

# Making a Week's Worth of Rain Last the Whole Year

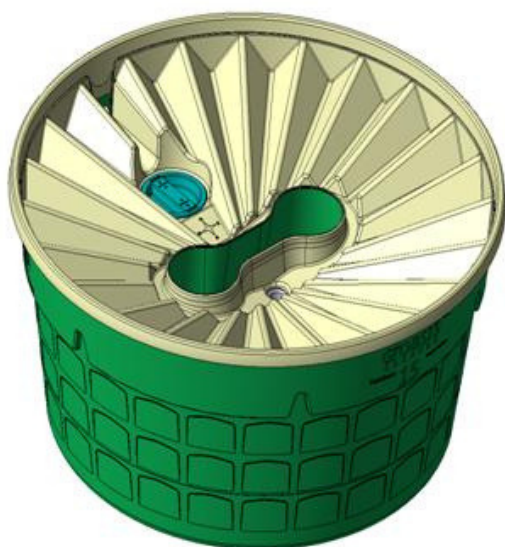
Posted by [Danielle Nierenberg](#) on @ 1:23 pm

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*Crossposted from the Worldwatch Institute's [Nourishing the Planet](#).*

We think of deserts as dry wastelands incapable of food production. Surprisingly, there is often enough rainfall to support vegetation. The problem is that most of this water falls only over the course of one week and pools in aquifers a meter below the surface. A tree with a developed root system can survive from these aquifers, but seedlings need consistent moisture at the surface in order to fuel root growth toward these water sources. A week of rain simply isn't enough. And if you dig deep enough to reach the water table, you destroy the natural capillaries in the soil that act as a permeable boundary to support the seed and transfer water.



Nature is full of examples of efficient solutions, and an unlikely model for success in retaining this moisture has been found in bird feces. When a [bird](#) consumes a seed and excretes it onto the dry soil of a desert, its excrement serves as a retention system for moisture, allowing roots to grow. The nascent root systems immediately begins penetrating the soil and growing toward the water below.

The vital role that bird excrement plays in the germination of plant seeds is the central inspiration for the [Groasis](#), a deceptively simple invention that promises to revolutionize afforestation efforts in arid climates.

The Groasis uses incubation to deliver water over a time-period in tune with a seedling's demand for water. Any precipitation from rainfall or evening condensation is collected from the fan-shaped roof of the device and stored in evaporation-proof containers. A small wick delivers a steady flow of water to the plant, gradually creating a water column in the soil to support long-term growth. The water also regulates the plant's temperature, cooling it in the day-time heat and insulating it at night. When the plant is around two feet tall, it has already established a robust root system and can survive un-aided in the harsh climate.

AquaPro, the company behind the Groasis, has developed mechanized equipment to implement this growing system for large-scale rehabilitation projects. In 2010 alone there were fifteen afforestation projects in Kenya, the United States, France and Spain that used the Groasis to help deal with strip-mining rehabilitation, desertification, and other problems.

*To read more about innovations that improve access to water, see: [Funding a Blue Revolution](#), [Water Out of Thin Air](#), and [Slow and Steady Irrigation Wins the Race](#).*

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Danielle Nierenberg, an expert on livestock and sustainability, currently serves as Project Director of State of World 2011 for the Worldwatch Institute ([www.NourishingthePlanet.org](http://www.NourishingthePlanet.org)), a Washington, DC-based environmental think tank. Her knowledge of factory farming and its global spread and sustainable agriculture has been cited widely in The New York Times Magazine, the International Herald Tribune, The Washington Post, and other publications. Danielle worked for two years as a Peace Corps volunteer in the Dominican Republic and volunteers at farmers markets, the Earth Sangha (an urban reforestation organization), and Citizen Effect (an NGO focused on sustainable development projects all over the world). She has spent the last year traveling to more than 25 countries across sub-Saharan Africa looking at environmentally sustainable ways of alleviating hunger and poverty. She holds an M.S. in Agriculture, Food, and Environment from Tufts University and a B.A. in Environmental Policy from Monmouth College. Websites: [www.worldwatch.org](http://www.worldwatch.org) [www.nourishingtheplanet.org](http://www.nourishingtheplanet.org) Twitter: [@worldwatchag](#)

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