
Strategies to Help Prepare for and Respond to Disaster

Dawn Berkelaar

What if you are working in a community when disaster strikes it? What steps toward recovery can you take in such a situation? And what actions can be taken beforehand to minimize the damage from a large-scale, catastrophic event such as Typhoon Haiyan, which devastated large portions of the Philippines in early November 2013?

According to the UN Office for the Coordination of Humanitarian Affairs, 13 million people were affected by Typhoon Haiyan and four million were displaced. The typhoon damaged the main rice crop in areas that were affected, and disrupted planting of the secondary rice crop
(www.fao.org/news/story/en/item/206856/icode/)
(<http://www.fao.org/news/story/en/item/206856/icode/>)).

The immediate need after such a disastrous event is for relief supplies, including food, water and shelter. In the case of Typhoon Haiyan, the FAO (Food and Agriculture Organization of the United Nations) also planned to provide farmers with rice, maize and vegetable seeds; tools; fertilizer and irrigation equipment.

After initial relief efforts, the process of rebuilding must begin, as relief shifts into development.

What factors should a local development worker be aware of when it comes to preparing for a disaster? And what interventions can be most helpful in the face of disaster? To gain some broadly-applicable insights, we contacted four people who have experience working with displaced and unsettled people, either after a natural disaster or post-conflict disasters:

R. Darrell Smith is the Executive Director of Global Environmental Relief.

Robin Denney worked in post-conflict situations in Liberia and South Sudan.

Laura Meitzner Yoder worked in Aceh, Indonesia, after the December 2004 tsunami, and in Timor-Leste in the years following independence.

Rhoda Beutler was involved in relief work after the 2010 earthquake in Haiti, though she was not physically in Haiti at the time of the earthquake. She also knows many people who were deeply involved in recovery efforts in Haiti.

We share their input below, along with information from presentations and papers.



Figure 1. A home garden outside a shelter in Yida UN refugee camp, Unity State, South Sudan. Photo by Robin Denney.

I. Preparing for the Possibility of Disaster

What can be done ahead of time to minimize damage from a natural phenomenon such as a tsunami, hurricane or typhoon?

Conservation agriculture to prevent erosion. Gaye Burpee with Catholic Relief Services shared this information in a webinar on Agricultural Extension and Climate Change: "In 1998, Central America was hit by a 200-year hurricane [Mitch] with 180 mile per hour winds, 50 inches of rain, and 22,000 deaths in Honduras where the hurricane centered. Economic losses [totaled] \$7 billion, [\$2 billion of that from agricultural losses.]....[A] third of farmers in Honduras had total crop losses and 10,000 hectares of topsoil were stripped.

"Afterwards, World Neighbors and a consortium of [other] agencies [analyzed] some of the impacts....They found...that on conservation agriculture plots,... depending on the country, there was 58 to 99 percent less damage on those plots than conventional plots, 28 to 38 percent more topsoil, 2 to 3 times less surface erosion.

"But in areas where there were gullies or landslides above those conservation agriculture plots, there was the same damage inflicted on conservation and conventional tillage plots. When I went into Nicaragua...about ten months afterwards, farmers said, 'We ignored you when you were training us in soil and water conservation because we thought it was a waste of our time.' [They] pointed to a slope where the plot that had been there had completely washed into the ravine.

Then they pointed [to a plot that had conservation agriculture and was still there and still had crops on it.] They said, 'We beg you to come back and teach us again because now we understand.'" (Simpson and Burpee, 2012).

Broadly speaking, conservation agriculture (CA) is an approach that uses sustainable, ecologically sound principles to reduce erosion and to maintain and improve soil fertility. CA practices include minimum soil disturbance, use of organic

matter as mulch, and crop rotation. If you are practicing conservation agriculture, but someone higher on the same slope is not, it might be helpful to establish vetiver or other deep-rooted plants at the top and along contours, or to dig ditches at the top of the conservation agriculture piece of land. See the article on soil and water conservation in ECHO East Africa Notes (EAN) #2 for information about the ditch-digging technique. The document can be downloaded from www.echocommunity.org/?EastAfricaPubs. (<http://www.echocommunity.org/?EastAfricaPubs>.)

