | 0.5477(0.0001) |  | 0.8485(< 0.05) |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Picea abies (Karst) K.* | DBH |  |  | 0.932(< 0.01) |  |  |  |  |  |  |  |  |
| (Stokes et al., 2007), France | *Picea alba Mill.* | DBH |  |  |  |  |  |  |  |  |  | 0.8944(< 0.017) |  |
| (Smith, 1964), USA | *Pinus contorta Bol.* | DBH  |  |  |  | 0.694(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pinus contorta Bol.* | DBH  |  |  |  | 0.458(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pinus contorta Bol.* | DBH  |  |  |  | 0.490(< 0.05) |  |  |  |  |  |  |  |
| (Danjon et al., 2005), France | *Pinus pinaster Ait.* | DBH |  |  |  |  |  |  |  |  | 0.94(<0.0001) |  |  |
| (Achim & Nicoll, 2009), USA | *Picea sitchensis (Bong.) Carr.* | DBH |  |  |  |  |  |  |  | 0.6856(0.005) |  |  |  |
| (Peltola et al., 2000), Finnland | *Pinus sylvestris L.* | DBH |  |  | 0.896(< 0.01) |  |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Populus × generosa*  | DBH |  |  |  | 0.83(0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pseudotsuga menziesii (Mirb)* | DBH |  |  |  | 0.593(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pseudotsuga menziesii (Mirb)* | DBH |  |  |  | 0.680(< 0.05) |  |  |  |  |  |  |  |
| (Gerhold & Johnson, 2003), USA | *Pyrus calleryana 'Autumn Blaze'* | DBH |  | 0.5477(0.0001) |  |  |  |  |  |  |  |  |  |
| (Gerhold & Johnson, 2003), USA | *Pyrus calleryana 'Chanticleer'®*  | DBH |  | 0.5477(0.0001) |  |  |  |  |  |  |  |  |  |
| (Gilman, 1989), USA | *Quercus virginiana Mill.* | DBH |  |  |  | 0.41(> 0.05) |  |  |  |  |  |  |  |
| (Gerhold & Johnson, 2003), USA | *Syringa reticulata 'Ivory Silk'* | DBH |  | 0.5477(0.0001) |  | 0.8832(< 0.05) |  |  |  |  |  |  |  |
| (Gerhold & Johnson, 2003), USA | *Syringa reticulata 'Ivory Silk'* | DBH |  | 0.5477(0.0001) |  | 0.8832(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Thuja plicata Donn.*  | DBH |  |  |  | 0.600(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Tsuga heterophylla (Raf.) Sarg.* | DBH |  |  |  | 0.714(0.01) |  |  |  |  |  |  |  |
| (Lundström, Jonsson, et al., 2007), Switzerland | *Picea abies (Karst.) Mill* | DBH High elevation site | 0.9644(< 0.001) |  |  |  | 0.4899(< 0.001) | 0.5196(< 0.001) |  |  |  |  | 0.5477(< 0.001) |
| (Lundström, Jonsson, et al., 2007), Switzerland | *Picea abies (Karst.) Mill* | DBH Low elevation site | 0.9695(< 0.001) |  |  |  | 0.3606(< 0.001) | 0.4690(< 0.001) |  |  |  |  | 0.4(< 0.001) |
| (Lundström, Jonas, et al., 2007), Switzerland | *Abies alba Mill* | DBH² |  |  |  |  |  |  |  |  |  | 0.8000(< 0.001) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Picea abies**L. Karst, Abies alba Mill, Pinus**sylvestris L.* | DBH² |  |  |  |  |  |  |  |  |  | 0.8426(< 0.001) |  |
| (Stokes et al., 2007), France | *Fagus sylvatica L.* | DBH² |  |  |  |  |  |  |  |  |  | 0.8426(< 0.016) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Picea abies L. Karst* | DBH² |  |  |  |  |  |  |  |  |  | 0.8544(< 0.001) |  |
