

Brief ECHO Overview



echo[®]
Hope Against Hunger

Abram J. Bicksler, Ph.D.
President/CEO of ECHO
abicksler@echonet.org

ECHO: A Global Organization

- Standing on the shoulders of giants
- Unity in diversity
- Each RIC and office takes on the unique aspects of its context and the needs of those it serves
- Unified by our Vision and Mission:

ECHO: A Global Organization

-VISION:

-Honoring God by empowering the undernourished with sustainable hunger solutions

-MISSION:

-Following Jesus by reducing hunger and improving lives worldwide through partnerships that equip people with agricultural resources and skills

How does ECHO Work Globally?

Our Approach: Through Networking

Our goal is to empower and equip our network members to advance food security and sustainable livelihoods among the poor

Connecting 18,000+ members (individuals and organizations) globally



International and National NGOs



Communities



Researchers



Churches



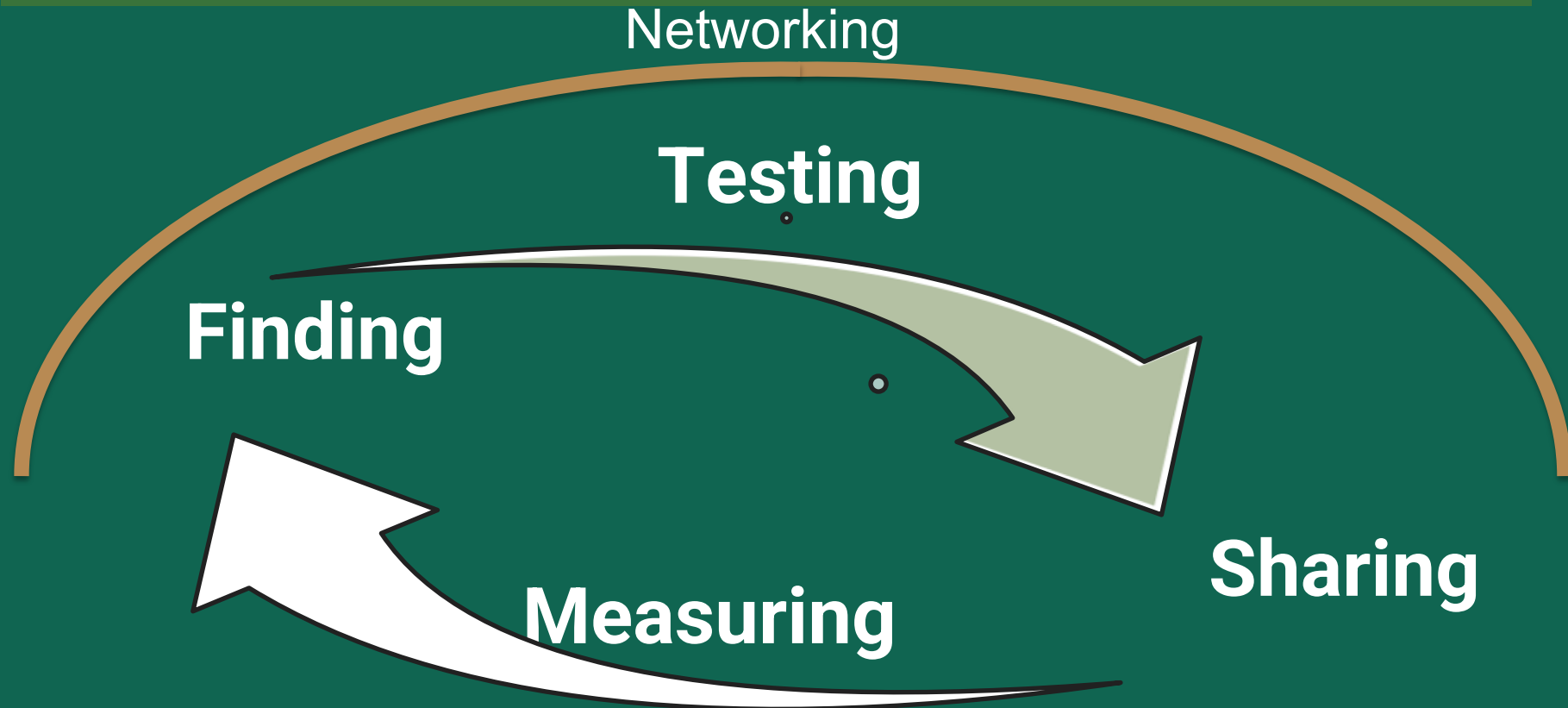
Government



Farmers & Farmer Groups

How We Achieve our Mission

Core Functions of ECHO



*...of practical and innovative options
(ideas that work)*

Providing Options

- **Sustainable Agriculture**
- Community Development
- Water and Sanitation
- Urban and Community Gardening
- Alternative and Renewable Energy
- **Appropriate Technology**
- Participatory Approaches
- **Seed Saving and Banking**
- Creation Care and the Environment
- Coffee and other niche crops



Delivering life-changing training worldwide.



Connecting

echocommunity.org


Resources

Plants & Seeds | By Publication | By Topic | By Language | By Region | Education and Events | Research

English (en) | Change Language

ECHOcommunity Updates

Latest news about the ECHOcommunity Mobile App 2022-11-15



