**Considerations for implementing irrigation scheduling in Puerto Rico**

With regard to limiting water use by farmers, irrigation scheduling should be practiced.  Currently I do not believe there are any requirements for a farmer to practice irrigation scheduling in Puerto Rico.  The goal of irrigation scheduling is to optimize water use to achieve potential crop yields and to minimize the over application of water.  Over application of water results in a waste of water, fuel and chemicals, can lower crop yields and result in groundwater contamination.

Many farmers don’t know how much water they should apply to their crops.  To illustrate how much water can be lost by over application of irrigation I will give an example.  Assume an average size farm in Puerto Rico of 13 cuerda.  The farmer applies 500 mm of water during the season, however, the crop water requirement was only 400 mm.  Therefore the excess water was 100 mm or 1.39 million gallons (4.27 acre feet) over the 13 cuerda farm.  For farmers who receive their water from one of the three irrigation systems in the island, there is currently little incentive for them to manage their water efficiently since the water is essentially free (something like $3 per acre foot).  By the way, for you and I the AAA charges approximately $2,000 per acre foot.

The following figure shows the methods of irrigation scheduling used by Puerto Rico farmers, based on a small sample of irrigators (approx. 50 farmers from southern Puerto Rico).  The methods called “Experience” and “Other” (54%) are likely not based on scientific methods.  For example, they might be one of the following “methods”:

* Apply 1 inch of water to the field every week during the season
* Run the pump for 8 hours during every irrigation
* Apply water when the soil surface looks dry
* Apply water when the crop looks stressed
* etc.

There are numerous methods for determining the proper amount of water to apply to a crop.  The most accurate method for determining irrigation requirements is based on soil moisture sampling, however, this requires a level of effort and expense that some farmers are not willing to expend.  The Agricultural and Biosystems Engineering Department at the University of Puerto Rico-Mayaguez recently developed a simple web-based tool for scheduling irrigation.  The method recommends replacing the water lost by evapotranspiration and taking credit for rainfall.  The following paper describes the method:  Harmsen E.W., 2012.  TECHNICAL NOTE: [A Simple Web-Based Method for Scheduling Irrigation in Puerto Rico](http://academic.uprm.edu/hdc/HarmsenPapers/Web-based%20method%20for%20Irr%20Scheduling%20in%20PR.pdf).  J. Agric. Univ. P.R. 96 (3-4) 2012.

Irrigation scheduling is not the solution to the current crisis, nevertheless, it can be viewed as part of the long-term solution.  Perhaps it would be feasible at this time to require farmers who use land owned by the Puerto Rico Land Authority (Autoridad de Tierras) to practice irrigation scheduling??



Irrigation scheduling methods used in Puerto Rico, based on a small  sample

(approximately 50 irrigators from southern Puerto Rico).