| (Stokes et al., 2007), France | *Picea alba Mill.* | DBH² |  |  |  |  |  |  |  |  |  | 0.9165(< 0.010) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Pinus sylvestris L.* | DBH² |  |  |  |  |  |  |  |  |  | -0.7141(< 0.05) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Abies alba Mill* | DBH²H | 0.8426(< 0.001) |  |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonas, et al., 2007), Switzerand | *Picea abies**L. Karst, Abies alba Mill, Pinus**sylvestris L.* | DBH²H | 0.8718(< 0.001) |  |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Picea abies L. Karst.* | DBH²H | 0.8718(< 0.001) |  |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Pinus sylvestris L.* | DBH²H | -0.3742(< 0.05) |  |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonsson, et al., 2007), Switzerand | *Picea abies (Karst.) Mill* | DBH²xH | 0.8944(<0.001) |  |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonsson, et al., 2007), Switzerland | *Picea abies (Karst.) Mill* | DBH²xH low elevation site | 0.9487(< 0.001) |  |  |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Pinus sylvestris L.* | DBH²xH |  |  | 0.9834(< 0.0001) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Picea abies L. Karst.* | DBH²xH |  |  | 0.9726(< 0.0001) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Betula spp.* | DBH²xH |  |  | 0.9576(< 0.0001) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Pinus sylvestris L.* | Height |  |  | 0.752(< 0.01) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Picea abies L. Karst.* | Height |  |  | 0.634(< 0.01) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Betula spp.* | Height |  |  | 0.665(> 0.05) |  |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Alnus rubra Bong.*  | Height |  |  |  | 0.331(> 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pinus contorta Bol.* | Height |  |  |  | 0.701(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pinus contorta Bol.* | Height |  |  |  | 0.450(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pseudotsuga menziesii (Mirb)* | Height |  |  |  | 0.356(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pseudotsuga menziesii (Mirb)* | Height |  |  |  | 0.616(< 0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Thuja plicata Donn.*  | Height |  |  |  | 0.375(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Tsuga heterophylla (Raf.) Sarg.* | Height |  |  |  | 0.498(0.01) |  |  |  |  |  |  |  |
| (Stokes et al., 2007), France | *Fagus sylvatica* | HxDBH² m³ |  |  |  |  |  |  |  |  |  | 0.8000(< 0.030) |  |
| (Stokes et al., 2007), France | *Picea alba Mill.* | HxDBH² m³ |  |  |  |  |  |  |  |  |  | 0.9381(< 0.005) |  |
| (Peltola et al., 2000), France | *Pinus sylvestris L.* | H/DBH |  |  | 0.818(< 0.01) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), France | *Picea abies L. Karst.* | H/DBH |  |  | 0.362(> 0.05) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), France | *Betula spp.* | H/DBH |  |  | 0.368(> 0.05) |  |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Alnus rubra Bong.*  | Longest branch |  |  |  | 0.377(0.05) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Pseudotsuga menziesii (Mirb)* | Longest branch |  |  |  | 0.534(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Thuja plicata Donn.*  | Longest branch |  |  |  | 0.544(0.01) |  |  |  |  |  |  |  |
| (Smith, 1964), USA | *Tsuga heterophylla (Raf.) Sarg.* | Longest branch |  |  |  | 0.652(0.01) |  |  |  |  |  |  |  |
| (Nicoll & Ray, 1996), UK | *Picea sitchensis (Bong.) Carr.* | Mean winter table depth |  |  |  | (< 0.001) |  |  |  |  |  | 0.4472(< 0.05) |  |
| (Danjon et al., 2005), France | *Pinus pinaster Ait.* | Root grafts relative surface |  |  |  |  |  |  |  |  | 0.53(<0.05) |  |  |
| (Danjon et al., 2005), France | *Pinus pinaster Ait.* | Root length |  |  |  |  |  |  |  |  | 0.89(<0.0001) |  |  |
| (Danjon et al., 2005), France | *Pinus pinaster Ait.* | Root maximal radial distance |  |  |  |  |  |  |  |  | 0.67(<0.01) |  |  |
