



## A solar still desalination system with enhanced productivity

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### ABSTRACT

Increasing the productivity of solar stills has been the focus of intensive research. Many introduced developments, however, require complex components and entail notable increases in cost and land requirements. Developing a compact, productive, and easy-to-operate system is a main challenge. This paper describes a sustainable modification of the solar still that significantly enhances its productivity without forsaking its basic features. A simple amendment in the form of a slowly rotating drum is introduced allowing the formation of thin water films that evaporate rapidly and are continually renewed. The performance of this system was compared against a control without the introduced drum. Throughout the experiment, the new system gave considerably higher yield than the control with an average increase in daily productivity of 200%. Moreover, during sunshine hours, the increase in yield could surpass 6–8 times that of the control. Important parameters such as ease of handling, material availability, efficacy, low cost, safe water quality, and space conservation are maintained. One side-benefit of this design is solving stagnation problems that usually develop in conventional stills. The new simple modification in this study presents a cost-effective and efficient design to solar stills especially in areas with abundant sunshine.

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