When asked what can be done ahead of time to minimize damage from a disaster, Laura Meitzner Yoder commented, "Smallholder farmers trying to cope with and prevent natural disasters [in areas that are prone to them] incorporate many of the same principles that are commonly used to ensure food security in general, such as crop biodiversity." She added the following specific ideas for disaster zones:

Include root/tuber crops among those promoted. "Root and tuber crops are often still accessible if a storm topples maize or rice. There is good reason that many Pacific islands have root crops as their staple starches." [Ed: See http://cipotato.org/publications/annual_reports/1... (http://cipotato.org/publications/annual_reports/1998/02) for information on how the International Potato Center intervened in Latin America and East Africa.]

Trees are important! "Many coconut palms withstood the massive December 2004 Indian Ocean tsunami unharmed, providing emergency (coconut) water supplies and calorie-rich food immediately after the disaster.

"Tree crops of any kind, including palms and fruits, may provide alternate food sources in the near term when annual crops are destroyed. Many people are also able to survive a flood or storm by clinging to a tree."

Rhoda Beutler also had ideas for actions that can be taken within a community, which can increase resilience in the case of a disaster.

Work to build trust and local capacity in your community. "The stronger the bonds are and the more that people in the community are confident in their God-given abilities and talents, the more they will be able to act to help others in the wake of an emergency."

Get to know your local authorities. "If possible, work in advance with local authorities, to talk about the risks that threaten the community and how you might collaborate in case of a disaster."

Think about ways to reduce the risk in advance. "Some ways to reduce the risk could include community motivation to move away from vulnerable spaces (ravines, seacoasts, exposed hillsides); community acceptance of norms (e.g. construction standards); making known evacuation or shelter plans; or having regular meetings of community members who are thinking of the well-being of the people in the area."

Collect supplies. "To the extent that is possible, collect supplies in advance and have tools, materials, and any food or medical supplies easily accessible. "

II. After a Disaster: Helping with Relief Efforts

Oftentimes, people already working in a country are uniquely poised to help with relief efforts in the case of a disaster. Based on experiences after the 2010 earthquake in Haiti, Rhoda Beutler shared a number of general ways that people working in-country might be able to step in and help with relief efforts after a disaster:

Rescue, evacuation, and burial. "Knowledge of the terrain can help people locate victims and survivors quickly and coordinate with family members."

Provide emergency medical care. "Existing clinic facilities or supplies on hand can be quickly mobilized to help with the emergency needs."

Assist with communications and transportation. "During a disaster, working vehicles, internet, or radio connections are invaluable."

Help to direct relief organizations as they seek to provide water, food, sanitation, and temporary shelter. "A few years ago, Bruce Robinson spoke at the ECHO conference about one of the roles of a long-term missionary [or development worker] as 'pointing the big guns.' While they may not have the resources to accomplish all that a bigger organization or expert can do, the long-term worker can direct the efforts toward greater effectiveness. This can be tricky, because the [bigger relief] organizations may be flooded with both bad and good ideas and they may trust their own internal experts more than a person on the ground, but relationships can be built with time and patience. Long-term workers should be aware of the SPHERE handbook (www.spherehandbook.org/) (<http://www.spherehandbook.org/>)), which sets out minimum standards for humanitarian action. If an established local organization wants to administer any emergency grants, they will need to follow these guidelines.

"In Haiti after the earthquake, there was a veritable flood of help; many disasters are less-publicized and there would be fewer resources to direct."

Carry out a community needs assessment. "A long-term worker who already understands the geography, local dynamics, and vulnerabilities of an area is several steps ahead of someone who has just come into the region. In Bohoc, Haiti, members of a local community committee, church members and young leaders volunteered to do a needs assessment, traveling to each household and recording who was there and what the needs were."

