
Plants Well-Adapted to Specific Difficult Conditions.

Disease-resistant FHIA bananas.

Banana plants are susceptible to serious diseases such as Black Sigatoka and Panama disease. FHIA (Honduran Agricultural Research Foundation; www.fhia.org.hn/ (<http://www.fhia.org.hn/>)) bananas have been bred for disease-resistance. Some of these varieties are described in EDN 59-1. Goldfinger (FHIA-01), for instance, is described as a dessert (eaten fresh vs. cooked) variety able to support 100 lbs (45 kg) of fruit with no propping. Both FHIA-01 and FHIA-03 (a cooking banana) performed well in Honduras and continue to perform well at ECHO. The best source of plants that we know is a Florida based company called Agristarts (website: www.agristarts.com (<https://www.agristarts.com/index.cfm>) phone: 407-889-8055). On their website, click on the tab labeled 'Musa' for photos and information on varieties they carry. They sell plants in plug trays; at least ten plants can fit in a container about the size of a shoe box. They do ship internationally, charging \$55.00/order for a phytosanitary certificate. After the plants bear fruit, it is likely that one or more of the varieties will be especially popular. If there is great demand but you have only a few trees, what can you do? Fortunately two different techniques have been developed for rapid multiplication of bananas, one in the field and one using a banana corm. See EDN 59, 66, 75, and 99 (re EDN 75-6: note that Dr. Rowe, who had been supplying tiny, tissue cultured plantlets, is no longer living).

ECHO evaluated nine FHIA varieties and two commercial varieties in Haiti. Disease incidence with the two controls ('Gran Nain' and 'Williams') ranged from 56% to 61%, but was much less with the FHIA varieties, ranging from 11 to 32%.

Pigeon pea (*Cajanus cajan*).

Seeds of this perennial legume can be harvested long after dry weather has killed most vegetables. Commercial varieties are selected for seeds that mature all at once and are easy to harvest, while dooryard varieties are selected to have blooms, green and mature pods at all times to provide a uniform supply of food. "Vegetable type" pigeon peas are especially selected for populations that prefer to eat plump green seeds rather than the more usual mature, dried seeds. Some varieties are dwarf in

size and produce quickly, while others can reach 9 feet in height. Local farmers might like to see a trial where a few of each of several varieties were grown at one time. AZ 86; AZ 173; EDN 71-9

Perennial lima (*Phaseolus lunatus*; 'Seven year' or 'Hopi' varieties).

Danny Blank writes, "We first came across these beans when Lance Edwards from Zimbabwe reported how he would promote them among families with one or more members having HIV/AIDS. He encouraged planting several seven year lima seeds around homes, where they would grow up the sides of houses and even cover the roofs. Perennial lima varieties, depending on climate and conditions, can produce beans for many years. We grow them successfully as a food producing cover crop during our dry season at ECHO. However, long-term health and production appear better when growing on a trellis of some kind. They are characterized by vigorous growth and wide adaptability with good tolerance to some common insect pests like leafhoppers. We recently heard of some perennial lima types used as food producing ground covers in wet and humid climates. We acquired seed from Central America and will be experimenting with these. The two cultivars we currently offer are best suited for dry climates, but can persist through our intense rainy season, especially if growing on a trellis. It is one of the easier pest-tolerant beans to grow at the ECHO farm." EDN 81-8.

Queensland lettuce (*Lactuca sativa*) resists bolting in hot weather.



Often lettuce could be a valuable cash crop near cities where there is a demand for westernstyle salads. But the tendency of lettuce to bolt (send up a seed stalk) in hot weather usually limits use where the weather is hot all year. The 'Queensland' variety is beautiful and remarkably resistant

to bolting. We have had good reports from our network on this variety. Farm Manager Danny Blank says, "I don't think we have a lettuce that rivals this one in terms of heat tolerance and slowness to bolt." AZ 61.

Incredibly drought-resistant tepary beans (*Phaseolus acutifolius*).

These beans are an important crop for American Indians in the arid southwest part of the USA. If seeds are planted at a time when the soil is moist, plants grow quickly and will produce well even if there is no rain after they bloom. Because tepary bean is adapted to very arid conditions only, it is not suited to climates with high humidity and frequent rains, where diseases harm or kill the vines. Drought-resistance is mentioned in AZ 89.

A high-yielding variety of sorghum (*Sorghum bicolor*) with resistance to striga.

Striga, also known as witchweed, is a parasitic weed that infests cereal crops including sorghum. Crop damage occurs as striga plants penetrate the roots of host plants, diverting essential nutrients to the weed instead of to the crop. Striga thrives in areas of low soil fertility and plant diversity. By the time the flowers appear, damage to the crop has already occurred. Crop loss can be as high as 70%. EDN 59-2 contains more information about striga and highlights a striga-resistant variety of sorghum developed at Purdue University. Of the sorghum varieties that we have grown on our demonstration farm at ECHO, the striga-resistant varieties have consistently performed best, even though we do not have striga. We have seed available in trial-sized packets. If you have received seeds of striga-resistant sorghum from ECHO in the past, we would be interested in reports of its performance in the field and acceptance by local farmers.

Sorghum (*Sorghum bicolor*)

If grain sorghum is an important crop where you work, there are some great options for doing variety trials on your project site or by farmers in their own fields, guaranteed to generate a lot of interest (see the story in EDN 95 of a sorghum variety trial ECHO planted to show farmers in Haiti). There are striking differences among sorghum varieties. Heights range from 3 to 9 feet (1 to 3 m). You may be able to harvest the short varieties before the taller ones even begin to bloom (there might even be enough time for two crops). Birds can easily eat grains from the open heads, but there are varieties with some resistance. However, the nutritional value of most bird-resistant varieties is inferior. Varieties can differ greatly in the shape of the head and color of the grain. Giza 114 produces grain but the stalks are of almost equal value in Egypt for cooking fuel. As mentioned above, special varieties are resistant to striga, a terrible parasitic weed in Africa. The best brooms are made from the long fibrous seed panicles of "broom corn," which is actually a sorghum.



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