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How do fungi measure wind speed? MARCUS ROPER, MICHAEL TOMASEK, YUXI LIN, UCLA, EMILIE DRESSAIRE, New York University, Tandon School of Engineering — For successful dispersal, a fungus must push its spores through the boundary layer of nearly still air that clings to it. Some spores pass through this boundary layer by being forcibly ejected. But many spores and fungi have no mechanism for active ejection, and must be carried away passively by the wind. To facilitate dispersal, the spores are borne on the top of aerial structures. Regulating the height of these aerial structures is an engineering challenge; too long and the structures will collapse under their own weight; too short, and they may not reach high enough to cross the boundary layer. A fungus therefore benefits by knowing the wind speed (and therefore the boundary layer thickness). How does it make this measurement? I will show that the model filamentous fungus Neurospora crassa uses water evaporation rate to accurately measure wind speed. In addition to showing that fungi control and optimize even passive mechanisms for dispersal, our findings highlight the importance of physical conditions in controlling fungal growth and behavior.

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