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and Tim Motis

ECHO is a global Christian organization that equips people with agricultural resources and skills to reduce hunger and improve the lives of the poor.

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Metal Silos for Improved Grain Storage

By Dawn Berkelaar

We share many ideas in *EDN* for agricultural techniques that can increase crop production. Higher production translates into more food and potentially more income; this is very important, especially for farmers whose livelihood comes from a small piece of land.

Another way to increase food supply and income is to minimize post harvest losses. These losses—due to insects, rodents and fungi—are often reported at 30 to 50 percent or even higher.

Post harvest losses can be minimized through practices that improve grain storage, such as the use of metal silos. We learned about the widespread promotion of metal grain silos in Central America in the late 1990s. Just recently, I noticed reference to metal grain silos in *Spore* magazine, issue 152 (<http://spore.cta.int/>; available in English, French and Portuguese). The *Spore* article reported that the silos are now being successfully introduced in eastern Africa. Postcosecha (meaning “after the harvest”), the organization that introduced metal grain silos to Central America, is now helping facilitate introduction of the silos in Africa, supported by CIMMYT (International Maize and Wheat Improvement Center) and the Swiss Agency for Development and Cooperation (SDC).

Airtight construction is the key to success with metal grain silos. Galvanized sheet metal is cut using patterns, then soldered together to make the silos airtight. Dry grain is placed in a silo, which is then sealed and fumigated with phosphine tablets

(available under many trade names, including phostoxin, gastion, detia, quickphos or celphos). Because the tablets are toxic they must be wrapped (for ease of later disposal) before they are placed on the surface of the grain. After ten days, fumigation is complete. The grain can be eaten one day after the end of the fumigation period. Properly stored grain can be stored for over a year. Grain is accessed from a spout at the bottom of the silo (Figure 1).

Metal grain silos are relatively inexpensive, but there is an upfront cost. Last year in Homa Bay, Kenya, a silo that stored three bags of grain cost around US\$74. A silo that stored 20 bags of grain cost around \$350. The cost can be recouped fairly quickly. According to the Postcosecha website, “With the Postcosecha technology, farmers in Central America typically are able to pay off their initial investments of 30 to 100 USD within one or two harvest cycles, while benefits last for 15 to 20 years.”

Introduction of the silos seems to work best with the involvement of NGOs (to coordinate and possibly arrange for micro loans), tinsmiths (to build the silos locally; one for every two thousand families that are potential silo users), farmers (who purchase and use the silos) and extension agents (to train farmers and tinsmiths). To this end, Postcosecha’s website (www.postharvest.ch) features publications (see examples below), targeted to:

- [Organizations such as NGOs](#): “Getting to Know the Metal Silo”;
- [Extensionists](#): “Metal Silo—Handling Stored Grain”; also “Salt method to determine moisture contents in basic grains”;

- [Tinsmiths](#): “Technical Manual for the Construction of Small Metal Silos”;
- [Farmers](#): (the document available on the website only shows up in Spanish).

These documents can be downloaded free of charge. The site also contains a preview of a comprehensive document entitled “Manual for Manufacturing Metal Silos for Grain Storage. The full document can be obtained by filling out an online request form at www.postharvest.ch/en/Home/Documentation/Form_Order_Manual

Tinsmiths, typically local artisans, are essential in silo promotion. Silos can be made on site.



Figure 1: Replica of a metal grain silo. Grain is added to the silo through an opening at the top (normally kept sealed). Grain is accessed through the spout at the bottom.

David Balsbaugh, a former ECHO staff member, traveled in Central America in the spring of 2000. He later shared, “I had the privilege of spending a week with a long-time farming couple from the USA, Benjie and Merrill Esch of Agape Ministries in Honduras. Merrill, is [also] skilled in appropriate technology. What caught my attention the most [among the projects I viewed] was the grain storage project, and particularly how the people of this rural Honduran community were so enthusiastically involved. Everywhere we traveled we saw neatly constructed grain silos near homes.”

Merrill gave a presentation on metal silos for grain storage at ECHO’s Agricultural Conference in 2000. The silos are like a big tin can, and can hold up to 1800 pounds of corn (enough to feed an average family for three to five months). Corn must be shelled before storage, but it often has to be shelled before it is marketed anyway.