Engage the community in the distribution of aid. "A long-term worker who is part of the networks of trust in a community can help empower volunteers from the area to help with effective aid delivery. This can multiply the impact of any effort you are undertaking."

Keep cash on hand. "When infrastructure, banking systems, and electronic payment structures are damaged, the amount of cash an organization has on hand becomes critical, both to daily operation and survival and to aid efforts."

Think long-term. "While acting to provide relief, think about the long-term impact of your actions."

III. Beyond Relief

Relief and development are two distinct **and different things.** A relief effort is a response to a disaster, which focuses on meeting people's basic needs quickly and efficiently. A development program works toward lasting change that is not dependent on outside input. Relief efforts that continue for too long can hinder development. For example, after the Haiti earthquake, free food was widely available, for quite a long time. As a result, farmers' capacity to sell produce and make a profit was hindered. Relief is necessary after a disaster, but must then pivot to development (preferably sooner rather than later). For more details on the distinction between relief and development, consider reading Steve Corbett and Brian Fikkert's book titled *When Helping Hurts: How to Alleviate Poverty without Hurting the Poor...and Yourself*.

With this in mind, what are some concerns to be aware of after a disaster? What steps should be taken as soon as possible to help people begin to rebuild?

Watch for Salt Contamination. We asked R. Darrell Smith for input regarding agricultural interventions that would be particularly relevant to the Philippines, that might also be more broadly applicable. Darrell commented, "I haven't seen specific information about the extent of flooding from the storm surge in the Philippines, but working in Indonesia after the 2004 tsunami allowed me to take a number of soil readings to look for salt contamination. I did not find a correlation between distance from the shoreline and amount of salt buildup, but I did find significant salt levels in some areas. I also had no pre-tsunami readings, so can't account for bad agricultural practices beforehand that might have led to high salt levels (e.g., improper irrigation).

"The levels were high enough in some places that rice varieties commonly grown would not have been able to cope. On the other hand, because the amount of rainfall is high, one would expect the salt levels to decrease over time due to flushing (possibly several years depending on the salt concentration). Another approach would be to use varieties with greater salt tolerance, if available. I'd recommend that agriculture workers look at soil salt levels in the affected area to see if a bad rice crop might be in their future."

Rick Burnette, ECHO Agricultural Director and former Director of ECHO Asia, commented, "Darrell's observations are similar to what was reported in the Irrawaddy Delta of Burma following Cyclone Nargis."

Laura Meitzner Yoder had several ideas for coping after a disaster:

Replant. Especially trees! "Do not delay replanting trees, as they are important in providing food and are also very important for shade, community gathering places, and beauty in areas where tree cover has been destroyed. After the 2004 tsunami, people quickly re-established sitting areas with benches under any fast-growing trees available in the newly barren landscape— especially the strawberry tree [*Muntingia calabura*] in the early months." [Sample quantities of seed for strawberry tree are available from ECHO; we also share seed for other fast-growing trees such as papaya (*Carica papaya*) and moringa (*Moringa oleifera*). Read about strawberry tree on page 8 of EDN 80, linked here: <http://tinyurl.com/echo-edn-strawberry-tree> (<http://tinyurl.com/echo-edn-strawberry-tree%5D>)]

Look locally for food supplies. "In localized disasters, food may be readily available nearby the badly affected areas. It is worth exploring whether efforts to restore washed-out bridges and other infrastructure may be helpful in bringing local food sources to areas with emergency needs."

Address infrastructure related to agriculture. "Helping people organize to clear out any irrigation ditches can help farmers restart their agriculture as soon as possible."

Be alert for unexpected benefits. "Sometimes, storms or floods bring additional nutrients to fields, leading to exceptional harvests in the season after the disaster."

Document responses and experiences. "If you work with local students, involve your classes in gathering information about farmers' experiences and agricultural responses to the disaster. Help them write this up and seek ways to disseminate it locally so people can learn from each other's experiences, and also learn ideas for the future."

