# Optimal Design of Multilayer Fog Collectors

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## Abstract

The growing concerns over desertification have spurred research into technologies aimed at acquiring water from nontraditional sources such as dew, fog, and water vapor. Some of the most promising developments have focused on improving designs to collect water from fog. However, the absence of a shared framework to predict, measure, and compare the water collection efficiencies of new prototypes is becoming a major obstacle to progress in the field. We address this problem by providing a general theory to design efficient fog collectors as well as a concrete experimental protocol to furnish our theory with all the necessary parameters to quantify the effective water collection efficiency. We show in particular that multilayer collectors are required for high fog collection efficiency and that all efficient designs are found within a narrow range of mesh porosity. We support our conclusions with measurements on simple multilayer harp collectors.