Merrill gave several helpful tips regarding grain storage:

Check the market before investing in infrastructure for grain storage. In Honduras, it made sense to invest in the infrastructure. In 2000, Merrill shared that farmers were paid

90 lempiras for 100 pounds (45 kg) of corn right after harvest. Later in the year, if they needed to purchase corn, it cost 300 lempiras to buy that amount of corn back. In addition to protecting the grain, metal silos offer food security to farmers and the community, making them more independent of markets.

A sustainable program must be locally operated. Merrill commented that the money to promote grain silos in Honduras was provided by a non-profit organization from Europe. At first silos were given away—but funds were misused, and people who were given a silo were the most likely to fail with it. Instead, a loan program was set up in the community to help with purchase of the silos. (In the later years of the project, Merrill commented that they did not extend credit to anyone. At harvest time, the farmer could sell enough corn to buy a silo and then store some of the crop for later sale.)

Tinsmiths/artisans must be skilled and properly trained to manufacture quality silos. One tiny hole or an improper solder joint would render the silo inoperative. Silos should be made right in the community. Making silos is a great business opportunity that does not require electricity or much investment in tools or overhead expenses.

The grain MUST be dry before being stored in a metal silo! To check for moisture in corn, heat sea salt in a pan on the stove at low heat and stir until dry. Mix 15 ml (1 Tbsp) salt and 475 ml (2 cups) of corn in a jar. Seal and shake it, then let it set overnight. The next day, shake the jar; if salt sticks to the glass, the corn kernels are not yet dry enough.

Stories from Central America

A few case studies illustrate how life-changing these metal grain silos can be. In 2006, Merrill and his wife Benjie shared encouraging stories about the continued use of metal grain silos in Honduras (see below). They commented, “In our experience the use of the metal grain silos was a very liberating thing for Honduran Farmers. It was wonderful to have a small part in helping farmers to get out of debt and be more in charge of their own destinies. We saw widows who, for the first time, with the aid of a silo could feed their families from harvest to harvest without going hungry.”

Miguel. The Esches shared, “Miguel was part of a farmers’ co-op in Canchis and farmed about 4.5 to 5 acres (1.8 to 2 hectares). He started out with two silos which held 818 kg (1800 pounds) each. This was enough to carry him from one harvest to the next. (A family of 10 with teenage boys can eat 34 kg (75 pounds) of corn a week, made into tortillas.) Every year he borrowed about US\$75.00 in order to buy fertilizer and herbicide and to pay some men to help him plant, as he also was a pastor of the local church.

“Several years ago, the man he usually borrowed from demanded the papers to his home for security. He knew better than to give him those papers and came to us for a loan. At that point we didn’t have the money to loan but a work team was visiting and they took up an offering and asked Pastor

Miguel to put that money in the bank after every harvest so he never would have to borrow the money again.

“Well, by harvest time another group had given money so that all the pastors in our pastors’ association could receive a silo. Thus, Miguel now had three silos. He...use[d] the third silo to store corn in place of putting the money in the bank. A silo full of corn at planting time that year was worth about US\$450.00 and at planting time he could sell some corn from that silo to buy fertilizer and herbicide. He could also then pay his workers with corn. This is a common practice, because the price of corn is always very high at planting time and people are glad to work for a payment in corn. A day’s wage then was about \$2.25 and equal to about 12.5 pounds of corn. Most years at planting time, 25 pounds of corn was equal to two days’ wages. At that harvest time, the workers said to Miguel, “Be sure and fill your extra silo with corn so you have it to pay us next planting time.” To our knowledge, Miguel has not gone into debt since to plant his corn.”

Pastor Liberato. “Pastor Liberato has a large family, so he had four silos. When his father was sick in the hospital and then died, Liberato was able to sell a silo full of corn to pay for transportation and the expenses of the funeral without going into debt. He has since been able to purchase about six acres of land and so can plant more corn. He now has five silos. It is better than money in the bank, because when the farmer can wait from harvest until almost planting time to sell, he gains far more than the bank pays in interest. At harvest time the farmer usually gets \$9-10 per 100 pounds of corn. At planting time he gets \$23-25 (or more) per 100 pounds.”

Don Francisco. “Don Francisco had bought a silo every year at harvest time for five years. He was a very hard working man. By selling 600 pounds of corn (more or less) at harvest, [Don could purchase a silo (at a cost of \$56) and then] store 1800 pounds to sell at planting time for \$450.00.”