The ECHOcommunity Mobile App (<http://edn.link/ema>) is freely shared in both the Apple and Android app stores to allow ECHOcommunity users worldwide to access downloadable resources in many languages. Earlier this year, the app navigation was updated to include English, French, Swahili, Thai, Central Khmer, Indonesian, Vietnamese, Chinese, and Haitian Kreyol.

The app was recently updated to accommodate new changes to the Android and iOS (Apple) systems. Changes to the Plant Records feature of the app improve the user experience when multiple Lifecycle Events of the same type are entered for a plant. Additional new features are being worked on and will be shared as available.

New users are finding their way to the app every day. Whenever new downloadable content is added to ECHOcommunity.org, that content is immediately available on the app. Thousands of videos, books, plant fact sheets, and research reports are freely available for download and sharing. Each user chooses what to download so that their local collection is customized to their needs.

ECHOcommunity Updates [Read all]

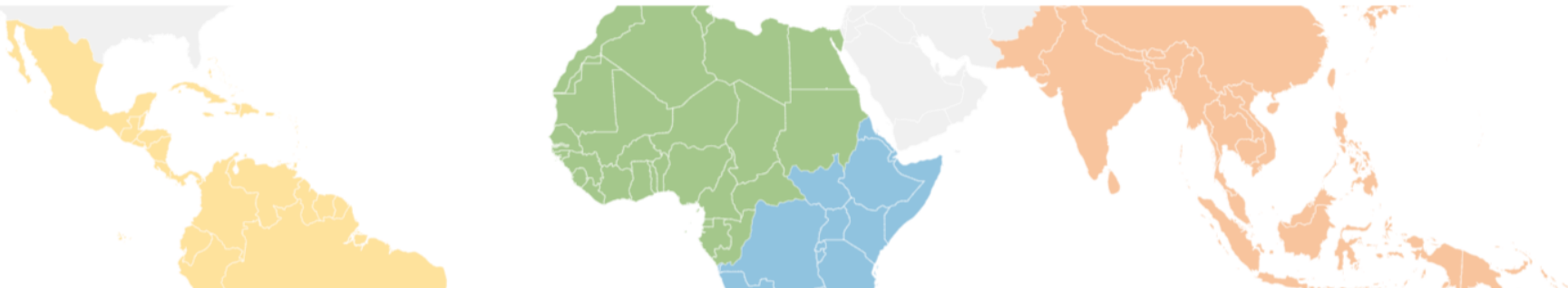
The many causes of leaf curling

Triage and Recovery of Small Trees Toppled by Storms

About ECHOcommunity

ECHOcommunity is a membership community that provides access to nearly all of ECHO's resources online, as well as communications tools to help development workers connect with each other. [View a list of ECHOcommunity.org features here.](#)

[Read more](#)



Conversations going on right now:

- Seeking fish rearing information and breeding stock source Stacy_Swartz
- Local tools for cocoa beans harvesting Marie_Nsobih
- Rice Seeder Ideas Frank_Sindler
- Rice Seeder Plans Frank_Sindler

ECHOcommunity Conversations

SIGN IN

Email Address

Password

Remember me

[Sign in to ECHOcommunity](#)

[Forgot your password](#)

