It Pays To Irrigate Plantains and Bananas

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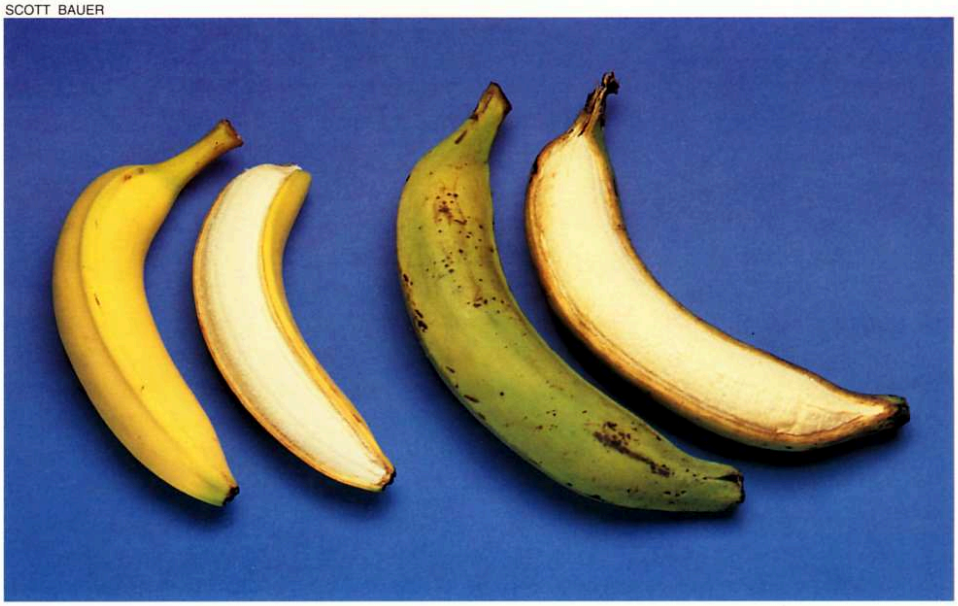

Bananas (left) and plantains. Drip irrigation would profit growers of this $53 million Puerto Rican crop. (K5452-16)

Semiarid areas in the Tropics typically only get about 37 inches of rain a year—not enough to grow a profitable banana or plantain crop. But drip irrigation more than pays for itself when it comes to growing these fruits in Puerto Rico's semiarid areas.

A 1990-93 study by Agricultural Research Service scientists is the first to document the cost effectiveness of irrigating these important fruit crops, worth $53 million a year to farmers in Puerto Rico.

"Banana is a water-loving plant. It responds very well to drip irrigation in low-rainfall areas," says agency plant physiologist Ricardo Goenaga, who is based at the Tropical Agriculture Research Station in Mayaguez, Puerto Rico. ARS horticulturist Heber Irizarry and agricultural engineer Bruce Coleman of BECA, Inc., Coamo, Puerto Rico, also participated in the study.

Goenaga estimates that about 50,000 acres of semiarid land with irrigation systems have become available with the decline of the sugarcane industry. This acreage can be partly used to expand the local plantain and banana crops, because soils are deep, very fertile, and flat, thus facilitating mechanized field operations.

Growers who supplement rainfall with drip irrigation on a 50-acre farm can make gross profits of about $205,000 for plantains and up to $374,000 for a first-ratoon crop of bananas, according to the study.

A banana planting yields several crops—the first being the fruit that grows from the original planting or plant crop, followed by subsequent ones from shoots called ratoons. The first ratoon crop usually yields more than the first plant crop.

Profits are based on using drip irrigation to replace, on a one-to-one basis, water estimated to be lost through soil evaporation and plant transpiration.

Total water and energy costs for a 50-acre planting were estimated at just under $4,900 per year, including $3,800 for energy and $1,100 for water. Goenaga estimates that the capital cost of installing a 50-acre drip irrigation system ranges from $69,000 to $84,000, depending on the quality of the pumps and tubing. In drip irrigation, water is pumped from underground wells or surface water supplies into tubes and trickles through small openings onto the soil. This conserves water, compared to overhead sprinkler irrigation.

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"A grower needs to get at least 28,000 pounds of bananas per acre to have a profitable crop," Goenaga says. "This level of irrigation almost doubled that—to 50,443 pounds per acre for the first-ratoon crop."

Increasing irrigation 25 percent beyond what is lost from evaporation and transpiration increases profits even further. The extra water and energy cost only about $1,200 per year but increase gross plantain profits by $7,100 and first-ratoon banana profits by $72,000.

"We were very surprised that the increase in yields would be so high from adding 25 percent more water," Goenaga says. "The additional irrigation more than pays for itself."—By **Sean Adams,** ARS.

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