Stories from East Africa

An article on the CIMMYT website (www.cimmyt.org/en/about-us/media-resources/newsletter/717-metal-silos-lock-out-maize-pests-in-africa) shared a few stories of lives in Africa that have been changed because of metal grain silos. In Kenya, Sister Barbara Okomo, principal of a girls’ secondary school, has 10 metal silos at the school. She is quoted in the article: “I have used the silos for several years now, and I am convinced that this is the best method to store grain. With other storage methods, we would lose up to 90% of our stored grain—now we lose nothing.”

Conclusion

In East Africa and Central America, metal grain silos have successfully curbed post-harvest losses and given farmers greater food security. Detailed information about this technology is available from Postcosecha. As always, we would appreciate hearing of experiences with this technology if you give it a try.

Links for more information:

View a news feature on metal silos, aired in Kenya. www.ntv.co.ke/News/Food%20security:%20Preserving%20grains%20in%20metallic%20silos%20/-/471778/947114/-/e8n5gqz/-/index.html

To check for moisture in corn, heat sea salt in a pan on the stove at low heat and stir until dry. Mix 15 ml (1 Tbsp) salt and 475 ml (2 cups) of corn in a jar. Seal and shake it, then let it set overnight. The next day, shake the jar; if salt sticks to the glass, the corn kernels are not yet dry enough.

Marketing Information from ATTRA

ECHO has not often shared marketing information and advice, because markets tend to be uncertain and volatile. Advice that is good for one location might not be helpful in another. Yet we recognize the important influence of economics and marketing in the lives of small-scale farmers. Even at the subsistence level, where farmers are only growing enough to feed themselves and their families, labor and other costs influence day-to-day management decisions. And many smallholder farmers have at least a small amount of grain or farm byproducts (*e.g.* firewood) to sell in local markets. Income from these sales is needed to pay school fees and to meet other expenses.

Dan Gudahl with Winrock International forwarded information from ATTRA, the National Sustainable Agriculture Information Service in the United States. The October 2009 issue (Volume 17, Number 5) contains information about “Planning and Planting for Your Markets.” Although geared toward agriculture in the US, some of the insights may be helpful for those elsewhere who are trying to help farmers market their agricultural products.

The issue of ATTRA News is available online at http://attra.ncat.org/newsletter/attra-news_1009.html. Contents include the following:

- Golden Rules of Marketing
- Plan Ahead for New Products
- Marketing Resources
- Publications about Marketing from ATTRA
- Pros & Cons of Selling Directly to Consumers
- Pros & Cons of Selling Directly to Restaurants
- Pros & Cons of Selling to Independent & Small Grocery Stores
- Evaluating Your Resources
- New from ATTRA

Some of the content is abstracted below. For more, see the link above.

Golden Rules of Marketing

[Adapted from ATTRA's Agricultural Risk Management Guides, which are available in English and in Spanish.]

Know what you are selling. It is more than just the product. Bundled with the product itself are non-tangible factors [(e.g. credibility of the seller) and/or services], each of which adds value that is appreciated by your target customers.

Know to whom you are selling. Each group of customers has a different set of characteristics and needs. You have to adapt your sales approach to meet these demands.

Know your own story. Your business's story adds value to your product and you should emphasize it.

Don't make assumptions. Don't guess about the viability of your business plan or the behavior of your customers. Find some way to make certain of what you think is true.

Be customer oriented, not product oriented. Think, "My customers want lettuce. How can I get it to them the way they like it?" Don't think, "How can I find someone to buy my lettuce?"

Sell features and benefits. Say, "This red lettuce contains more vitamins to keep you healthy," not just, "I have red lettuce to sell." Each feature has a benefit that your customers value. Point these out to make a sale.

Be a price maker, not a price taker. Don't sell commodities. When you're selling something that can't be distinguished from another farmer's product, you can't control the price. If the other farmer has more to sell, you will lose.

To manage risk, diversify carefully in all directions. Growing many crops for many kinds of customers reduces your risk of loss. But management can then become an overwhelming task, which can lead to a reduction in the quality of your product(s) and service. You must strike a balance between diversity to manage risk and management time to maintain quality.

Start as small as possible and learn the market. Find the smallest way you can enter the market in order to minimize your risk. Once you learn how it works, you can increase your production.

Plan Ahead for New Products

It can be risky to invest time or money in a new product. How do you know you can produce something until you try? And how do you know you can sell a new product until you have it in hand to show people? The answer to both questions is: produce a small amount of product the first time. This way, any mistakes will be small and less costly. If you produce a large supply of a product without first securing your market, you may not be able to sell it, no matter how well it turns out. Experiment on a small scale this season to line up your market for next season.