| (Danjon et al., 2005), France | *Pinus pinaster Ait.* | Root numer |  |  |  |  |  |  |  |  | 0.94(<0.0001) |  |  |
| (Kamimura et al., 2012), Japan | *Chamaecyparis obtuse**(Sieb. Et Zucc.) Endl.* | Root plate area |  |  |  |  |  |  |  |  | 0.789(0.011) |  |  |
| (Kamimura et al., 2012), Japan | *Chamaecyparis obtuse**(Sieb. Et Zucc.) Endl.* | Root plate volume |  |  |  |  |  |  |  |  | 0.691(0.039) |  |  |
| (Peltola et al., 2000), Finnland | *Pinus sylvestris L.* | Root-soil plate depth |  |  | 0.693(< 0.01) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Picea abies L. Karst.* | Root-soil plate depth |  |  | 0.495(< 0.05) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Betula spp.* | Root-soil plate depth |  |  | 0.718(< 0.05) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Pinus sylvestris L.* | Root-soil plate radius |  |  | 0.476(< 0.05) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Picea abies L. Karst.* | Root-soil plate radius |  |  | 0.606(> 0.05) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Betula spp.* | Root-soil plate radius |  |  | 0.661(> 0.05) |  |  |  |  |  |  |  |  |
| (Danjon et al., 2005), France | *Pinus pinaster Ait.* | Root volume |  |  |  |  |  |  |  |  | 0.88(<0.0001) |  |  |
| (Faulkner & Malcolm, 1972), UK | *Calluna vulgaris L.* | Rootable volume |  |  |  |  |  |  |  |  |  | 0.72111(< 0.01) |  |
| (Mueller & Cline, 1959), USA | *Prunus serotina Schur., Ulmus americana L.; Acer sacharum Marsh.; Liriodendron tulipifera L.* | Soil wetness calcareous till |  | -0.422(> 0.05) |  | 0.519(< 0.05) |  |  | 0.313(> 0.05) |  |  |  |  |
| (Mueller & Cline, 1959), USA | *Prunus serotina Schur., Ulmus americana L.; Acer sacharum Marsh.; Liriodendron tulipifera L.* | Soil wetness fragipan |  | -0.907(< 0.01) |  | -0.112(> 0.05) |  |  | -0.509(< 0.05) |  |  |  |  |
| (Danjon et al., 2005), France | *Pinus pinaster Ait.* | Stem height |  |  |  |  |  |  |  |  | 0.61(<0.05) |  |  |
| (Nicoll & Ray, 1996), UK | *Picea sitchensis (Bong.) Carr.* | Stem mass |  | < 0.001 |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonsson, et al., 2007), Switzerland | *Picea abies (Karst.) Mill* | Stem mass (kg) high elevation site | 0.9592(< 0.001) |  |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonsson, et al., 2007), Switzerland | *Picea abies (Karst.) Mill* | Stem mass (kg) low elevation site | 0.9644(< 0.001) |  |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonsson, et al., 2007), Switzerland | *Picea abies (Karst.) Mill* | Stem volume high elevation site | 0.9592(<0.001) |  |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonsson, et al., 2007), Switzerland | *Picea abies (Karst.) Mill* | Stem volume low elevation site | 0.9644(< 0.001) |  |  |  |  |  |  |  |  |  |  |
| (Faulkner & Malcolm, 1972), UK | *Calluna vulgaris L.* | Stem weight |  |  |  |  |  |  |  |  |  | 0.9381(< 0.01) |  |
| (Peltola et al., 2000), Finnland | *Pinus sylvestris L.* | Stem weight |  |  | 0.972(< 0.01) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Picea abies L. Karst.* | Stem weight |  |  | 0.974(< 0.01) |  |  |  |  |  |  |  |  |
| (Peltola et al., 2000), Finnland | *Betula spp.* | Stem weight |  |  | 0.790(< 0.05) |  |  |  |  |  |  |  |  |
| (Danjon et al., 2005), France | *Pinus pinaster Ait.* | Stump volume |  |  |  |  |  |  |  |  | 0.78(<0.001) |  |  |
| (Stokes et al., 2007), France | *Fagus sylvatica L.* | Total biomass (stem+crown) (kg) |  |  |  |  |  |  |  |  |  | 0.8718(< 0.011) |  |
