
Resilient Bamboo

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In September, ECHO's Global Farm in Florida faced a fairly direct hit by Hurricane Irma. In the aftermath, one thing is abundantly clear - some things fall down and some things don't (see our short video, *After Hurricane Irma* (<https://vimeo.com/233709349>)). This fact is relevant to our efforts to promote resilient farms and landscapes. Natural disasters come in many forms and often wreak havoc due to flooding, rain, landslides, and building collapse. When recovering from natural disasters, one important step is to evaluate, remember, and promote the plants and structures that were most resilient.

Bamboo plays many important roles in tropical landscapes. It can stabilize hillsides during monsoon rains, act as a windbreak for buildings and crops, and produce strong, flexible building material that strengthens homes during high winds and earthquakes. These ecosystem services and structural qualities are well known in places like the Philippines where cyclones and earthquakes are common. ECHO's demonstration farm in southwest Florida grows many species of bamboo. Factors that contribute to the ability of bamboo to withstand strong winds are a well-developed root system, flexibility of the canes, and narrow leaves (varieties with large, wide leaves intercept more wind than those with smaller leaf blades; Figure 7).

We recommend two excellent resources about bamboo and bamboo construction. The first is the *Bamboo Construction Source Book* (http://communityarchitectsnetwork.info/upload/opensources/public/file_14062013022345.pdf) by the Community Architects Network (2013). This free, downloadable 100-page treatise has chapters on bamboo as a plant; bamboo as a construction material; and bamboo's role in building systems. The document contains excellent



Figure 7. Large leaves of *Dendrocalamus minor* 'Amonenus' (left) versus smaller leaves of *Bambusa malangensis* (right) Most of the bamboo uprooted by Hurricane Irma, on ECHO's Global Demonstration Farm in Florida, were *Dendrocalamus minor*. Source: Tim Motis

photographs and illustrations that demonstrate joinery, lashings, and both traditional and modern techniques. [NOTE: An ECHO Technical Note, currently in progress, will explain bamboo treatment and construction methods used by our Appropriate Technologies department.] The second resource is the website Guadua Bamboo (<https://www.guaduibamboo.com/>). This site, from a for-profit company based in Latin America, has excellent pages on bamboo species, cultivation, and construction in English. The site also provides a wealth of information in the form of free, downloadable PDF publications.

We welcome further information about bamboo's usefulness. Please share with us published resources and personal stories that emphasize various species' ability to hold soil, stabilize hills, and act as windbreaks. Every disaster affords us the opportunity to learn and share. Help us grow from the challenges before us.