
2018 ECHO International Agriculture Conference

ECHO Staff

ECHO's 25th Annual International Agriculture Conference was held in November 2018. Below are brief descriptions of a few of the morning plenary sessions. For these and other talks, video and slide presentations are available on ECHOcommunity.org (https://www.echocommunity.org/pages/conference_presentations).

Seed2Save—an 'old school' approach to vegetable seed development

(Mike Mueller)

Mike Mueller, Founder and Executive Director of Hope Seeds (<http://hopeseeds.org/>), has been involved in the vegetable seed industry for 40 years, much of it involving seed development. Since Hope Seeds began in 1999, Mike has put his extensive knowledge of the seed industry to use in providing over 10 million packets of seed through 400 ministries and agricultural workers in 60 countries, and in the USA.

Mike described characteristics to look for when evaluating "good seed." Good seed will be appropriate to the local land, climate, day length, and culture. It will be free of weed seed. Good seed will germinate well and will grow into plants that are true to their type and that grow with vigor.

Mike's talk on "Seed2Save" emphasized two simple and time-tested methods that farmers can use to select and develop vegetable varieties. The first, called random mass selection, involves saving seeds from the best plants in a garden or field. Farmers walk their fields, selecting plants with traits they like (marking such plants so later the seed may be saved), and removing plants with traits they do not like. By saving seeds from intentionally-selected plants, over time a farmer will end up with his or her own selection that has qualities suited to the local context. Helpful qualities to select for include disease resistance, insect tolerance, good flavor, high productivity, local marketability, and a pleasing appearance.

The second method is called population breeding. A farmer plants multiple selections of seed of a specific target species at the same time. When the plants grow, the farmer removes any selections that perform poorly, then allows the remaining selections to cross pollinate. The resulting seeds are planted, grown out, and seeds saved from the most desirable plants. Over time, this method allows a farmer to breed his or her own strain of plants with a unique combination of traits from each selection. Examples of these and other breeding techniques are available in Mike's talk.



Figure 7. Mike Mueller training gardeners in Haiti how to save seed of bell pepper. *Source: Hope Seeds*

The Answer is in the Room

(Dr. Karen Stoufer)

Dr. Karen Stoufer, director of training and Asia area director for Christian Veterinary Mission, outlined twelve principles of dialogue-led adult education that can help any trainer to disseminate content effectively, and to also respect and connect with the people being trained.

The principles shared by Karen were developed by Dr. Jane Vella. They encourage agricultural development workers to approach training in a new way: facilitating the learner's own self-discovery of answers rather than delivering information from the "top down." The principles, briefly described below, were modeled during Karen's talk, as delegates were periodically encouraged to discuss a topic in small groups. Keywords of each principle are in bold font.

1. Spend time conducting a **needs assessment**. Ask learners what they would like to learn. Before teaching anything, observe the learners' context to discover and respect what is already known.
2. People need to feel a sense of **safety** in order to participate in the learning process. Trainers can establish a safe environment by being inclusive and giving non-judgmental affirmation.
3. Training must be seen as an exchange in the context of **sound relationships**. While a trainer offers information, the learners offer insight

into the problems they face, what local resources are available, and how the trainer can better train within their context.