Ask Yourself These Questions before Starting a New Enterprise

Marketing

- Where am I going to sell the products?
- Who is the customer?
- What is the size of the potential customer base?
- Where do the customers live?
- How will their location influence my selling to them?
- What are the customers' needs and desires?
- Am I going to sell directly to consumers?
- Am I going to sell wholesale to the commodity market?
- What seasonal price fluctuations can I expect?
- What quality standards must I meet?
- How much time and fuel will it take to reach my markets?
- Are there legal or food-safety considerations?

Personal

- Do I have time to devote to this new enterprise?
- Does the workload correspond to the season I want to work?
- Will the new enterprise complement my current enterprise?
- Do I have written [or at least have clearly in mind] objectives describing the desired outcome?
- Do I have the skills and experience necessary to do this?
- Do I like to supervise people?
- Have I managed a business before?
- Do I have enough personal energy to do this?
- Can I count on my family members for support?
- Do I care what the neighbors think about my new enterprise?
- Why do I want to pursue this enterprise?

For Land-Based Enterprises

After you have determined that the enterprise is something you really want to do, consider these additional questions.

Land

- What is the water drainage like?
- Are the soils suitable?
- What is the seasonal rainfall pattern?
- What will happen to my enterprises during a flood or drought?
- Are these plants or animals adapted to this region?
- Is water available for irrigation or watering livestock?
- Do I want concurrent uses for the land, such as wildlife conservation, fishing or hunting?

Buildings and Machinery

- Do I have adequate facilities?
- What additional machinery will I need?
- Can I rent or borrow machinery or storage facilities?

Labor Needs

- How much labor will be required?
- What is the source of labor?
- How much will it cost?
- Is seasonal labor available?
- Does this enterprise use existing labor in off seasons?

ATTRA is a project of the National Center for Appropriate Technology (NCAT), a private, non-profit organization in the USA that since 1976 has helped people by championing small-scale, local and sustainable solutions to reduce poverty, promote healthy communities, and protect natural resources [in the United States]. Address: ATTRA - National Sustainable Agriculture Information Service; PO Box 3657; Fayetteville, AR 72702; www.attra.ncat.org

More on Marketing from CRS

Catholic Relief Services (CRS) has worked with other organizations to develop five key skill sets farmers need in order to link successfully with markets: 1) good organization and group management; 2) savings and financial management;

3) basic business and marketing; 4) technology and innovation; and 5) natural resource management. An overview of these skill sets is given in a helpful YouTube video at this URL: www.youtube.com/watch?v=wuFSyvkfO-4s

CRS has also developed a field manual called "Preparing Farmer Groups to Engage Successfully with Markets: A field guide to five key skill sets." The CRS website describes the guide: "This field guide provides pointers for program managers and field staff on how to foster several crucial skill sets for preparing groups of poor farmers who are at a very early stage of engaging with markets and who aspire to successful agroenterprise development." The guide can be downloaded as a pdf file from

www.crsprogramquality.org/publications/2011/1/12/preparing-farmer-groups-to-engage-successfully-with-markets.html

ECHOES FROM OUR NETWORK

Resource for Understanding Land and Tree Tenure Issues

Laura Meitzner Yoder (author of the article on land tenure issues in *EDN* 106) sent us a link to a document that looks helpful. "I just ran across this easy-to-read, concise, but extremely thorough and practical online manual (FAO, 1989) that covers most of what any potential tree-planters (for fruit, alley cropping, and wood production) ought to know and to consider regarding land and tree tenure issues. It even includes lists of questions and mentions which questions to start with, and which to avoid, and how to get local terms right.

"[The manual] includes very helpful short case studies from agroforestry projects around the world that illustrate most of the common mistakes that people have made in this area...it's rare to find something on this topic that is so nearly ready-to-use by people who are not specialists in land tenure issues. This is a topic of critical importance to nearly everyone in ECHO's network [Eds: though most likely many of our readers are not aware of its importance to them]. The manual is based on work from the University of Wisconsin-Madison Land Tenure Center."