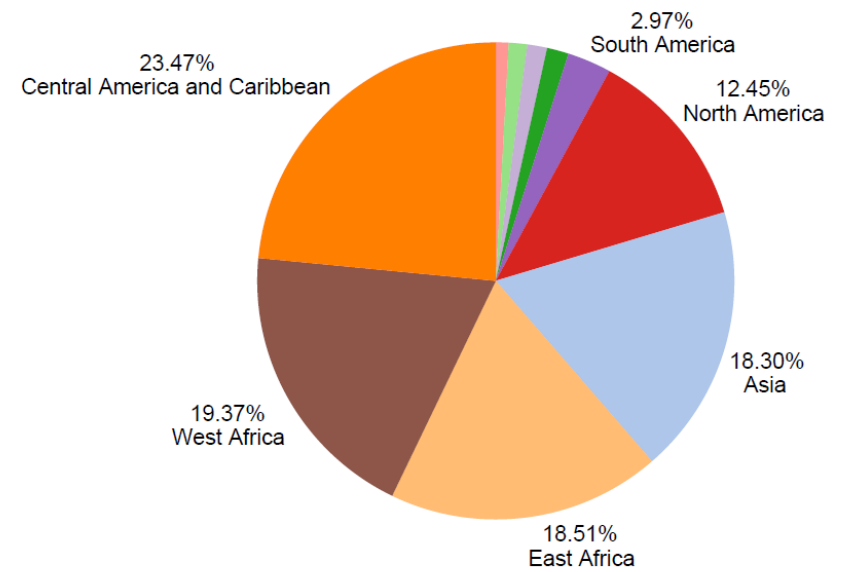
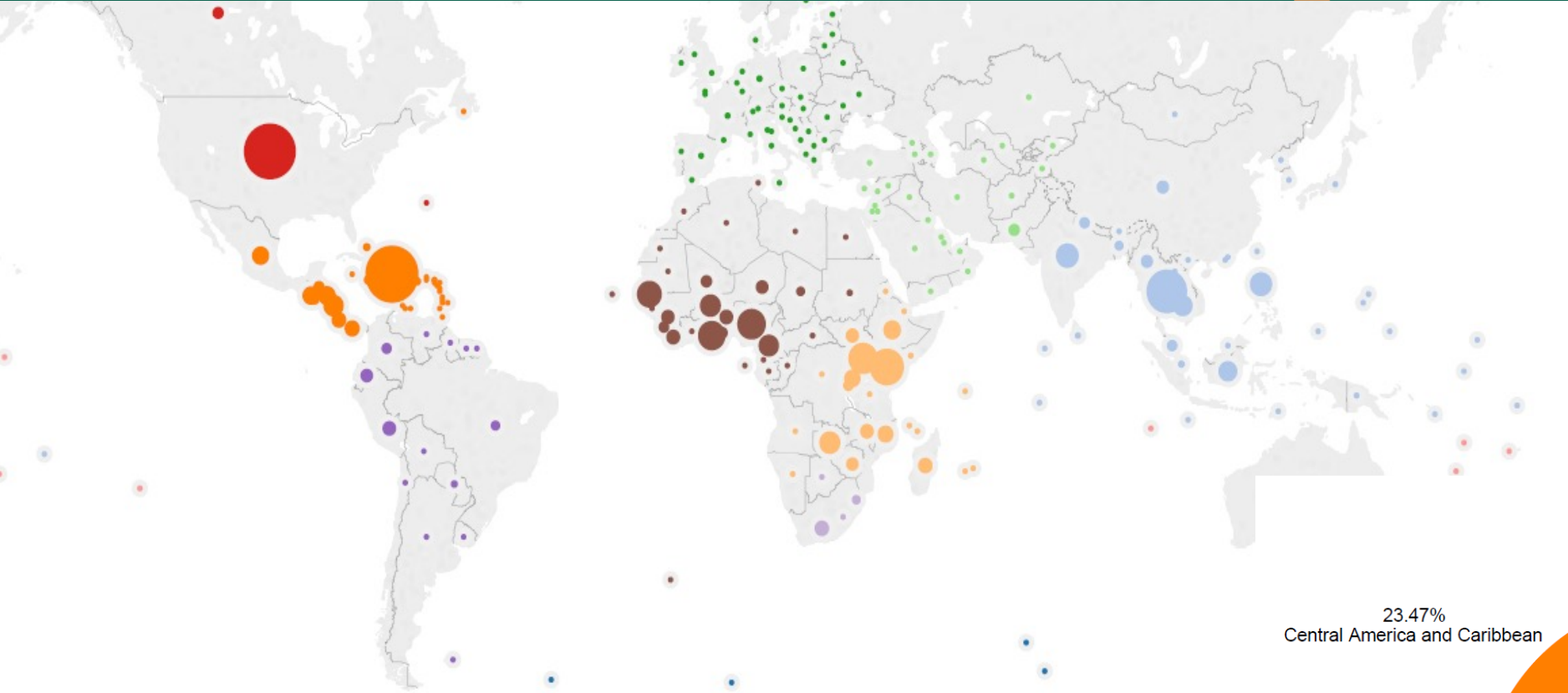
[Register](#)

