echo® news

Hope Against Hunger | volume 44 | issue 3

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David Erickson, President/CEO

"Let's not merely say that we love each other; let us show the truth by our actions."
1 John 3:18

Dear Friends,

Welcome to a new issue of *ECHO News*! In a number of these stories, you'll see words like "observe," "test," "trial," "research," and "study". For us, these aren't academic or passive activities. Rather, they are vital elements of our work and witness around the world.

Why? We love to share new plants, practices, and appropriate technologies with small scale farmers, missionaries, and development workers everywhere. However, simply because something is "new" doesn't mean that it is appropriate, that it will be effective, or that it is likely to be embraced and adopted. Furthermore, there are very few "one-size-fits-all" solutions – some "improvements" are highly beneficial in specific contexts and not in others.

So, at ECHO we see it as part of our responsibility, and privilege, to do what we can to know what is relevant, reliable, and replicable for farmers in different contexts. We take the risks. **Doing our "research" makes all the difference between a promising "idea" and something that actually offers hope against hunger.**

With this learning in hand, we can responsibly and joyfully share improved plants, practices, and appropriate technologies with farmers, missionaries, and fellow development workers. This scientifically-sound, Biblically-based approach has been our core DNA since Dr. Martin Price (and his wife Bonnie) launched the work of ECHO Florida 40 years ago. It is also the core DNA that infuses our equipping work with our new cohort of Interns, caregivers in Tanzania, Bible students in Togo, and farmers around the world.

Enjoy and be inspired!

David Erickson, President/CEO

ECHO exists to follow Jesus by reducing hunger and improving lives worldwide through partnerships that equip people with agricultural resources and skills.

Cover photo: Sonia in the village of Komsilga, Burkina Faso, preparing a cooking fire in her open air kitchen. Smoke inhalation for the cook and nearby children is a major health concern caused by cooking fires.

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edited by Danielle Flood

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in this issue

Homemade Bio-pesticide
Repels Pests and Earns Income

In many regions of the world, insects spread plant diseases that cause leaf wilt, spotting, or stunting of fruit growth. Younger plants may wilt and die. Some older plants may bear discolored fruit that doesn't ripen. Preventing insects from spreading diseases is the best way to protect farmers' crops because treatments are often expensive (time and resources), or don't yet exist.

In West Africa, the ECHO training team shares how to make bio-pesticides to keep insects away from the garden. One trainee, Karim, learned to make his own pesticide by combining onion, peppers, and neem leaves.

He applied it on his tomatoes and eggplants and was convinced by the lack of disease and the high quality of his crop.

After that, he sold his bio-pesticide in liter bottles to any neighbors who didn't have time to make their own. His profit this year was $182.

Karim is thrilled to be able to earn money alongside his other gardening projects and protect his plants from pests.

Fueling Innovation Across Africa

Burundi

"A technology that is never used has an efficiency of zero."

Craig Bielema's quiet but confident voice echoed in my headphones as he explained his recent project modifying a rocket stove concept to help his team feed 500 kids every school day. A past ECHO Intern, Craig had also spent many years on staff at ECHO Florida, leading the Appropriate Technology department. Now, Craig and his family serve in Burundi with Mennonite Central Committee.

The kitchen staff at the school have been using open fires in a small enclosed kitchen, which becomes very smoky, causing health problems for the women that cook each day. This method of cooking also consumes a large amount of wood, which is in short supply. Craig is helping them to pilot a large-scale, fuel efficient stove with a chimney to remove smoke from the kitchen, making a much healthier environment for the cooks and also to ease the burden of collecting and/or buying as much firewood for the cooking fires.

"In this project we sacrificed some efficiency for increased usability," Craig explained. "In later versions of the stove, we sacrificed slightly more efficiency for reproducibility and longevity. The goal is that the technology is an improvement to the current situation, and it is used. If it is not both of those things, it is failing."

Tanzania

In another part of Africa, Herry Charles, an ECHO trainer, is testing multiple rocket stove sizes made of mud-bricks to help share hands-on experience with the farmers he teaches in Tanzania. Just like in Burundi, the bigger size accommodates larger pots and feeds groups of people, from schools to large family gatherings. Made of mud-brick and reinforced with metal, these stoves are affordable and use less fuel, and create much less smoke than the traditional 3-stone fire.

Burkina Faso

ECHO first taught about biogas in West Africa in 2010. Biogas is created by the metabolism of methane bacteria, and is comprised of methane, carbon dioxide, and less than 1% hydrogen sulfide. Simply put, biogas is the output of the natural process of turning organic residues such as manure or kitchen waste into energy and fertilizer.

