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SCALE
Strengthening Capacity in Agriculture Livelihoods and Environment

# TRIGGERING CHANGE

## Five Pivotal Moments in Permagarden & Resilience Design Training

### Insights from the Fall 2021 Zimbabwe Training

*January 2022*

## Summary

From October 4-15, 2021, SCALE led a Permagarden and Resilience Design (RD) training of trainers (TOT) for the Takunda and Amalima Loko Resilience Food Security Activity (RFSA) teams in Mutare, Zimbabwe. The eight minimum standards of permagarden and RD formed the backbone of this training, grounding each session in the principles for good resilience design in smallholder farming systems: that community-led, resource-efficient, adaptively managed landscapes can improve soil health, water management and biodiversity.

**SCALE** (Strengthening Capacity in Agriculture, Livelihoods, and Environment) is an initiative funded by USAID's Bureau for Humanitarian Assistance (BHA) and implemented by Mercy Corps in collaboration with Save the Children. SCALE aims to enhance the impact, sustainability and scalability of BHA-funded agriculture, natural resource management, and off-farm livelihood activities in emergency and non-emergency contexts.

Each week of the two-week training consisted of two classroom days, two days of field practical, and a day for reflection and wrap up. The classroom days were spent learning the history, principles and essential practices of each approach, answering questions and preparing the training participants to lead their own sessions in the field. The field days were held at the farm of the Dzitiro family in Mutare District's Ward 11. For all practical sessions and work, the training participants were joined by not only Cephas and Winnet Dzitiro, but also 30-40 farmers from the surrounding community. In this way, the TOT cohort learned alongside the farmers, and had the chance to practice their community engagement and hands-on participatory training skills in an environment that allowed for trial, error, feedback and improvement.

As trainers, capacity sharers and facilitators, we are always seeking those opportunities for new ideas to inspire action. When it happens, it's important to pay attention to the pivotal moments that have resonated with people, the concepts that have secured practitioners' interest, excitement and confidence that these ideas can have real impact. This learning document provides a summary of a few such pivotal moments from the Zimbabwe Resilience Design TOT.

## Resilience Design Approach

### History of the Approach

The Resilience Design in Smallholder Farming Systems (RD) Approach was developed by Mercy Corps under the USAID-funded TOPS program in response to environmental and economic shocks and stresses, accelerated by climate change, that severely constrain the productivity and resilience of smallholder farming households. As a result, smallholder farmers must work harder to produce less, leading to land use practices (like burning and use of chemicals) that more often work against natural processes rather than with them, with increasingly limited returns on those efforts.

RD builds upon the elements of many other movements—including agroecology, permaculture, climate-smart agriculture, conservation agriculture, and bio-intensive methods. Similar to these movements, RD asks farmers to seek a deeper understanding of their farming systems within the broader ecosystem to create a farm design that optimizes use of available resources over the long term and responds to external changes.

### Why It's Distinctive

At its heart, RD is really about water and soil—increasing the availability of water through good water management and boosting soil fertility. The RD process starts with engaging farmers and the local community, placing them at the center of the learning process. Together, field agents and farmers observe and assess what already exists within the farming system, then analyze that information, and design their land to create a more resilient farming system. Over time, as environmental conditions change, farmers integrate feedback and adjust their practices accordingly. RD is a simple, iterative approach, where the main objective is to slow, spread and sink water in farmers' fields and feed the soil.

The RD approach encourages farmers to think differently about their landscapes and identify ways to work *with* natural systems compared to against them, resulting in a more resilient and productive farming system.

## Why It's Difficult

RD can be difficult for some farmers to implement at the start, particularly on soils that are dry, compacted and challenging to work. The technical elements of the approach (e.g., earthworks construction) require greater commitments of time and labor to establish and change landscapes over the course of several seasons rather than the single-season timeframes of more conventional farming systems.

The Takunda team had already encountered farmers in their implementation zone trying their own methods of controlling the movement of water or slowing soil erosion in their fields, with limited results. Even at the farm site selected for the training, the farmer had abandoned whole sections of his field, having given up on any notion of salvaging production from eroded or degraded soils. Training participants themselves expressed doubts about whether RD is really any different from any other agricultural development approach. As the training got underway, project staff and farmers alike wondered, is all this extra effort really worth it? Can these approaches really make a difference in turning around the effects of soil degradation and climate change?

These are the experiences and preconceptions that RD training participants often bring with them to the training, and shifting those perceptions is critical to gaining participants' trust and receptiveness to new ideas. This is why the pivotal moments observed during the October 2021 RD training in Zimbabwe are so important to highlight.

## Five Breakthrough Moments

Over the course of the two-week training, there were five key moments that really sunk in with the participants—moments that one participant referred to as "trigger moments."

