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# Root traits of seabuckthorn

**Per-Olof Lundquist**[1], **Syed Rehmatullah Shah**[1, 3], **Tatiana Plaksina**[1, 4], **Sridevy Sriskandarajah**[1], **Peter Agback**[2]

*[1]Dept of Plant Biology and Forest Genetics, Uppsala BioCenter, Swedish University of Agricultural Sciences and Linnean Center for Plant Biology, PO Box 7080, SE-750 07 Uppsala, Sweden, email: Per-Olof.Lundquist@slu.se;*

*[2]Dept of Chemistry and Biotechnology, Uppsala BioCenter, Swedish University of Agricultural Sciences, PO Box 7015, SE-750 07 Uppsala, Sweden;*

*[3]Faculty of Agriculture, Lasbela University of Agriculture, Water and Marine Sciences, Uthal, Balochistan, Pakistan*

*[4]The Lisavenko Research Institute of Horticulture for Siberia, 49 Zmeinogorskiy Tract, Barnaul, Russia*

Common seabuckthorn (*Hippophae rhamnoides*) has, in addition to its fascinating berries, a root system with several interesting traits. We studied how availability of mineral nutrients affected root development in experiments at the Swedish University of Agricultural Sciences using plants cultivated in greenhouse, growth chamber and *in vitro*. Low P and Fe resulted in more lateral roots and densely positioned rootlets with determinate growth similar to cluster roots. Plants of the *Hippophae rhamnoides* subsp *turkestanica* originating in a natural population in northern Pakistan formed four times more cluster roots and a more branched root system compared to plants of *Hippophae rhamnoides* subsp *mongolica* originating from breeding in rich black earth soil. Metabolites and gene expression patterns in cluster roots were investigated. Roots are also important in vegetative reproduction by formation of shoots from roots, root suckers, which in natural populations form at the groove of lateral roots and also in our *in vitro* cultivation system. Treatment with high P and indole-3-acetic acid (IAA) gave highest production of shoots prior to induction in our W4 medium (Shah *& al.* 2015a, b). Fluorescence microscopy of roots stained with 4′,6-diamidino-2-phenylindole (DAPI) suggested meristem activation in the pericycle between endodermis and vascular tissue. The *in vitro* system allows studies of root traits and applications of propagation of seabuckthorn.

**Keywords:** cluster roots, *Hippophae rhamnoides,* meristem, metabolite, mineral nutrient, root development, shoot

**References**

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