Now, farmers are asking for guidance on how to make the digester larger. "We train people and they start using the biogas plant with the drum," shared Promesse Kansie, an ECHO West Africa trainer. "The biogas digester provides many benefits – reduced smoke, cooking fuel, and fertilizer. It is amazing. The main request from our trainees is to know whether we can build a larger plant to produce more gas. Ten or twelve family members can be eating together at one time."

Sharing Knowledge Across the Continent

The beauty of ECHO's network is that larger biogas plants are currently being tested and researched in Tanzania – and ECHO trainers are testing and sharing this knowledge.

As Craig demonstrated in Burundi, usability, reproducibility, and longevity are key features in technology innovations – at ECHO and globally. As we share knowledge resources and learn from those we serve, we are fueling innovation for small-scale farmers across Africa and around the world.

Above: Institutional cooking requires 2-3 large fires (1) but was replaced with improved stoves (2). Larger capacity rocket stove (3) uses the same basic technology to meet larger cooking requirements. Opposite: A traditional three-stone fire exposes both cook and children to smoke.

Growth in ECHO's Internship Program

Eight new interns arrived at ECHO Florida as a cohort in June. Changes to the internship program add new learning opportunities including a graduate certificate.

"Cohort." A new word keeps popping up around ECHO Florida. For the first time in ECHO's history, eight new interns arrived at the same time. This "cohort-style" internship means that the interns will be able to experience the newness of ECHO Florida and tropical agriculture in a group. "I love that I have others with me also experiencing everything for the first time," says Grace Brinsfield. It also means that foundational knowledge can be shared early and built upon as the year progresses.

New to the intern program this year is an exciting partnership with Dallas International University (DIU) which will allow interns to earn a Graduate Certificate in Tropical Agriculture Development after their 12 months at ECHO.

Interns will participate in eight graduate-level courses focusing on applying knowledge within communities through cross-cultural training, multicultural teamwork, community development, tropical crops, and agricultural experimentation. Five of the courses are taught by ECHO staff members and complemented by experiences gained through ECHO's internship program, and three courses will be taught by DIU staff.

Though the structure has changed, the purpose of the internship remains the same. Equipping interns for international service is core to ECHO's mission.

Another new feature is a more rotational system in which the interns will gain experience in each of the animals on the farm, instead of specializing in one animal. This will provide a more rounded experience with goats, pigs, chickens, and the forage bank – after all, knowing what crops to grow to feed the animals is important as well.

Though the structure has changed, the purpose of the internship remains the same. Equipping interns for international service is core to

Above: Grace Brinsfield pats one of three pigs that she is caring for this month. Opposite: John Yann plans planting stations for a plot of corn on the Tropical Highlands.

ECHO's mission. Interns are still immersed in hands-on experiences in the various tropical gardens, enjoying the bounty of crops that grow well and learning hard-earned lessons when a crop doesn't pan out.

Practical, Hands-on Experience

When I met up with new interns Sarah Harding and Robert Beaty, they were cutting and tying bunches of lablab and mucuna vines and hanging them up to dry. Sarah and Robert were hot, but smiling. Working together as intern buddies on the project, they expressed how much they appreciate the teamwork, collaboration, and learning opportunities of the internship tasks. They shared that they've already learned about how the dried cover crops can be a rich fertilizer when mulched around future millet plants in a nearby garden plot.

We look forward to sharing updates with you in the next months and years as we see ECHO's mission take root in the lives and futures of these passionate young people.

Forty Years of ECHO Interns

"We are always amazed at what God has done. We started small and worked with what we had and took each step as it came. We would never have dreamed that ECHO would become what it is today," shared Martin Price, Founding CEO.

Dr. Martin and Bonnie Price arrived at ECHO's Fort Myers property on June 18, 1981. The internship program started later that same year with the arrival of Elise Hansen.

"ECHO's property was flooded when I arrived, so my first official task was to assist Martin in digging drainage ditches by hand. He joked that I probably never imagined my college degree would prepare me for that job!" Elise recounts. "I became very close to Martin and Bonnie that year, as we initiated many of ECHO's core missions, including the Seed Bank and ECHO Development Notes. I am very thankful and proud that I was part of ECHO during its first year under Martin's leadership."

This June, ECHO welcomed its 277th intern!

After retiring as CEO in 2006, Martin and Bonnie have remained active volunteers helping with ECHO workshops and special events. One of their great joys is reconnecting with ECHO partners from years past.

"We are thrilled to see interns take what they have learned and use it in their futures to help others in so many different ways," shares Bonnie Price. "The interns have been a special joy in our lives!"