CALENDAR [MORE]

November 15, 2022 - November 17, 2022
ECHO International Agriculture Conference

February 21, 2023 - February 23, 2023
7th ECHO East Africa Biennial Symposium on Sustainable Agriculture and Appropriate Technologies

Connecting



ECHO Publications



Issue ### • Month Year

edn

ECHO Development Notes

edited by Dawn Berkelaar and Tim Motis



LOW O₂ METHODS FOR INSECT CONTROL IN SEEDS

Se ilique plis pos doluptios vellabore netus aligent urerfer ionecti isimus aciet aut et dolupti busapie nditatur, torias nobis ut es ius erspedit rem id et re.



EIAC 2019 SUMMARIES

Pel issint laute velitia sum voluptiur, natur, conectur? To bla et qui rationeae esto magnist aut verit plam ut is id ma usapie nditatur, torias nobis ut es ius erspedi.



ECHOES FROM OUR NETWORK

Am volutem nonsequi con est ut qui ipsam quunt. Bus, ut et occullabo. Beaquidi cum cum sedigent volo doluptatent Occullamet voloriore ommodis et apicipid quidunt.

Books, Websites, and Other Resources | Upcoming Events



Best Practices Note

no. 7 Selecting Legumes as Green Manure / Cover Crops



ECHO Publications



RESEARCH NOTE

Okra Variety Trial: *Abelmoschus esculentum* & *Abelmoschus caillei*

Rachel Cohen, Heather Yates, and Tim Motis

Keywords: okra, variety trial, etcetera, etcetera, etcetera

Abstract. A comparison trial of okra species and varieties was conducted at the ECHO farm in North Fort Myers (zone 9a/10b), Florida. Thirteen varieties of *Abelmoschus esculentum* and two varieties of *Abelmoschus caillei* were evaluated for pod production and taste. Plants were started from seed in trays, with resulting seedlings transplanted to field plots arranged in a randomized complete block design such that each variety was grown/replicated in three plots. Pods were harvested from July through November, 2003. The effect of variety impacted early-/mid- but not late-season pod production. Top-producing varieties during peak pod-producing months, August and September, were Parbhani Kranti, Ever Lucky, Cow Horn and Clemson Spineless. Parbhani Kranti not only yielded well but also ranked highest in taste tests.

Introduction and Purpose

Two African okra species, *Abelmoschus esculentum* and *Abelmoschus caillei*, are popular in tropical and temperate climates. Okra produces edible pods for human consumption and seeds for processing into oil and vegetable curd. Okra leaves can be eaten in stews or used as animal fodder. Varieties of okra were compared in sub-tropical Florida conditions to better guide recommendations to ECHO network members.

Materials and Methods

Fifteen different varieties of okra were evaluated in 2003 at ECHO's Global Demonstration Farm in Fort Myers, Florida (Zone 9a/10b).

Abelmoschus esculentum: Blonde, Botneo, Burgundy, Cherokee Long, Chubby, Clemson Spineless, Cow Horn, Ever Lucky, Greenie, Kranti-Palestine, Martin's Long, Parbhani Kranti, Prelude.

Abelmoschus caillei: African, West African



These were varieties of two species of okra, as indicated below: Clemson Spineless was considered a control since many Florida farmers grow it commercially. Each experimental unit was replicated three

Productivity of *Moringa oleifera* augmented with intercropped tropical legumes

T.N. Motis*, J.M. Longfellow, A.D. Jani, B.J. Lingbeek, C.J. D'Aiuto and J.C.J. Bergen
ECHO, Inc., 17391 Durrance Road, North Fort Myers, FL 33917, USA.