Here is the link:

www.fao.org/docrep/006/t7540e/T7540E00.HTM#TopOfPage

Avocado Trees

Rudy Poglitch e-mailed from Swaziland with a question. "I have a problem. We have about 18 avocado trees in the ground. Almost all of them are over five feet tall. The soil is very poor, and the leaves are a pale green/yellow. We are headed into the cold, dry season. I want them to survive and thrive. We have previously made a fertility hole and put fertilizer in it, but my wife Ruth explained I put it too close to

the tree (inside the drip line). What can I do? I really want these trees to live a long time and put out lots of fruit."

Dr. Martin Price responded, "The first thing I wonder is whether it is a lack of fertility or if nutrients are being tied up because of pH imbalance, caused by very alkaline or acidic soil. If it is just a matter of fertility, then simply adding enough fertilizer (in the right spots) should correct the problem.

"I have had a lot of problems myself with one of my two avocado trees. ECHO's farm manager, Danny Blank, told me I was not using nearly enough fertilizer and that I needed to mulch, mulch, mulch. (I don't know if you saw the article Danny wrote a few years ago called "A Fresh Look at Life below the Surface" in *EDN* 96. An international scientific organization in Thailand actually adapted and reprinted it as a chapter in a book they published. You can download it from our website.)

"If it is a pH problem, that can be expensive to change. Again, mulch can help, because an acidic or alkaline soil will not affect the pH inside a thick mulch layer on top of the soil. Eventually fine roots will develop in that mulch."

Tim Watkins, Nursery Manager at ECHO, also commented. "Can you describe 'pale green/yellow'? Is it even, consistent color, with no sign of veins? Even light green could indicate nitrogen (N) deficiency, while obvious veins would indicate something like iron (Fe) deficiency...maybe resulting from high pH, like Martin suggests....How is the drainage of the area? Poor drainage or really heavy soil can also result in stunted avocado trees."

Rudy wrote back about a month after sending the first note. "Our avocado trees are much improved. We dug trenches beside them on the uphill side and put grass and ash (to raise

the pH) in the trenches. The older leaves are better, and the new growth is the normal color.”

Bamboo for Fences

A visitor to ECHO from Nigeria told former intern Randall Fish about a method of creating fences using bamboo. Randy recounted, “He said this was the way they did it when he was growing up. They would cut bamboo culms and lay them down into the shape of the enclosure they wanted to create, cover them with two to four inches of soil, and wait for it to grow up into what would create a solid fence/enclosure type structure. It was done during the start of their rainy season, and he said they used [the enclosures] as pens for goats and cows.”

Beth Doerr has seen what appeared to be the same thing in Southeast Asia. If you have any knowledge of this technique, or if you decide to try it, please let us know what results you get.

Tomatoes from Cuttings

John Douglas wrote to us from Finca de los Perezosos in Panama. “As [information from ECHO] suggested, we have been starting tomatoes by cuttings, which of course are faster than seeds and true to the parent. Both suckers and growing tips[work], but the growing tips seem to perform a bit better....You must use indeterminate plants.

“Here in the country of Panama, ‘gringo’ plants love to die quickly. By flowering stage, all of our tomatoes that have been started by seed suffer from both fungal and bacterial leaf spot disease. However what I really want to point out is that *when we start a cutting from an infected plant, the new plant is healthy for a decent amount of time. We are in flowering stage with healthy plants.*

“Our tactic now is to make cuttings quickly and get rid of the old plants just as fast.”

New Use for Moringa Seeds

Tim Tanner (working in Tanzania) shared, “An interesting feature about the mature [moringa] seeds is that if you eat them, they act much like the miracle fruit on your ECHO farm. Try it: Take two or three seeds, peel them, eat them (a bit bitter) and wait about 45 seconds. Then drink a glass of water. You will think you are drinking juice. A Tanzanian medical officer who is associated with ANAMED showed me that. He uses moringa seeds in his clinic for getting children to take their medicine. He tells them that the seeds are the bitter medicine. Then he gives them glass of ‘juice’ to wash it down. The glass of water has the actual medicine. I’m not sure I like the ethics of lying to the children, but it is clever.”

BOOKS, WEBSITES AND OTHER RESOURCES

Correction: SRI Toolkit link

The link we shared in EDN 111 is no longer valid. The current link is:

<http://vle.worldbank.org/moodle/course/view.php?id=336>

Several links are located in the upper right-hand corner of the web page. The top link is a video/slide show for the general public. The second link is a step-by-step ‘how to’ for practitioners.

A CD-ROM version of the SRI Toolkit information is also available. ECHO has obtained several copies. You are

welcome to request a complimentary copy if you are working in agricultural development and it would be helpful in your work (*i.e.* you do not have consistent access to the Internet, but are interested to explore SRI in the area where you work).

