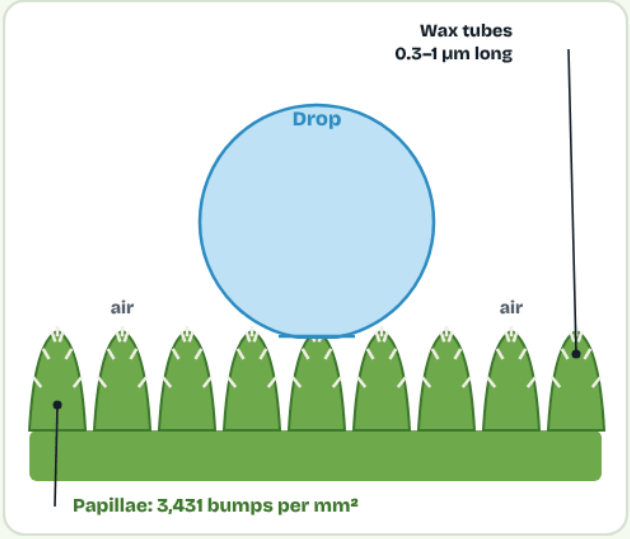
That is why

Why does water roll off lotus leaves?

Tiny waxy bumps let a raindrop touch only their tips, so it stays round, rolls off and carries dirt away.

A The leaf up close



Bumps on bumps

Each bump wears wax tubes 80 to 120 nanometers thin, about 200 of them in 10 square micrometers. Small drops touch only the highest bumps; air fills the gaps.

Drawing not to scale.

B A drop on the tips

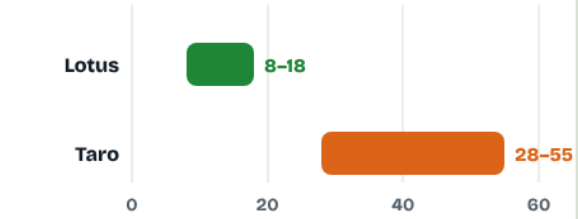
Contact angle: how round the drop stays



0° = flat film, 180° = a perfect ball

Grip: how hard the drop holds on

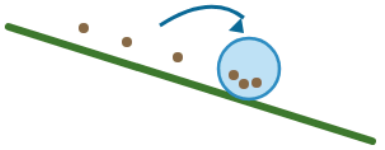
millionths of a newton (µN)



Less grip means the drop rolls off sooner.

C Self-cleaning, for life

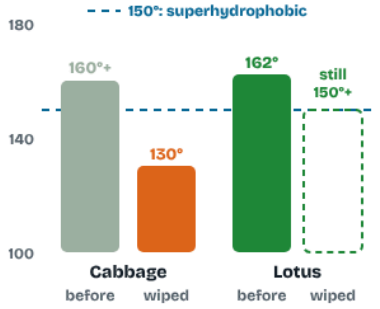
Tilt, roll, and the dirt goes



Loose dust on the tips sticks to the drop and rolls away with it.

Wipe the leaf: does it last?

contact angle



The bumps shield the wax between them.

Touch only the tips, and you can barely stick.

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Diagram: https://thatiswhy.com/diagrams/why-lotus-leaves-repel-water/ · Full guide: https://thatiswhy.com/why-water-rolls-off-lotus-leaves/