



Alex Montenegro and Dr. Pohl with Alex's new hydroponic fodder facility. According to Mr. Auerbach, the Salvadoran farmers "loved beginning with this low-cost structure, and now that they see the benefits they are interested in upgrading to aluminum systems with drip irrigation."

**“Hydroponic feed is a home run. [It] improves the farmer’s water situation and improves yield.”**

**- Richardo Auerbach**

“It’s kind of like a field in a box,” said Nona Fisher, the Winrock staff member who arranged the hydroponic fodder pilot program, “Imagine you cut up a field and layered the pieces, one on top of the other.” Ms. Fisher was describing the seed-filled trays that Dr. Phillip Pohl had installed on Alex Montenegro’s farm in Metapán, El Salvador. Winrock and [USAID’s John Ogonowski Farmer-to-Farmer Program](#) brought Dr. Pohl to El Salvador, at the request of Salvadoran agricultural extension agents, to teach water-saving hydroponic production techniques to farmers.

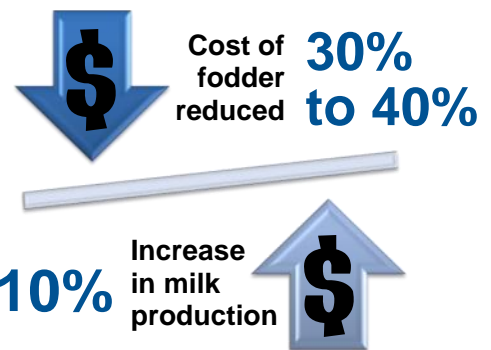
During El Salvador’s dry season, fodder for dairy cattle is scarce. Between November and April, Salvadoran farmers do not have enough rain to grow grass in their fields, and many lack irrigation. By putting the plants under cover, in trays, the hydroponic system focuses all available moisture on the

growing plants, and minimizes the loss through run-off and evaporation.

It took Dr. Pohl and his group of farmers and extension agents a week to build the pilot facility. Growing hydroponic fodder uses over 90% less water than growing fodder in a field, according to researchers at [Sandia National Labs](#), where this technology was perfected. “It also uses a small land area compared to traditional pastures, which are often degraded and eroded from overgrazing,” said Ms. Fisher. And, once the low-cost structure is in place, the hydroponic fodder is cheap, costing only US \$0.09 - \$0.13 per pound to produce, compared with US \$0.30 for commercial fodder.

In addition to using less water, the hydroponic system results in more productive cows. Mr. Montenegro’s cows now average 15.4 bottles of milk each per day, 10% more than before. At \$.30 cents per bottle, Mr. Montenegro now earns an extra \$200 each week.

## Benefits of Hydroponic Fodder



“For farmers, hydroponic feed is a home run,” said Ricardo Auerbach, who coordinated the visit in El Salvador, “This technology improves the farmer’s water situation and improves yield.” Dr. Pohl is one of almost two thousand volunteers whom Winrock has empowered through its [Volunteer Technical Assistance](#) (VTA) program. Through direct connections, made across continents and circumstance, the VTA program lets experts share their knowledge of agriculture, business development, information technology, and many other areas, with active residents of developing countries who have requested their assistance. During the program’s 17-year history, the innovations shared by Winrock’s volunteers have had a positive impact on 7.7 million people in 50 countries around the world.



Another hydroponic system during set-up.

Since Dr. Pohl’s trip, the USDA has installed two more hydroponic systems, and [TechnoServe](#) has plans to start another 40 modules. “There are a lot of farmers who could benefit,” concluded Ms. Fisher, “the hydroponic system helps them use their natural resources more efficiently.”



Dr. Pohl and Eduardo Ramirez, a TechnoServe extension agent, make some adjustments to the hydroponic system.



Alex Montenegro displays his new hydroponic fodder after just a few days of growth.

Winrock International is a nonprofit organization that works with people in the United States and around the world to empower the disadvantaged, increase economic opportunity, and sustain natural resources.