| (Stokes et al., 2007), France | *Picea alba Mill.* | Total biomass (stem+crown) (kg) |  |  |  |  |  |  |  |  |  | 0.9110(< 0.012) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Abies alba Mill* | Total mass tree (kg) |  |  |  |  |  |  |  |  |  | 0.9055(< 0.001) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Abies alba Mill, Picea abies L. Karst, Pinus sylvestris L.* | Total mass tree (kg) |  |  |  |  |  |  |  |  |  | 0.9000(< 0.001) |  |
| (Lundström, Jonas, Stöckli, & Ammann, 2007), Switzerland | *Picea abies L. Karst* | Total mass tree (kg) |  |  |  |  |  |  |  |  |  | 0.8718(< 0.001) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Pinus sylvestris L.* | Total mass tree (kg) |  |  |  |  |  |  |  |  |  | 0.9899(< 0.001) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Abies alba Mill* | Total stem mass (kg) |  |  |  |  |  |  |  |  |  | 0.8660(< 0.001) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Abies alba Mill, Picea abies L. Karst, Pinus sylvestris L.* | Total stem mass (kg) |  |  |  |  |  |  |  |  |  | 0.8718(< 0.001) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Picea abies L. Karst* | Total stem mass (kg) |  |  |  |  |  |  |  |  |  | 0.8544(< 0.001) |  |
| (Lundström, Jonas, et al., 2007), Switzerland | *Pinus sylvestris L.* | Total stem mass (kg) |  |  |  |  |  |  |  |  |  | 0.1000(< 0.05) |  |
| (Mueller & Cline, 1959), USA | *Prunus serotina Schur., Ulmus americana L., Acer sacharum Marsh.; Liriodendron tulipifera L.* | Tree diameter |  | 0.166(> 0.05) |  | 0.633(< 0.01) |  |  | 0.637(< 0.01) |  |  |  |  |
| (Mueller & Cline, 1959), USA | *Prunus serotina Schur., Ulmus americana L., Acer sacharum Marsh.; Liriodendron tulipifera L.* | Tree diameter |  | 0.296(> 0.05) |  | 0.555(< 0.05) |  |  | 0.502(< 0.05) |  |  |  |  |
| (Lundström, Jonsson, et al., 2007), Switzerland | *Picea abies (Karst.) Mill* | Tree mass (kg) high elevation site | 0.9592(< 0.001) |  |  |  |  |  |  |  |  |  |  |
| (Lundström, Jonsson, et al., 2007), Switzerland | *Picea abies (Karst.) Mill* | Tree mass (kg) low elevation site | 0.9644(< 0.001) |  |  |  |  |  |  |  |  |  |  |
| (Štofko & Kodrík, 2008), Czech Republic | *Picea abies L. Karst.* | Width root plate undamaged |  |  |  |  | 0.068(> 0.05) | 0.576(< 0.05) |  |  |  |  |  |
| (Štofko & Kodrík, 2008), Czech Republic | *Picea abies L. Karst.* | Width root plate undamaged |  |  |  |  | 0.021(> 0.05) |  |  |  |  |  |  |
| (Štofko & Kodrík, 2008), Czech Republic | *Picea abies L. Karst.* | Width root plate wind throw |  |  |  |  | 0.156(> 0.05) | 0.337(> 0.05) |  |  |  |  |  |
| (Štofko & Kodrík, 2008), Czech Republic | *Picea abies L. Karst.* | Width root plate wind throw |  |  |  |  | 0.151(> 0.05) |  |  |  |  |  |  |
| (Crook & Ennos, 1996), UK | *Larix europea L. x Larix japonica A.Murray bis* | Windward laterals area | 0.6928(<0.001) |  |  |  |  |  |  |  |  |  |  |
| (Crook & Ennos, 1996), UK | *Larix europea L. x Larix japonica A.Murray bis* | Windward sinkers | 0.7681(<0.000) |  |  |  |  |  |  |  |  |  |  |
| Total number of studies | 46 | 16 | 28 | 26 | 68 | 6 | 4 | 6 | 1 | 9 | 25 | 2 |
| Author(year) | Species | Variables | Anchorage strength  | Root depth | Root failure | Root spread® | Root soil plate depth | Root soil plate length | Root volume | Soil type | Stem volume | Turning moment | vertical radius root plate (width) |

1. DBH = diameter breast height, DBH² = diameter breast height squared, DBH²H = diameter breast height squared times height, H/DBH = height divided by diameter breast height.