Dr. Martin and Bonnie Price, still active today, faithfully led ECHO's ministry for 25 years.

what's happening

East Africa Interns gather with Annie Deutsch during her field experience for a practical seminar on pest identification and management.

#echofightshunger

Follow us on Instagram for pictures of ECHO's work all around the world. #echofightshunger

Advantages of Bio-Pesticide

Amos used to purchase chemical pesticides on credit and then owed a large bill at the end of the harvest season. After being trained by ECHO he now makes bio-pesticides from neem seeds. He shares that his cotton is the whitest and highest quality in his region.

New Life at the ECHO Asia Farm

Baby "DJ" was born in May. Cattle, water buffalo, goats, and yaks are important ruminants on farms in Southeast Asia. To learn more about feed options for animals in the tropics, go to ECHOcommunity.org.

g at ECHO

Indigenous Microorganisms

Healthy soil is alive! Our staff at ECHO Asia are growing another batch of indigenous microorganisms (IMO) to help break down organic matter so the plants can take up the nutrients they need to grow strong! IMO trainings are offered through the ECHO Asia Farm and online.

Community Garden Partnerships

ECHO Interns assist a nonprofit with their garden initiatives benefiting adults with mental illness.

Bible School *Plus* Agriculture

The ECHO West Africa team visited Northern Togo to share a multi-day training for future pastors and their spouses. Practical training in agriculture equips them with additional tools to share the Gospel and provide for their families.

Nutrition and the Garden

With support from ECHO, a rehabilitation center for children recovering from corrective orthopedic and plastic surgeries in Tanzania uses their flourishing garden to feed 200 people each day and teach household nutrition.

Women at The Plaster House have many reasons to be anxious. Their child comes for a corrective surgery not available in rural Tanzania. Their stay is dictated by the length of recovery time of their child, following surgery for a correctable disability. Treatment cost is a challenge for so many families, and they have to help their little ones regain skills like walking and eating again. Financial, emotional, spiritual and physical worries are a daily battle.

Today though, the women are in the garden. Happy Martin, an ECHO East Africa trainer, leads a hands-on planting training for mothers while their children are being cared for by The Plaster House caregivers. There is joy, excitement, and fellowship.

Many of these women had never heard of katuk before but as they have come to trust both the food and care of The Plaster House, they're willing to give it a try. "Because so many come to The Plaster House from remote areas, ECHO is reaching communities it might never reach otherwise. And, because the women are so enthusiastic, we know that what they are learning will be spread in their families and communities," shared ECHO President/CEO David Erickson.

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ECHO not only trains the mothers, but helps by training the gardeners working in the garden plot itself. This plot helps The Plaster House continue to feed 200 people every day, with 45% of all the vegetables grown in their own garden. ECHO has been a resource and inspiration for their garden and chicken flock for the last five years and continues to serve both the staff and clients.

"ECHO's seminars in our Mama's Education Program are amongst their favorites, and they respond well to Happy's teaching style," wrote Bronwyn Winchester of The Plaster House. Many have learned to prepare, dry, cook, and grow vegetables that they didn't know were edible such as chaya, cassava, moringa and katuk. Our staff and children also benefit from the vegetables growing in our garden. We are so thankful for ECHO's partnership in Tanzania."

Left: Happy Martin, an ECHO East Africa trainer, showed how to plant katuk and cassava that can improve household nutrition. Above right: Harvesting lessons in the garden add hands-on experience to the knowledge taught.

In Their Own Words: Joyce Charles

My name is Joyce Charles; I am a mother of two children from Arusha City. For many years I have been involved in the vegetables and fruits business and I have been selling seasonal vegetables such as Amaranth, African nightshade, and Ethiopian mustard to my customers.

Through our women's group, I attended a training on perennial vegetables such as chaya, moringa, cassava leaves, and katuk from ECHO East Africa. We were taught how to produce and prepare these perennial vegetables which have high nutrition. We were taught that perennial vegetables contain vitamins, minerals, and nutrients required to protect our health.

I am grateful to have received this training as I have been able to expand my understanding of perennial vegetables compared to other annual vegetables. I learned how they can withstand drought, water scarcity, and also that you can plant once and continue harvesting for three to ten years.

Through this training I will be able to produce these vegetables for my family's use and also for sale to increase income from selling of produce since during the dry season it becomes difficult to find seasonal vegetables. Perennial vegetables, though, are available throughout the year.

Local Research for Global Impact

By Makenzi Johnson

Storing fresh produce is not a task most people put too much thought or energy into – using a container and tossing it into the refrigerator will suffice. But for one farmer in Burundi, his method of storing freshly harvested tomatoes was far from ordinary.