Abstract

In Limpopo Province of South Africa, a trial was conducted over four seasons (one each year, from September 2011 to May 2015) to assess the productivity of *Moringa oleifera* 'PKM 1' grown with tropical legumes. Season 1 was devoted to the establishment of 120-m long rows of moringa trees, with seeds spaced 1 (in-row) × 3 (between-row) m. Except for a 1-m wide weed-free band at the base of each moringa row, the alleys were kept in native grasses to minimize weeding. Arranged in a randomized complete block design with five replications, treatments consisted of a no-legume control and four legumes [cowpea (*Vigna unguiculata* 'ITD98'), jack bean (*Canivalia ensiformis*), lablab (*Lablab purpureus* 'Highworth') and pigeon pea (*Cajanus cajan* 'Kranti')] sown below the moringa trees during seasons 2 and 4. During season 3, the 1-m wide weed-free strip beneath the moringa trees was sown to okra (*Abelmoschus esculentus*) and kale (*Brassica oleracea*). The moringa trees were heavily mulched with straw over the winter dry seasons, and pruned to a height of 1 m at each of two leaf harvests per season (2-4). Total season-2 (223-279 kg ha⁻¹) and season-3 (314-466 kg ha⁻¹) moringa powder yields were unaffected by season-2 legumes. Season-4 moringa productivity, however, was lower (P<0.0001) with (191-340 kg ha⁻¹) than without (473 kg ha⁻¹) legumes, likely due to weather conditions favoring legume competition with moringa. Legumes performed better under moringa than the vegetables. Results indicated that, where short-duration freezes occur, 1 ha of this system can provide – over the course of a year – a daily supply of 5 g of moringa powder for each of 120-153 people by the second season. Additionally, legumes were shown to contribute as much as 5 (jack bean) to 6 (lablab) t ha⁻¹ of dry, above-ground biomass and 525 kg ha⁻¹ (lablab) of dry beans. Steps such as pruning moringa above 1 m are suggested to minimize adverse effects of legume competitiveness with moringa.

Keywords: *Moringa oleifera*, intercropping, legumes, *Vigna unguiculata*, *Canivalia ensiformis*, *Cajanus cajan*, *Lablab purpureus*, alley cropping

INTRODUCTION

Moringa oleifera (referenced hereafter in this document as "moringa"), the most commonly cultivated of 13 species of the *Moringaceae* family, is a slender, soft-wooded, perennial tree native to sub-Himalayan parts of India (Ramachandran et al., 1980). Readily propagated from seed or cuttings, it grows well in most areas of the tropics and subtropics (Morton, 1991; Palada, 1995).

Fuglie (2000, 2001) described multiple uses for moringa and advocated for its use in addressing human malnutrition. Non-governmental organizations (e.g., Trees for Life, Church World Service, and ECHO Inc.) have also promoted moringa as a valuable source of nutrition for the tropics (Fahey, 2005). The leaves, consumed fresh or dried and then crushed into a powder, are a rich source of protein, minerals, and vitamins (Amaglo et al., 2010; Fahey, 2005; Fuglie, 2001; Gopalakrishnan et al., 2016; Nambiar and Seshadri, 2001; Thurber and Fahey, 2009; William et al., 2014; Yameogo et al., 2011).

Moringa responds well to pruning (Crosby and Craker, 2007), and the leaves intercept

*E-mail: tmotis@echonet.org





Feed Options for Ruminants in the Tropics

by Keith Mikkelsen, Aloha House Orphanage and Sustainable Farm, Puerto Princesa, Philippines

[Editor's Note: This article marks the fourth and final installment of a series of on-farm animal feed creation articles written by Keith Mikkelsen at Aloha House Orphanage and Sustainable Farm in Puerto Princesa, Philippines. Keith's prior articles include AN #20 Fish Feed, AN #25 Hog Feed, and AN #28 Poultry Feed. These articles have shown how utilizing on-farm products for animal feed can reduce dependency on external (often costly) inputs, thereby increasing sustainability and profitability.]

Introduction

The amazing multi-stomached ruminant comes in many forms, with varied nutritional requirements. Ruminants are even-toed, cloven-hoofed, four-legged, cud-chewing mammals of the suborder Ruminantia (within order Artiodactyla). Cattle, water buffalo, goats, and yaks are some of the ruminants found in Southeast Asia.