4. Learning happens best when it takes place in **sequence**, meaning that a learning task is done in small steps that progress from simple to complex. Reinforcement is also important in that trainees are exposed to the same information in various ways in order to retain their interest and lead them to a mastery of the material. Sometimes this includes games, or having trainees correct their own work.
5. The Greek word **PRAXIS** means "action with reflection." This encapsulates how adults learn. Ask learners about what they saw, why it happened, and what they're going to do about it.
6. Instead of viewing learners as objects that passively receive education, trainers can show respect for learners by treating them as subjects, and as the ones who are responsible for their own education. Don't do something for the learner that the learner can do for themselves.
7. Any topic has three components that need to be taught: head **knowledge**, practical hands-on **skills**, and a heart **attitude**.
8. Adult learners put effort into learning what is relevant. **Immediacy** affects what trainers teach and when they teach it. For example, training on harvesting and storage makes the most sense shortly before harvest season.
9. Since many trainees might be used to viewing a trainer as being on a different level than themselves, **clear roles** are important--in this case, making clear that trainers and trainees are equals. To help with this, trainers might choose to call themselves facilitators rather than teachers. Trainers can also sit with trainees during meals and assist with chores.
10. Since everyone attending a training has different gifts, **teamwork** is an important principle for learners to experience. Positive, non-divisive competition can be a good technique to encourage collaboration in problem solving.
11. **Engagement** refers to the passion and excitement that learners experience when the aforementioned principles intersect in a training setting.
12. **Accountability** is necessary. In particular, trainers are accountable to trainees to provide the learning environment they said they would offer.

Other Resources

Learning to Listen Learning to Teach: The Power of Dialogue in Educating Adults by Dr. Jane Vella

Christian Veterinary Mission has a free E-learning curriculum available at <https://cvmusa.org/elearning/> (<https://cvmusa.org/elearning/>). Look up "participatory learning." You will need to sign up for a free account in order to access the online course.

Adoption of amaranth in the local context of Oaxaca, Mexico

(Pete Noll)

Pete Noll, executive director of Puente a la salud comunitaria (Bridges to Community Health) (<https://www.puentemexico.org/content/integrated-approach>), has promoted amaranth for 10 years. He started his plenary talk by expressing deep admiration for those who farm, because it is not an easy job. He also shared his belief that solutions to existing problems are often closer than we might think.

Amaranth can be one solution. Pete stressed that amaranth is not a “silver bullet,” but that it does have multiple helpful attributes. He described the way that amaranth can be part of many related initiatives, including improved nutrition, economic development, sustainable agriculture, and social equity.

Puente is located in Oaxaca, Mexico, which Pete described as being rich in diversity, culture, community, and social values. Puente’s amaranth (*Amaranthus cruentus*) initiatives take place primarily in two areas of Oaxaca. Amaranth is a context-appropriate crop to promote in Oaxaca for many reasons. It is culturally and historically significant to the region; the ancient Aztecs prized amaranth and used it extensively. Amaranth is very nutritious, with both grains and leaves supplying needed protein, minerals and vitamins--and Pete mentioned a variety from which a portion of leaves can be harvested without decreasing grain yields. Amaranth is a C4 plant, well-adapted to hot, dry environments. It also integrates well into local milpa systems (traditional Mesoamerican polycultures). In Oaxaca, amaranth has economic potential.

Puente works towards a local, healthy food system by 1) prioritizing the farming of amaranth in ways that sustain agroecosystems, 2) educating families to increase local consumption of amaranth and to improve families’ nutrition, and 3) building access to markets and commercialization (Figure 8). Puente consciously puts families at the center of their approach, rather than money; Pete referred to this as “social and solidarity economics.”

Puente is involved in many different activities in pursuit of a healthy local food system. Farmer-to-farmer exchanges spread knowledge about production practices. Chromatography (<http://pasc.ca/en/article/cromatografia-tool-fight-food-sovereignty>) is used to evaluate soil health; results give farmers information about organic matter content, microbial health, minerals, and nutrient accessibility and assimilation. Farmers take samples every six months. Over time, farmers are able to see evidence of soil health improvement. Puente has developed a curriculum for a three-week summer