This farmer's method of storage was ash.

"He was extending the life of his tomatoes, claiming up to four months," Stacy Swartz, a research and publications associate at ECHO said. "Properties in the ash help to slow down the process of ripening the tomato and the farmer was able to hold these tomatoes until a more profitable market time."

When Swartz and the research team heard about this method, they reached out to ECHO's Regional Impact Centers and asked if this technique was relevant enough among farmers to test. The centers responded with an overwhelming yes.

Post-harvest storage is challenging for many small-scale farmers around the world. With a lack of resources for pest control and limited access to electricity for climate control, produce has to be sold right away before it rots. If a farmer can store the produce and bring it to market when there's less supply and increased demand, they can make a larger profit.

The research department at ECHO's Global Demonstration and Research Farm in Florida began with literary research, finding that the storage life for tomatoes ranged from 18 days to six months. Because of this research, the team decided to set up an observation trial rather than a re-creation trial. An observation trial tests at a smaller capacity as a precautionary effort to help reduce waste.

"We try not just to validate something once, but over multiple seasons because of the variability in seasonality."

- Stacy Swartz

The purpose of ECHO Florida being the first to facilitate a trial is to confirm validity before sending the information to the Impact Centers. The centers will then pass along the results to farmers so that they can be as successful as possible. A majority of the trials tested will last for more than one season.

"We try not just to validate something once, but over multiple seasons because of the variability in seasonality," Swartz said.

Small, cardboard boxes are lined on a table, half of them filled with ash and the other half with sand, the control, with four tomatoes placed in each. Every week the team goes to open both an ash and a sand box to measure variables such as the sugar content, Ph, weight and more. Measuring specific variables such as these can help to see how far along the ripening process is with the tomato. Analyzing the ripeness of a tomato is a direct indicator of how well the sand and ash acts as a means of preservation. The next week, they will open another set of boxes and take measurements again.

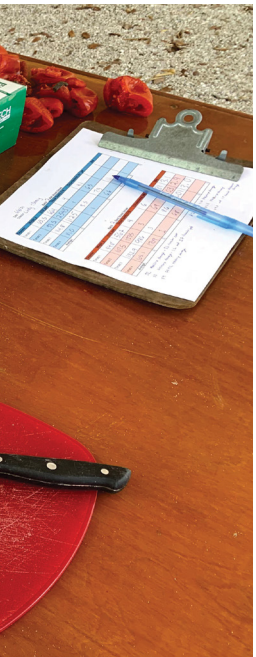
Tomato storage is just one example of the many trials conducted at ECHO's Global Demonstration and Research Farm in Florida. Another trial testing how variations in shade affect growth is also being conducted. In this trial, maize and beans are planted under three variations of shade coverage – no shade, partial shade and constant shade. This trial will analyze how well the maize and beans grow under each of these conditions. The results will be posted in *ECHO Development Notes*, a report which showcases research and trial results.

The *ECHO Development Notes* are sent quarterly to 183 countries and are translated in more than eight languages. Missionaries, development workers and small-scale farmers use these notes and pass them along to others.

"A farmer in Asia might be practicing something that's applicable to a farmer in West Africa, and we just need to make those connections in order to get information from one farmer to another," Swartz said.

"A farmer in Asia might be practicing something that's applicable to a farmer in West Africa, and we just need to make those connections..."

Through ECHO's research and global resourcing, farmers all around the globe are learning new techniques for preventing post-harvest loss, increasing crop yields and more. Tested and proven practices are helping farming families increase their productivity, improve their livelihoods and know that there is indeed *Hope Against Hunger!*



Above: Stacy Swartz and an ECHO intern refill the "haraka" planter, meaning "fast" in Swahili, with beans to plant in trials at the ECHO Global Demonstration and Research Farm in Florida. They planted both beans and maize under three variations of shade coverage to determine how shade impacts growth. Opposite: Once a week, the research team opens two boxes to reveal tomatoes buried in sand and in ash. The team will run tests to measure different variables which indicate how well the sand and ash preserve the tomatoes.

Intern Spotlight

Lindy

Each one of us has been given a different story. My journey has not always been straightforward, but I know none of it will be wasted.

It began with getting a bachelor's in horticulture, becoming friends with international students, and then teaching. These and other circumstances led me to engage in cross-cultural agricultural work.

When I found out about the ECHO internship, it seemed like the perfect place to grow my agricultural skills so that one day I could serve others. Gaining experience in cover cropping, making biofertilizer, learning about agroforestry, and making some really good friends have been highlights of my internship. The Lord in His kindness surprised me with a great blessing here at ECHO.