Ruminants are able to digest and extract nutrients from plant-based food by fermenting it in a specialized stomach with the aid of beneficial microorganisms, prior to digestion (Figure 1). After the initial fermentation, the fermented cud is regurgitated and chewed again. The process of re-chewing the cud (to further break down plant matter and to stimulate digestion) is called rumination. The waste from rumi-

nants is valuable as a fertilizer for better production of the forage they eat. Manure should be used on the farm to maintain soil fertility. One of the benefits of integrated livestock will be better plant health and yield owing to the recycling of nutrients on the farm.

Many options are available for feeding ruminants on the small farm. Before selecting a feeding strategy for your situation, be sure that the benefits outweigh the disadvantages. Every farm is unique, and farmers must determine the most appropriate and cost-effective techniques for their needs.

Optimum Health of Ruminant Herds

Sunshine and grass are some of the best sources of nutrients for cattle and sheep, but may not provide a complete diet for



Figure 1: A tethered cow wades in to graze on a barge of Gotu Kola and Salvania.

Featured in this AN

- 1 Feed Options for Ruminants in the Tropics
- 10 Building a Low-Cost Seed Dryer for Local Seed Banks
- 15 Upcoming ECHO Asia "Improving Lives" Agriculture & Community Development Conference
- 16 New Publications Available
- 17 Opportunities from the Network
- 17 Call for Articles & Insights

The ECHO Asia Impact Center operates under ECHO, a non-profit Christian organization that helps you help the poor to produce food in the developing world.

ECHO Asia Impact Center
PO Box 64
Chiang Mai 50000 Thailand
echoasia@echonet.org
www.ECHOcommunity.org

Translations:

○English

○French

○Spanish

○Kiswahili

○Thai ไทย

○Burmese မြန်မာ

○Mandarin 汉语

○Bahasa Indonesia

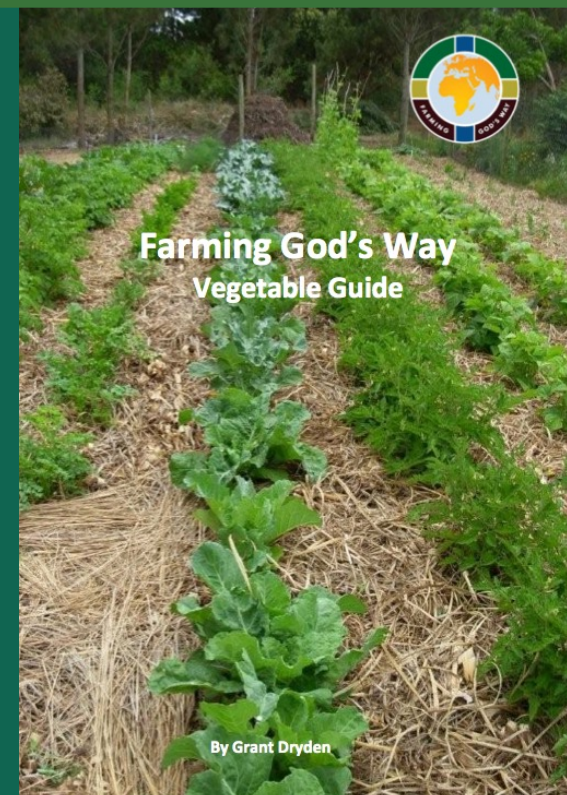
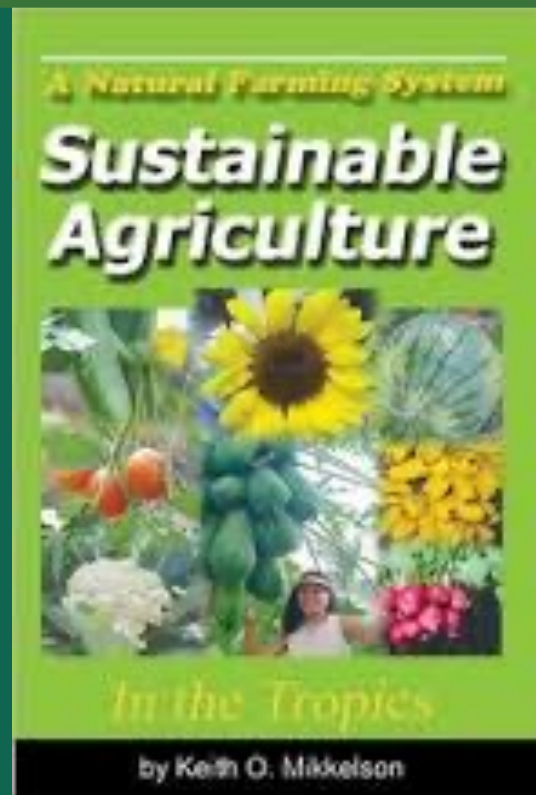
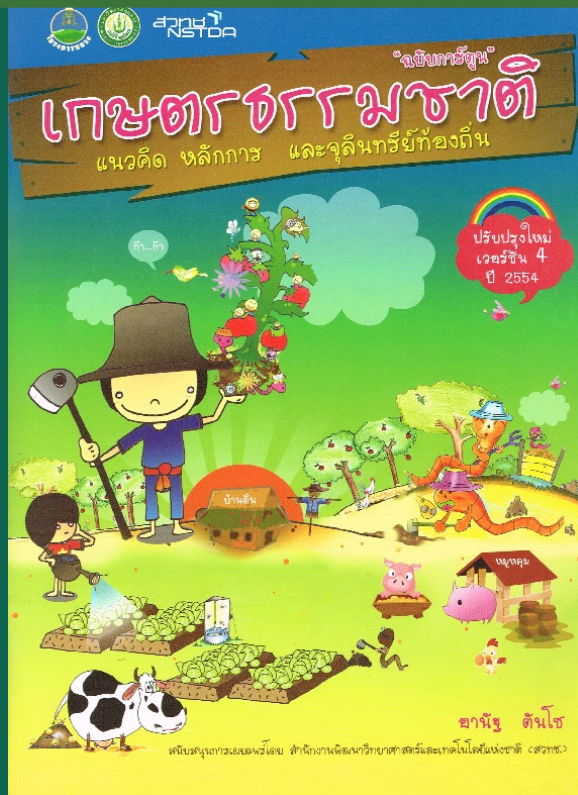
○Khmer ភាសាខ្មែរ

