

Low-Cost Drip Irrigation

Written by Amy Smith



Drip irrigation is one of the most efficient methods of irrigation—the water drips directly onto the soil, preventing losses due to evaporation or run-off, and

if the flow rates are set correctly, water losses due to deep percolation (that is, penetrating the soil below the root system and flowing into the water table) can be minimized. This provides a moist environment for the roots which optimizes growth, while keeping the rest of the plant relatively dry, which helps prevent diseases. Furthermore, with drip systems, you can control where the water is applied, which increases water efficiency and helps minimize weed growth. Drip irrigations systems are typically about 90% efficient, as compared to sprinkler systems which are about 75% efficient. Water savings can be as high as 50% and crop yields can be increased by up to 40%.

Daily Water Requirements for Selected Crops*

Cabbage	4.2 liters/m ²
Carrots	3.8 liters/m ²
Onion	6.3 liters/m ²
Bell Peppers	3.1 liters/m ²
Sweet Potato	5.1 liters/m ²
Tomato	3.8 liters/m ²

Adapted from "Crop Production Guidelines: Drip Irrigation" by H. Valenzuela

*Based on data gathered in Hoolehua, Hawaii, USA

Conventional drip irrigation systems cost between \$1,200 and \$3,000 per hectare (10,000 m²), which makes them inaccessible to small-scale farmers in developing countries. The low-cost drip systems available from International Development Enterprises cost less than \$500 per hectare and are available in a variety of sizes, ranging from the home garden kit, which costs only \$2.50 and covers a plot of 20 m², to a large custom system that costs \$45 for 1,000 m². Designed with affordability as the driving factor, the kits uses thin-walled flat plastic tubing and simple knotted-tube emitters and will last 1 to 2 years.



A small garden in Haiti equipped with one of IDE's drip irrigation systems.



Simple knotted-tube emitters control the water flow rate.



To learn more about the International Development Enterprise drip irrigation systems, visit their website at: <http://www.ideorg.org>

MIT OpenCourseWare
<http://ocw.mit.edu>

SP.721 / 11.025J / 11.472 D-Lab I: Development
Fall 2009

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.