

Air Plants: Waterwise Wonders

by Tayler Blee

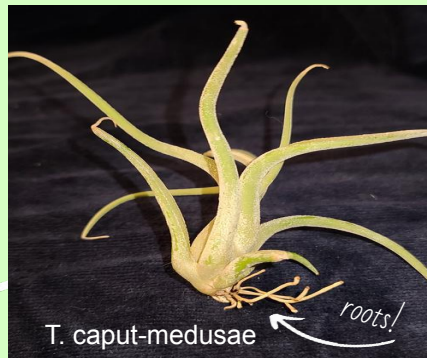
What are trichomes?

Many plants have trichomes, which are hairlike structures on the epidermis. They can serve a variety of functions like regulate water loss or deter herbivores by covering the plant in fuzz or irritating oils.

How do air plants use their trichomes?



Tillandsia sp.

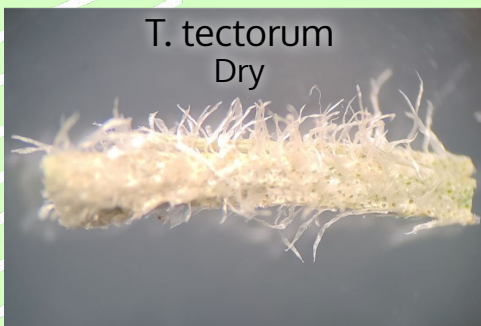


T. caput-medusae

roots!

Air plants (*Tillandsia* spp.) are epiphytic Bromeliads. They have very short and simple roots that anchor the plant in place, but they are not very good at absorbing water. Instead, they use their trichomes to get their water from moisture fog, morning dew, and rain. The silvery sheen on leaves is from the trichomes' waxy cells (Zheng & Li 2023).

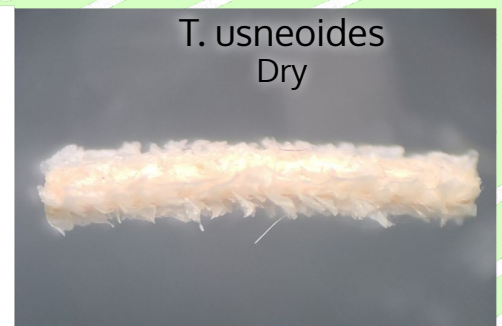
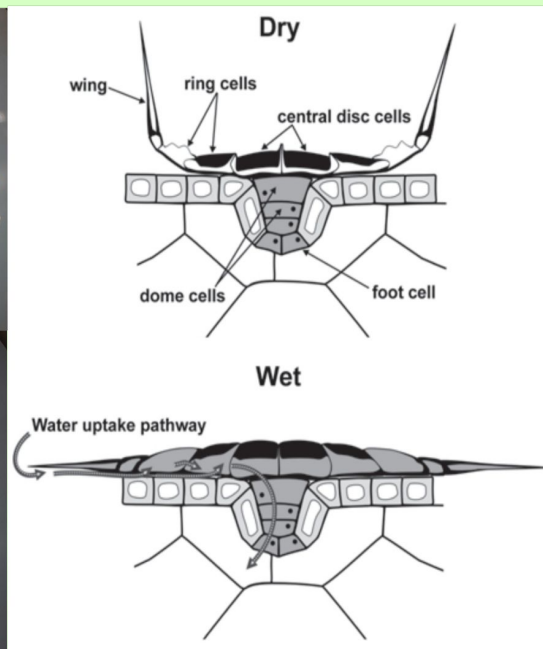
Trichomes: How do they work?



T. tectorum
Dry



Wet



T. usneoides
Dry



Wet

Air plants have "peltate", or bowl-shaped, trichomes. They have grooves that funnel water to the central disc, which leads to the leaf mesophyll. When dry, they stand straight up and protect the plant from the sun (Pierce 2007). In wet conditions, they fold flat facilitating water distribution to neighboring trichomes (Ha et al. 2021). The way they overlap with each other helps water spread water droplets all over the leaf.