Equip local churches to help. "Wheaton College's new Humanitarian Disaster Institute (<http://www.wheaton.edu/HDI>) (HDI; <http://www.wheaton.edu/HDI>) aims to equip churches to respond to disasters in their regions. The HDI web site is full of useful resources."

Robin Denney, who has worked in post-conflict situations, has suggestions concerning where, after initial relief efforts, to begin rebuilding following a disaster. In both natural and post-conflict disasters, communities end up dealing with major upheaval, trauma and possibly displacement.

Land access. "Access to land is a big issue. People are often displaced internally, within their own country. Internally Displaced People (IDPs) in South Sudan often traveled very far from their home before settling. They sometimes settled in camps, but often they were welcomed into a community and settled interspersed between neighbor's homes. I saw this throughout Western Equatoria State in South Sudan, perhaps most pronouncedly in Maridi town, where 10,000 IDPs were dispersed between the homes of local hosts. In most rural villages, people would have about an acre of land around their home, and then plots of land for farming further away. Because the newcomers were dispersed throughout the community, they got to know their neighbors, and the

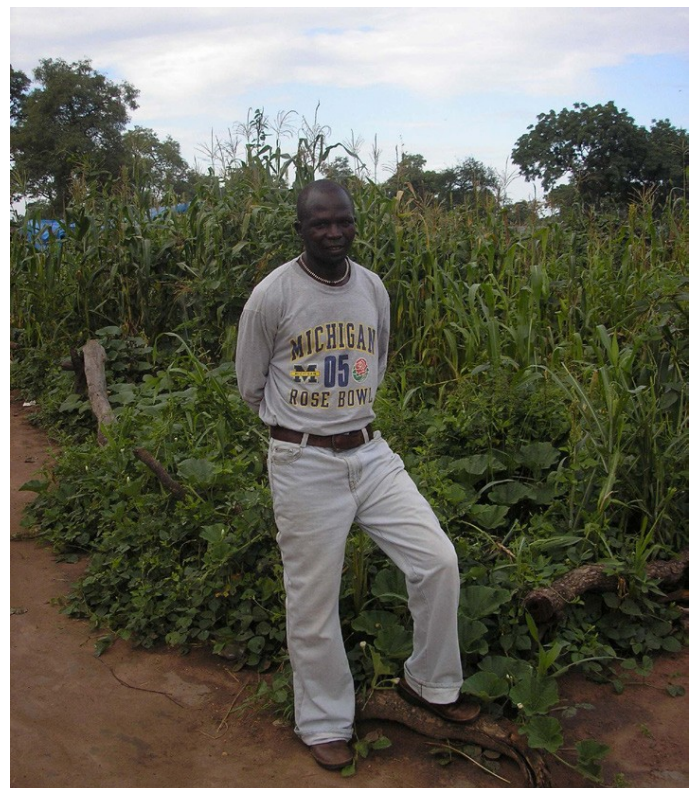


Figure 2: Yida's elected agriculturalist, Suki, with his demonstration plot. The blue tarp of his shelter/home is visible behind. Photo by Robin Denney.

latter could share resources and information unique to the location, e.g. about the microclimate, local pests, etc. Had the newcomers settled on the outskirts, the village residents would likely have lost some cropland, and the displaced people would be without the support of the people in that community. They would be more like outsiders, with a greater sense of desperation and dependency. When they were a little more dispersed, they felt more hosted by a community.”

A community agricultural spokesperson. “Yida UN refugee camp, in Unity State, South Sudan, hosts refugees from the conflict in Sudan. Agricultural support wasn’t initially given, so the people organized themselves for agriculture. They elected an agricultural development person who was the most experienced with various techniques, and asked him to be the representative of the camp in terms of agriculture. He would talk about the needs with aid workers that came to the camp. He also trained people in the camp and set up a demonstration of farming techniques next to his shelter. The people also chose an informal camp leadership of elders that was not officially sanctioned by the UN camp directors, but was their own organizational system. The community thus had a voice to represent itself, resulting in better communication between the refugees, the UN, and other agencies working in the camp. The group of elders was able to encourage people to farm on the outskirts of the camp where there was better land, to try to grow more staple crops.”

