

Abstract

The ability of plants to absorb water through leaves has been a matter of the scientific discussion for a long time. Among the epiphytic species (tilandsias for example), reduced root system and foliar water uptake (FWU) is considered an adaptation for life in soil-less environment, and FWU is a necessity. It was surprising, that the same ability has been discovered in plant species with normally developed root system. Over the time, new pieces of evidence about FWU in broad range of plant species has been published and FWU is getting universal for all plants, across the taxonomic groups or biomes, including temperate zone. The systematic focus on FWU and continuity of its research is lacking and therefore the knowledge about FWU is still only partial.

This bachelor's thesis is focused on mechanisms of FWU and the leaf structures that may mediate it. The ability of water to pervade cuticle through aquatic pores is discussed, together with the possibility of water absorption by stomata, trichomes, hydathodes or epiphytic organisms.

Another discussed topic is the use of this water by plant – improving of the water regime, refilling of the embolized xylem vessels, possible exudation by roots etc. The matter of FWU has other consequences on the ecosystem level, like in water cycle or the plant's ability to survive drought. However, the complex relations of FWU to physiological processes and ecophysiology are left for research.