

# Rainwater Harvesting and Drip Irrigation for Smallholder Vegetable Producers in Guatemala and Honduras

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Honduran farmer being trained to use an oxen to build rainwater harvesting ponds

With funding provided by the Horticulture Innovation Lab and in collaboration with existing Feed the Future initiatives in Guatemala and Honduras, the use of low-pressure drip irrigation systems and rainwater harvesters by impoverished farmers are being evaluated. This includes the actual installation of the systems, their use in household water use decisions, and the use of conservation agriculture practices to improve soil health.

On station research at the Horticulture Innovation Lab will include 2x2 factorial trials to evaluate the effects of low-pressure drip irrigation, and its interaction with the conservation agriculture. The treatments will be

arranged in randomized complete block design with five replications. They will be tilled, tilled with drip, conservation agriculture, and conservation agriculture with drip. For women farmers who have not grown vegetables, treatments will be till with drip and conservation agriculture with drip. Farmers will provide socio-economic data, labor requirements for the crop management and production practices, and their personal impressions of the technologies. Both production results and the actual farmer usage of these technologies will be measured.

Results from the Horticulture Regional Innovation Lab on-station trials located at Zamorano University and farmer managed field trials, will be used to further define appropriate low pressure drip irrigation technologies for smallholder horticultural producers. Initial actions have revealed interest in the size of home gardens for household consumption, the use and spacing of crops within the garden, the use of perennial crops and the overall nutritional value and home use of crops produced. As well the continuum of household production through sharing of surplus production up to the first sale even at the smallest local level, is guiding

interventions.

Even with drip irrigation, water availability continues to limit dry season production of horticultural crops. The marked dry season, (ustic), contrasts with the rainy season, where rainfall is more than sufficient the majority of times for crop production. The harvesting and storage of rainwater for use in horticultural crop production, represent an innovation that can allow food production during times of greatest need at the household level in Honduras and Guatemala. In order to bridge the gap between simple human dug holes for storage of small amounts of water, and machinery excavated ponds, the evaluation of improved animal traction implements for excavation of ponds is being undertaken. Evaluations will include economical analysis for the volume of excavation and the water available for cropping. The cost for the entire range of water harvesting systems will also be considered to help determine recommendations for farmers that can benefit from this supplemental water source.