Capturing Water From Fog

ECHO Inc.

Capturing water from fog for household or agricultural use is a promising technology. It is not a new idea: African nomads and Andean people have long taken advantage of trees' natural water-catching properties by collecting morning dew or using the water trapped by forests. But now scientists around the world are working to enable more dryland communities to harvest the fog water in their regions.

The technology is simple: polypropylene meshes are set up vertically in areas with dense fog and light winds. As the fog passes through the mesh, the suspended water droplets are caught by the net and drip down into a collection trough and are channeled into a storage tank. Water captured by the nets is of excellent quality. Fog is a long term sustainable resource much more reliable in both availability and safety than groundwater in many areas. This technology is best suited to upland areas with persistent fogs that limit visibility to 100 m or less and light winds (about 10 km/h) needed to carry the fog through the mesh. The knitted polypropylene meshes known to be effective are inexpensive (about US$0.25 per m^2), durable, and available from many sources worldwide.

Last month, three ECHO staff visited one site just north of Quito, Ecuador, in which the water-catching nets have been successfully installed. The area near the Mitad del Mundo ("Middle of the World") equatorial monument is a dry, eroded zone plagued by dust storms. Nearby is a fertile volcanic crater called Pululahua, an ecological reserve known for its unique vegetation. The people above the crater can see the near-constant fog from distant humid valleys which blows across the crater and over their dry land. A few years ago, trial fog collectors of 1 m^2 were erected on the ridge above the crater (at 2830 m elevation) to catch water droplets in the fog that passes through the nets. The trial collectors harvested up to 20 liters of water a day, with a daily annual average of 12 liters. Based on these results, sixty-three 4.5 m x 6 m mesh panels were set up on the ridge and are now capturing water for the nearby arid community.

Fog collection is one of the most hopeful water-harvesting technologies for certain zones. It is not suited to every area, however, and trial nets are a wise investment if you believe fog collection has promise in your area. Some limitations include very strong winds which can damage the collectors, not enough wind, insufficiently dense fog, and inaccessible sites. A collector (two vertical posts mounted in well-packed

holes and anchored with strong cables, mesh secured with cables, and a plastic collection trough) with a 50 m^2 surface area could cost US $300-500, which could cost significantly less than buying water from trucks, for example.

Dr. Robert Schemenauer of Environment Canada is a cloud physicist and one of the primary researcher-promoters of fog collection. He sent ECHO some excellent publications on site evaluation for fog harvesting, clear details on how to set up a trial net, sources of meshes in various countries, and more. Write to ECHO for this introductory information if you see a potential for your area.

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