T. usneoides vs T. tectorum

Also known as "Spanish moss," *T. usneoides* this air plant is commonly seen draping from trees.



T. tectorum is well-known for being a very fuzzy-looking plant.

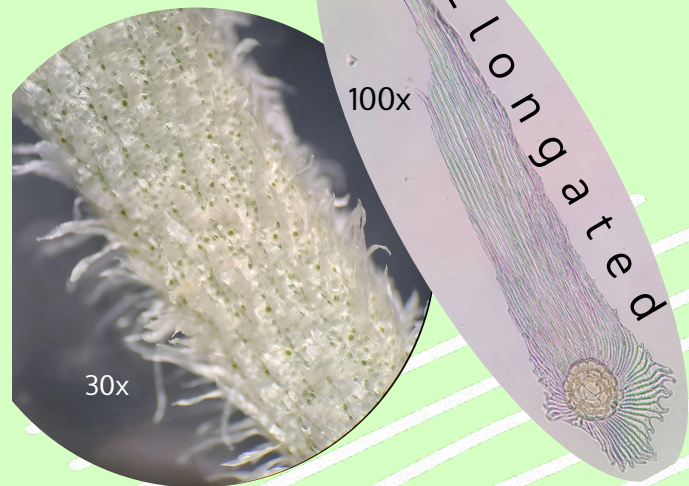
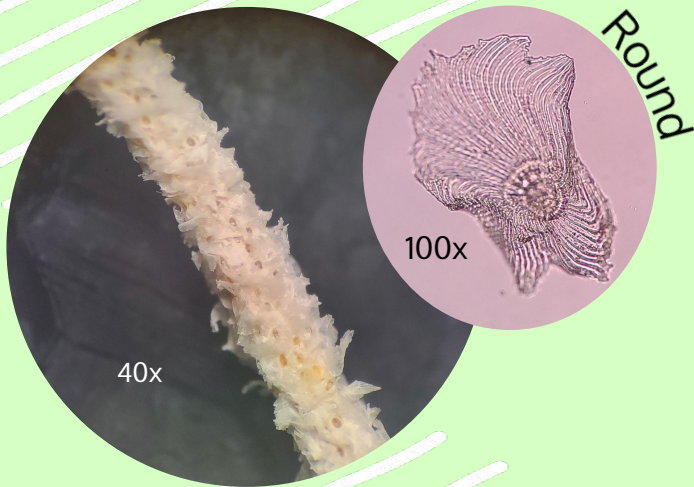
Habitat + Geographic Range

T. usneoides is found in coastal south eastern America, from Virginia to Argentina. It is found as far inland as central Texas.

They're restricted to coastal areas that are frequently foggy.

T. tectorum is found in coastal Peru and Ecuador. It is found as far inland as the Peruvian mountains.

Leaf + Trichome Micrographs



Tillandsia Houseplant Care

Soak your plant for about 30 minutes about once a week. Gently shake off excess water and dry upside down to avoid rot. Place it somewhere with good air circulation and a lot of indirect sunlight. Mist occasionally if your climate is dry or if the plant gets a few hours of direct sunlight every day.



References (accessed 12 Dec 2023):

https://www.wildflower.org/plants/result.php?id_plant=tius

<https://plants.ces.ncsu.edu/plants/tillandsia-usneoides/>

Ha, N., Park, J., Park, S. H., Seo, E., Lim, J. H., & Lee, S. J. (2021). Domino-like water transport on Tillandsia through flexible trichome wings. *New Phytologist*, 231(5), 1906–1922. <https://doi.org/10.1111/nph.17336>

Pierce, S. (2007). The Jeweled Armor of Tillandsia—Multifaceted or Elongated Trichomes Provide Photoprotection. *Aliso*, 23(1), 44–52. <https://doi.org/10.5642/aliso.20072301.06>

Zheng, G., & Li, P. (2023). Composition and localization of the leaf waxes in seven epiphytic Tillandsia species. *Biochemical Systematics and Ecology*, 110, 104715–104715. <https://doi.org/10.1016/j.bse.2023.104715>