Having a piece of land to experiment with has helped me envision what it might be like to be a small-scale farmer. There are many different management techniques that could be recommended to farmers, but they know better than anyone else what their goals, resources, energy, needs, and limiting factors are. I want to remember that as an agriculturalist, I will always be a learner, especially when entering a different culture. This is one of the values I have gained from my time at ECHO.

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As I get ready to leave ECHO, I'm looking forward to serving others in a new setting knowing that God's promises go with me. I will be spending the next 10 months in Mexico learning language and cultural acquisition skills. The program is designed to teach me how to learn languages, even those without a written alphabet, in order to be able to communicate clearly with the people among whom I will one day live and work. I am trusting that this next step will prepare me well for my next steps ahead, and I am looking forward to entering this next season.

Lindy and her intern buddy Lauren


Lindy, Semi-Arid Intern


So many bananas!

Extraordinary Plants: Barbados Cherry

Barbados Cherry, *Malpighia pucinifolia*, is native to the West Indies, Central and South America.

For centuries this tropical cherry was a common dooryard tree grown for its tasty fruit and its use in traditional home remedies for the common cold. The fruit, however, gained worldwide notoriety in 1945 when scientists from Puerto Rico reported acerola (the Spanish name) as one of the richest sources of vitamin C among edible fruits. This resulted in widespread interest and large commercial plantations around the world. The enthusiasm was short-lived, however, as less expensive synthetic ascorbic acid replaced natural sources. Nonetheless, the Barbados cherry remains a splendid natural source of Vitamin C and an excellent tree for the home garden.

The Barbados cherry tree will grow and fruit fairly well with little care. A small tropical tree, it will tolerate only mild cold weather, usually not less than 28 degrees. Freezes kill it back but it can resprout. The plant prefers full sun and well-drained soil. The use of mulch is desirable, especially in sandy soils. In addition to conserving water and shading the shallow roots, the mulch is thought to reduce nematode damage, a major limitation to successful cultivation.

Four ripe cherries can have as much vitamin C as a half pound of oranges and is an attractive plant ideal for small spaces. Both children and adults will enjoy the tasty fruit as well as benefit from its exceptional vitamin C content.

Charitable Giving Incentives Extended through this tax year.

Don't miss out on taking advantage of some of the tax benefits that COVID-19 relief legislation extended through the 2021 tax year.

Not itemizing?
You can take an additional $300 ($600 if married filing jointly) **on top of the standard deduction** for cash donations to charity in 2021. Last year, the Coronavirus Aid, Relief and Economic Security (CARES) Act set the charitable limit at $300 per "tax unit". **New for this year** is that those who are married filing a joint return can BOTH take the $300 deduction, for a total deduction of $600.

For those who itemize…the adjusted gross income (AGI) deduction limit for cash donations to charity **stays at 100% this year,** compared to the typical 60% limit prior to the CARES Act.

Considering Corporate Giving?
Corporations can also take advantage of bigger deductions this year. The **increase in the AGI limit from 10% to 25%** for cash contributions to charity remains in effect for corporate donors.

Proposed Legislation Means Now is the Time for Estate Planning

While these extensions of the CARES act provide favorable incentives in 2021, there's other proposed legislation that could drastically impact estate and gift taxes. Some of the proposed tax legislation could pass as early as this fall, with provisions that immediately go into effect. With these changes on the horizon, now is the time to seek the advice of a trusted financial adviser.

This information is not intended as legal or tax advice. Please consult your preferred tax advisor.

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North Fort Myers, FL 33917
239-543-3246 | www.echonet.org

Video Trainings Cross Closed Borders

In Myanmar, a recent study showed that few farmers have received any formal training on pig or poultry farming. In some communities, knowledge about animal diseases is limited and an outbreak of African Swine Fever (ASF) – a severe viral disease – is currently present in Southeast Asia. So, when Samaritan's Purse staff asked if ECHO could offer a pig rearing training for the communities they serve, the staff was eager to share their knowledge.

ECHO Asia staff members Chao, Hanni, Patrick, and Toh collaborated to produce three hours of video demonstrations and presentations. The topics ranged from feeds and bedding to disease prevention and breeding. This set of on-demand training resources will be shared by Samaritan's Purse Myanmar, supporting their initiatives among vulnerable people in many villages.

The needs are great and the challenges more complex. The COVID pandemic has worsened food insecurity, and caused unprecedented impact on the most vulnerable population's ability to afford food and other basic needs. Virtual trainings are helping ECHO continue to meet these needs across closed borders.

Staff members Patrick (left) and Toh (right) present recorded sessions on pig rearing to share with farmers in Myanmar.