
Insights from a Simple Sorghum Trial in Haiti

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My wife and I had the privilege of spending our first three years as ECHO staff overseeing a Small Farm Resource Development Project (SFRDP) in Haiti. A major emphasis of the SFRDP concept is to conduct “adaptive research” in which ideas and innovations developed elsewhere are evaluated for their potential under local conditions. In this case, research efforts were focused on new varieties of locally-grown crops.

The challenge was to identify promising varieties, get sample quantities of seeds into the hands of local farmers as quickly as possible, and use what we learned to help others in ECHO’s network. As it turned out, a simple sorghum trial provided the basis for involving farmers in experimentation and, in doing so, introducing crop varieties into the community.

Sorghum (*Sorghum bicolor*) is thought to originate in Africa where it ranks second only to maize in grain production. Belonging to the grass family, the leaves appear similar to those of maize; however, the grain is produced at the tip of the main stem and/or tillers (offshoots from the main stem) in a panicle (head) instead of on enclosed cobs. With its deep, fibrous root system, it can be grown successfully in areas where maize would not do well without irrigation.

When the SFRDP started in 2004, most of the trials were replicated to allow for statistical analysis. This meant that, in each trial, every crop variety had to be grown in at least three plots of ground. This was relatively easy to do with a limited number of varieties. By the end of 2004, though, I had obtained seeds of over 40 varieties of sorghum as well as numerous varieties of corn, peanut, and pigeon pea. It quickly became apparent that replication required too much land and that another experimental approach was needed.

In planning trials for the rainy season of 2005, a decision was made to evaluate as many varieties as possible in simple “observation” trials. In observation trials, each variety is grown in only one plot of ground (Figure 6). Observations from such trials are not as conclusive as with replication. As long as site conditions are fairly uniform, however, they give the experimenter a pretty good idea of likely “losers” and “winners.” The “winners” in on-site observation trials can then be studied further in on-farm trials. This results in lots of replication as multiple farmers try new varieties on small portions of their own fields.

The farmers’ enthusiastic responses were very insightful. As I had anticipated, grain color and yield were important to them. They liked varieties with large heads (panicles) of light-colored grain. Black-colored and low-yielding varieties were



rejected. What I had not anticipated was the importance farmers placed on plant height. Varieties less than 3ft (0.9m) tall were rejected even if they produced an abundant amount of grain. They said the grain on these short varieties was too close to the ground where it could be eaten by foraging animals. It was also interesting to hear their thoughts on

earliness. They recognized that an early-yielding variety could produce a crop during a short rainy season, or even two crops during a normal season. They pointed out, though, that they wanted to time the planting of earlyyielding varieties to produce grain at the same time as local sorghum. This, they said, would avoid excessive bird damage.

With all of this in mind, we planted 41 varieties of sorghum in June of 2005 on a flat strip of land near a major road where people pass on their way to and from a local market. Each variety was established in a three-row, 20ft-(6m)long by 4ft-(1.2m)-wide plot. Inputs and methods used were similar to those used by local farmers. Interest in the very visible plantings made a great opportunity to get valuable feedback from local farmers. Key farmers from various communities were invited to a "field day" to evaluate each of the varieties. We encouraged the farmers, "Don't just tell us you like everything. We really want to know what varieties you like and don't like."

Farmers took cuttings of several cassava and sweet potato varieties and were eager to have seeds of five or six of the sorghum varieties to try in small plots in their fields. To quickly multiply seeds of these varieties, we grew sorghum during the following dry season on irrigated land rented from a local farmer. This worked well for cassava and sweet potato, but seeds in the grain heads of an October planting of sorghum did not fill. Short day length was probably not the cause, as ECHO has had success with winter plantings in Florida; it may have been an insect problem. It meant that propagation of seeds of the most popular sorghum varieties had to be delayed till the very start of the rainy season.

Figure 6. Sample layout of a non-replicated observation trial with three varieties (A, B, C).

Variety B	Variety A	Variety C
*Each variety appears in only one plot.		
**Though not as critical as with a replicated design, randomization minimizes bias.		

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To sum up, a simple sorghum trial enhanced the project in the following ways:

- it gave farmers a much greater role in the process of identifying better varieties.
- insights from local farmers were used to plan and expand the project.
- it immediately led to on-farm trials of cassava and sweet potato.
- farmers participated in a low-risk method of variety evaluation/ multiplication.
- it led to a dry-season method of propagation (for cassava and sweet potato) that allowed greater interaction with farmers.

Locally grown varieties are hardy and already accepted, but farmers in one location may not know of other varieties being grown in neighboring areas. It is worth the effort to gather and include local varieties in trials. Additionally, ECHO's seed bank carries some of the sorghum varieties that farmers in Haiti liked. Let us know if you are interested in a packet of any or all of the varieties shown in Figure 7.

P9403	M91051	IS12965^A	Giza 114	IS15401^A
				
Purdue Univ. Striga resistant	Purdue Univ.	ICRISAT	Egypt-for fuel (stalk), food	ICRISAT
3.5 months ^B	3.5 months ^B	3.5 months ^B	3.5 months ^B	5.5 months ^B
^A Currently multiplying at ECHO in Ft. Myers; will provide sample if available.				
^B Approximate time to harvest with a seeding date of June 10 or 13. Local sorghum harvested 5.5 months after seeding.				