FROM ECHO’S SEED BANK

‘Caro Rich’ Tomato Seed for Increased Vitamin A

By Tim Motis

In her book, *Breed Your Own Vegetable Varieties* (reviewed in EDN 87), Carol Deppe mentions an open-pollinated, orange-fleshed tomato variety called ‘Caro Rich.’ The book states that ‘Caro Rich’ is second only to carrot as a source of beta-carotene (Vitamin A). It is an indeterminate variety, so the vines will grow as long as the plant is alive and will likely require trellis support. ECHO’s seed bank now carries ‘Caro Rich’ for

members of our network interested in experimenting with a trial packet.

You may be interested in the variety for its own merits. Alternatively, you might want to take it a step further by using ‘Caro Rich’ to enhance Vitamin A in locally grown red tomato varieties. Deppe suggests taking the best red-fruited varieties that are available in an area and crossing them with ‘Caro Rich’ several times to obtain a more nutritious tomato.

Below are some links I also came across that show how to go about crossing tomato varieties by hand. If

‘Caro Rich’ is considered the pollen parent, you would need to: 1) remove the stamens from a ‘Caro Rich’ flower; 2) remove the anthers (emasculate) from a flower of the red-fruited variety you are working with; and 3) gently brush the stamens you removed from ‘Caro Rich’ against the now-isolated (because anthers were removed) stigma of the flower on the red-fruited variety. If you would like to learn more, below are some helpful links.

- Plant Breeding as a Hobby: www.aces.uiuc.edu/vista/html_pubs/PLBREED/pl_breed.html

- YouTube showing how to emasculate a tomato flower for hand-pollination: www.youtube.com/watch?v=UBNaV-Q9Mc0 (note other short clips on pollination that are linked with this video)
- Steps for making a tomato cross: www.avrdc.org/LC/tomato/seedhybrid.pdf; <http://www.avrdc.org/LC/tomato/hybrid/08emasc.html>

Additionally, we still carry *Breed Your Own Vegetable Varieties* in our book store (www.echobooks.org/SearchResults.asp?Search=Breeding+your+own+vegetables). I would recommend this excellent and very practical reference if you want information to help you encourage and train farmers to save seeds and/or develop their own varieties.

***Moringa stenopetala*: Anyone interested in sending seeds to ECHO?**

For a number of years, ECHO's seed bank has supplied trial packets of *Moringa stenopetala* seed. Native to Africa (e.g. Ethiopia, Eritrea, Kenya), *M. stenopetala* has greater drought resistance than *M. oleifera*. To our knowledge, *M. stenopetala* seeds are not available commercially, and we are no longer able to obtain seeds from Haiti. A large tree on our demonstration farm here in Florida flowers but does not set seed well. If you are able to supply ECHO with seed, or know of a source we are not aware of, please contact Tim Motis (tmotis@echonet.org). ECHO would be interested in up to 2 kgs per year and could pay approximately \$50/kg for fresh seed with a high germination percentage (80% or higher).

You would need to be able to obtain a phytosanitary certificate from government authorities in the country from which the seeds are sent. Be sure to write us before collecting or sending the seeds, because others might have already met our needs. Also it is essential that we send you a plant import permit on the outside of the package.



Figure 2: *Moringa stenopetala* seeds.

UPCOMING EVENTS

Reminder: 18th Annual ECHO Agricultural Conference

Fort Myers, Florida
December 6 to 8, 2011

Our 18th Annual ECHO Agricultural Conference (EAC) is coming up soon! Online registration is available. Go to www.echonet.org and click on "Conferences and Symposiums" under the "Agriculture" tab. Alternatively, find the registration site at www.regonline.com/2011EAC.

Being a networking conference, our speakers are the delegates themselves. If you have a topic you would like to present and have registered, or plan to do so, please take a few moments to fill out the online [presenter form](#) (link also provided on the registration form). Early submissions will allow us to post program information on the website in a timely manner. November 1 is the deadline to

present a topic for consideration by our speaker selection committee. Other deadlines:

- November 7, 2011 - Last day to request Visa Invitation Letter.
- November 15, 2011 - Last day to cancel for 100% refund of registration fees. An exception MAY be made to this if we are provided with a copy of the rejection notice from the Embassy regarding your application for a Visa and we sent you a Visa Invitation Letter.