○Vietnamese Tiếng Việt

○Hindi हिन्दी



Print Publications





ECHO[®]
Asia Impact Center

Seed Catalog

Global and Regional Seed Banks

- Nearly 175 Seed Varieties at ECHO Asia Alone in addition to ~350 varieties at ECHO Global and growing number in E Africa
- Appropriate Seed Storage Methods for the Tropics
- Seed Production Plots



 **ECHO**[®]
Asia Impact Center

- Open-Pollinated
- Locally adapted
- Biodiversity and CC implications

Global Farm and Regional SFRCs

Serve as a research, demonstration, and training hub
Interns, Volunteers, and Community Leaders



Other ECHO Services

ECHO Internships in Florida and in different RICS

- Combination of coursework and hands-on practical experience
- Runs from May-May with a cohort of 8
- Master's Certificate through DIU



Technical Responses

Dear friends:

Where can I obtain a local bamboo that's called mai ruak?

Phil

Dear Phil,

The mai ruak (or mai huak) you're referring to, *Thyrsostachys siamensis*, also known as umbrella bamboo, is very common. It's found planted all over the countryside for pole production. It's also pretty easy to establish (I believe by removing and planting offsets from the main clump - see image below). I've heard local farmers say that best time to often remove and plant offsets is late dry season (April).

Whether transplanted to plant beds, large seedling bags or directly into the field, the offsets will need to be well watered until the offset begins producing shoots and develop viable root systems to support the plants.

I hope this helps!



Global Training and Equipping

Delivering life-changing training worldwide.



Global Training and Equipping

Next Up:
November 14-16, 2023
ECHO, Florida



The 29th Annual ECHO® International
Agriculture Conference

**Reflecting,
Renewing,
Restoring Hope.**

NOVEMBER 15-17, 2022
FORT MYERS, FLORIDA



Global Training and Equipping

- 7th ECHO East Africa Biennial Symposium on Sustainable Agriculture and Appropriate Technology**
 - Feb 21-23, 2023 Arusha, Tanzania**
- Burkina Faso National Forum**
 - Feb 13-15, 2023 Ouagadougou**
- ECHO Asia Agriculture and Community Development Conference**
 - Oct 16-20, 2023 Chiang Mai, Thailand**
- Multiple symposia and WS throughout W Africa**
- TAD 1 at ECHO Florida – March 27-31**