Plant fast-impact crops. “After a disaster, you need fast-impact, nutritious crops, and training in how to use crops with which people may not be very familiar. Vegetables, especially greens, are good, quick-growing crops to promote, because in that period of hunger people are used to collecting leaves and plants from the forest, when the more preferred staple crops have run out. I think that when people are displaced, they are more willing to do things differently and try new crops, because they understand that the microclimate is different than the place where they are from. Training could focus on producing and using fast-growing vegetable varieties that fit the microclimate and that grow quickly and can fill out the rest of the meal.”

Chaya is a good fast-impact crop to promote. Robin commented, “I really tried to promote chaya in South Sudan. It is easy to plant, grows quickly, is easy to maintain, and can feed you throughout the year. There is no worry about saving seeds and replanting. I found that practically, in terms of dinner and our schedule, chaya was so easy that we would eat it at least once a week. Every time I would harvest some for dinner, I would plant the sticks around my house, and pretty soon my house was surrounded by chaya. There was no way I could eat it all. People would ask, “What is that you are planting?” and I would tell them it is edible. It was fast to cook, and filling.” [Note: particularly where people are used to eating cassava leaves, chaya seems to often be readily accepted.]

Above-ground gardening. “If you can grow things close to your house, you can easily pick and add them to your meal. Aboveground gardening can be done using the packing materials that relief supplies come in.” [These packing materials are already often repurposed creatively. For example, Robin mentioned that cans from cooking oil regularly turn into pots, toy cars, and roofs. For more information about above-ground gardening, see ECHO’s Technical Note: <http://tinyurl.com/echo-rooftop-urbangardening>].

Local seeds. “I asked people in Yida what crops they were using and what their needs were. Their biggest concern was not having the seeds that grew in that microclimate. The refugee camp was only 20 km from where they had fled, but the microclimate was significantly different and their seeds weren’t working in the way they thought they ought to. They had a list of different varieties that they had heard of and wanted to try.”

Encourage local seed systems. CIAT, the International Center for Tropical Agriculture, partners with a number of relief and development agencies to facilitate a program called ‘Seed Systems Under Stress.’ On the website, they comment, “Humanitarian relief practitioners, although skilled in quickly delivering short-term food aid, often do not understand the technical complexities of the agricultural context. Even though seed aid began in the early 1990s, the long-term effectiveness of such activities remains disappointing. Both food and seed aid are still being delivered to many countries year after year.

“Because they base their diagnoses on food assessments, relief practitioners are typically ignorant of, or misunderstand, stress situations as they apply to agriculture. For example, they commonly assume farmer seed systems to have collapsed or to have been inadequate in the first place. Yet field results show that seed systems are usually resilient. For example, in Rwanda, even after its genocidal war, local seed markets continued functioning, and crop diversity profiles remained stable.

“Even research institutions tend to view disasters as opportunities to expose farmers to ‘improved’ varieties of current crops or to alternative crops. However, evidence shows that system resilience, not only productivity, is key to recovery and sustaining household food security after disasters. Multiple strategies— which strengthen local systems and introduce innovation—are often required.” For specifics about strategies promoted by the Seed Systems Under Stress Program, see <http://ciat.cgiar.org/seed-systemsunderstress>

In situations where local seed varieties were lost or destroyed after a disaster, seeds from several of the CGIAR centers have been used to help rebuild agricultural systems (www.cgiar.org/consortium-news/ (<http://www.cgiar.org/consortium-news/>) seed-banks-great-and-small/).

Can You Help Us?

We know that this article only scratches the surface when it comes to preparing for and responding to disaster. If you have additional thoughts to share, we would love to hear from you! Contact us at echo@echonet.org (<mailto:echo@echonet.org>).

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