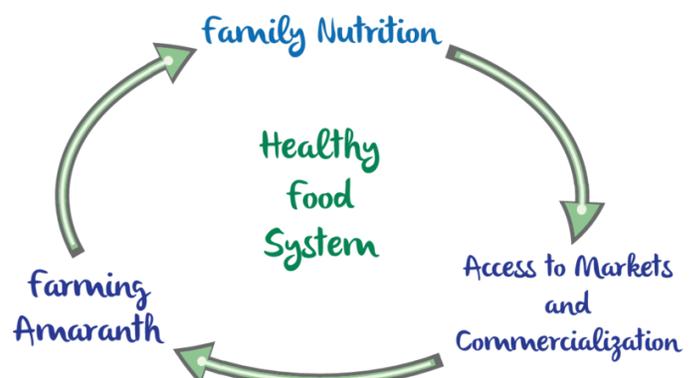


Figure 8. Parts of Puente’s approach to a healthy food system. *Source: Courtesy of Pete Knoll*

nutrition program for children. Puente also has other initiatives, including seed banks, bio-factories (for production of compost), mineral rock processing (a microenterprise that yields agricultural inputs), and appropriate technologies. Puente's "systems thinking" approach has led them to establish partnerships with organizations that work in public policy.

Other Resources:

Amaranth institute <http://www.amaranthinstitute.org/>
(<http://www.amaranthinstitute.org/>)

Collection of Amaranth resources: <http://edn.link/amaranth>
(<http://edn.link/amaranth>)

15 underutilized crops for improving the lives of smallholder farm families

(Josh Jamison)

Josh Jamison from HEART (<https://heartvillage.org/#>)(Hunger Education and Resources Training) Village gave a plenary talk about underutilized crops. Using the potato as an example, he reminded delegates that introduction of a new crop can significantly impact food security (as the potato did when it was introduced in Europe), but cautioned that crop diversity is essential for food security (crop diversity was lacking in Ireland when the blight hit that led to the Irish potato famine).

For the majority of his talk, Josh shared 14 perennial crops that have great potential to improve the lives of smallholder farm families. Some, like chaya and katuk, ECHO has promoted for years. Others would have been less familiar to those in ECHO's network. For example:

***Mulberry** (*Morus* spp.), some cultivars of which produce early and have very large fruits. Mulberry leaves are extremely nutritious and are edible--though some taste much better than others. [Varieties with long fruits are cultivated and sold in Southeast Asia, but may be difficult to find elsewhere. To find varieties with good-tasting leaves, Josh suggests that you pick young leaves from several different mulberry plants, steam the leaves, and taste and compare them. Continue until you find ones you like. The species *Morus alba* is known for edible leaves.] The leaves



Figure 9. Mulberry varieties yield fruits of differing shapes and sizes. *Source: Josh Jamison*

also make excellent animal forage. Mulberry grows in almost every climate. Josh suggested that it could potentially be for cold climates what moringa is in the tropics.

***Papaya** is a well-known tropical fruit, but Josh shared that careful management of good varieties can result in huge amounts of fruit, available year-round. This kind of targeted management requires planting new papaya trees every year. Josh shared a trick for controlling fruit flies: put sticky glue on a green ball and wedge it between two branches; the fruit flies will mistake it for a papaya and try to lay eggs on it.

***Breadfruit and breadnut**

(*Artocarpus* spp.). Breadfruit trees produce large starchy fruits, and breadnuts produce life-sustaining nuts. Both can yield for decades, with low labor input. Breadfruit can be grafted onto breadnut rootstock. [This is helpful because breadnut plants are easier to propagate and have a taproot--so grafting breadfruit onto breadnut rootstock makes it easier to multiply breadfruit and may make the resulting plant more drought-tolerant.]

***True yams** (*Dioscorea* spp.) will continue to grow as long as they are in the ground, and are excellent to have growing for an emergency food. Once dug up, tubers can often be stored for months. More than 60 edible species exist.

Josh stressed the importance of looking for improved varieties of crops that have larger fruits, better taste, and higher yields. He ended his talk by encouraging delegates to experiment and find their own favorite perennial, underutilized crops. The world is full of amazing diversity, so get curious!



Figure 10. Photos showing a poorly managed papaya tree (left) and a carefully managed papaya tree (right).

Source: Josh Jamison