2011 ECHO Asia Agriculture and Community Development Conference

Empress Hotel, Chiang Mai, Thailand
October 3 to 7, 2011

The ECHO Asia conference enables persons serving Asia's poor to network solutions related to alleviating hunger and poverty. Three mornings of plenary sessions will

feature knowledgeable and experienced speakers. Slated speakers include:

Tony Rinaudo (Natural Resource Management Specialist with World Vision)

Dr. Tom Post (CRWRC Team Leader for Asia)

Dr. Arnat Tancho (head of the Soil Resources and Environment Department at Maejo University, Chiang Mai)

Randy Bevis (founder and director of the Chiang Mai Aquatic Development Farm and regional aquaculture advisor)

Jeff Palmer (Executive Director of Baptist Global Response)

Heather Morris (Technical Advisor for World Concern Myanmar)

Di Matthews (physician working in Papua, Indonesia)

Dr. Karl Frogner (President and Project Development Head; UB International, biochar researcher and advocate)

Dr. Samran Sombatpanit (Past President and Membership Coordinator of the World Association of Soil and Water Conservation-WASWC)

The conference will also offer dozens of workshops and discussion groups led by regional agricultural development workers and experts, a resource fair featuring displays and booths by various development organizations and businesses, and unlimited networking opportunities with fellow conference participants and resource persons. Also included in the conference is a day of post-conference tours (October 7) to notable venues which offer excellent examples of sustainable agriculture, appropriate technology and outreach to the poor.

Visit <http://asia.echonet.org> for additional information, including on-line registration and payment.

Online Courses Offered by Auburn University's College of Agriculture

The Auburn University College of Agriculture offers a convenient opportunity to take agricultural courses by distance education. These web-based courses may be taken for academic credit, for certification or simply to acquire a better understanding of soil and crop sciences.

Undergraduate-level courses that will be available online fall semester 2011 include basic crop science, basic soil science, poultry health, general plant pathology and introduction to entomology/insects. Courses in plant genetics and crop improvement may be offered if there is a demand for them. All courses are

taught by qualified faculty with doctorates in their respective fields. The deadline for registering for fall classes is August 17. Details can be found online at www.ag.auburn.edu/distanceeducation.

Certificate courses give professionals in the fields of agriculture, conservation and natural resources and those working with environmental agencies the opportunity to continue their education and refresh their knowledge base. They also can be beneficial for students who are preparing for graduate school.

Individuals who sign up for certificate courses are not required to enroll as students at Auburn, nor do they pay a registration fee. (The course fees are listed in the next paragraph.) At the end of their courses, they will be awarded certificates of completion instead of transcripts.

The cost for taking online undergraduate-level courses as certificate courses is \$260 per credit hour. For students taking the distance education courses for academic credit, the cost is \$876 per credit hour for people who are not residents of Alabama (\$292 per credit hour for Alabama residents). All formally enrolled undergraduate students also must pay a \$446-per-semester registration fee.

All of the college's online courses are Web based and "asynchronous," which means students can download information at times that are convenient to them and can submit assignments and take their exams online. A variety of media are used, including audio PowerPoint

presentations, video recordings, web links and documents. Some courses use computer simulations of laboratory experiments.

A graduate distance education degree program also is available in agronomy and soils. Students who enroll in that program, which is accredited by the Southern Association of Colleges and Schools, can pursue either a Master of Science degree, which requires original research and a thesis, or a non-thesis Master of Agriculture degree.

To learn more about the College of Agriculture's distance learning opportunities and to stay abreast of courses that will be offered fall 2011 and spring 2012 semesters, visit the website at www.ag.auburn.edu/distanceeducation, or contact Megan Ross at mhr0001@auburn.edu or 334-844-3201.

Auburn also is considering offering the same course materials with self-tests and without graded assignments or graded exams at a much reduced price if there is sufficient interest. This option does not provide academic or certification credit but is useful for knowledge enhancement.

The distance education organizers are soliciting feedback from anyone interested in enrolling in these courses to find out which type of courses most interest you. Send an email to Dr. Dennis Shannon at shannya@auburn.edu indicating that you would like to take (a) courses for academic credit at \$292 or \$876 per credit hour, (b) certificate courses at \$260 per credit hour or (c) personal improvement courses at much reduced price.

PLEASE NOTE: At ECHO we are always striving to be more effective. Do you have ideas that could help others, or have you experimented with an idea you read about in EDN? What did or did not work for you? Please let us know the results!

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