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Self-burrowing seeds: drag reduction in granular media WONJONG JUNG, SUNG MOK CHOI, Seoul National University, WONJUNG KIM, Sogang University, HO-YOUNG KIM, Seoul National University — We present the results of a combined experimental and theoretical investigation of drag reduction of self-burrowing seeds in granular media. In response to environmental changes in humidity, the awn (a tail-like appendage of seed) of Pelargonium carnosum exhibits coiling-uncoiling deformation which induces the thrust and rotary motions of the head of the seed against the surface of the soil. Using various sizes of glass beads that mimic the granular soil, we measure the thrust forces required for the seed of Pelargonium carnosum to penetrate into granular media with and without rotation. Our quantitative measurements show that the rotation of the seed remarkably reduces the granular drag as compared to the drag against the non-spinning seed. This leads us to conclude that the hygroscopically active awns of Pelargonium carnosum enables its seed to dig into the relatively coarse granular soils.

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