### Seeing Examples of Resilience Design in Practice

In the classroom session preceding the field practical, participants learned about the history of RD, its core principles and techniques, and how it differs from other agriculture development efforts. They heard how important the intersection of hydrology, geology and biology is to designing for resilience. However, it was only once participants saw the before and after photos of actual RD sites—sites that were as badly degraded and barren as any they had seen in their own project area—that they started to grasp the possibilities of what RD could accomplish. They were able to see evidence, from both inside and outside Zimbabwe, of how transformative the slowing, spreading and sinking of water and the rehabilitation of soils can be, even in a season or two. These images inspired the participants and instilled an early sense of hope that there was a way to reverse the effects of land degradation and climate change in their own program communities.

### The A-frame: Theory Made Real

One of the first concepts in RD is the need to slow, spread and sink water in the soil, and the most essential tool to accomplish this is the A-frame. Made from simple materials, low-tech and extremely easy to put together with whatever materials a farmer has access to, the A-frame makes it possible for farmers to map out contours across their landscape.

> *"When you started, did you really think these lines were going to look like this?"*
>
> **-Head Trainer of the Group**

The training participants first learned about A-frames in the classroom, including how to construct, calibrate and use them. They saw pictures of fields that had been marked out and planted on contour; photos of water harvesting structures that followed the curve of the land, and the way water collected along these contours. They drew maps that sketched out where the contours on their field site might lie, and designed water harvesting structures and berms. But it wasn't until the training participants and farmers started using their own newly constructed A-frames that they understood how the tools allowed them to 'read' the landscape and to anticipate how water and soil might move across it. Over and over, the participants stood back to marvel at the contours they were tracing across the field and to remark how much sense those lines made now, how intuitive it now seemed to trace the flow of water in order to understand how to keep it in place.

When the head trainer asked the group, "When you started, did you really think these lines were going to look like this?," he was met with a chorus of no's and never's. For many, this was the first tangible proof that this approach was different.

## The Sponge Demonstration

One simple, effective demonstration used during the RD training was the so-called "sponge demonstration." In Zimbabwe, the head trainer gathered the training participants together at the end of a day spent preparing, mapping and practicing to show them what these techniques were capable of accomplishing. He marked out two rectangles on the ground as examples of two farmers' fields. On one field, he dug out a mini version of the shallow planting basins Zimbabwean farmers typically use and covered them with grass, representing crop residues, which he then burned to mimic the practice of clearing fields with fire. In the other field, he dug deep on-contour bioswales and berms across the plot, then mixed soil amendments such as leaves, grass, manure and ash into the soil in the swales. Then with a watering can, the lead trainer simulated a heavy rain over both fields, similar to the rainfall patterns that are now the norm in Zimbabwe. In the first field, the water ran in large, muddy streams across and down the field, away from the crops and carrying soil with it. In the second field, the water pooled and gathered along the bioswales, held in place by the leaves and other materials.

After a minute or two, the lead trainer dug down into the soil in the first field: after less than an inch, the soil was bone dry. Digging down into the soil of the second field, the lead trainer scooped up two or three handfuls of wet soil, not reaching dry soil until he had dug nearly six inches deep. He asked, "Which field would you want to be farming?" The response was unanimous. Everyone could see with their own eyes how much better the second field had captured and held farmers' most critical assets: water and soil.

## Translating Rainfall to Banked Water Resources

Seeing how much water could be captured and held in the soil when using RD techniques was one thing, but—farmers were quick to point out—what about the fact that rainfall patterns in their zone have shifted so significantly over the years due to climate change? Rains begin later now, and the season is punctuated by unpredictable dry spells. How much water can be slowed, spread and sunk in these conditions?

The lead trainer crunched the numbers with the group of famers gathered in the field. He pointed out that one millimeter of rain falling on one square meter of land means that one liter of water. On a 5,000 square meter plot, with the area's average annual rainfall of 141mm, that would mean 705,000 liters of water that could be banked in the soil, using resilience design techniques. "What if you had a 705,000 liter water tank and could irrigate your land with it?," he asked. "Wouldn't that be a massive asset? Well, this soil can be your water tank." Farmers were used to thinking

about changing rainfall patterns as something they had little control over—when it fell, how much fell, whether it watered their fields or flooded them—but equipped with this perspective, they started to see the opportunity to mitigate and manage the effects of their environment, effects that for so long have felt beyond their control.

This realization was even more powerful given farmers' observation that rain now tends to fall in a series of heavy or even extreme rainfall events over the course of a season. During these events, farmers often can only watch all that water flowing across and away from their fields, carving out channels and gullies, damaging crops and carrying precious topsoil with it. But they began to see that these RD methods could give them a way to make these increasingly extreme cycles work for them—sinking water in the soil during heavy rains and banking that resource to carry their crops through dry spells.

## Witnessing Abundant Biodiversity

Years of increasingly dry weather, deforestation, and monocultures has left this part of Zimbabwe looking rather barren. Fewer and fewer trees dot the landscape, hillsides are bare, field after field is planted with maize and little else. It is a landscape that gives the initial impression of a place with low biodiversity, a perception shared by many of the training participants who at first wondered whether they would be able to source seeds for the various plant and crop varieties the lead trainer said would be planted in the newly designed RD plot.On the first day at the farm field site, the training cohort asked the farmers about their seeds, the types of plants and crops they grew, and the ways they used various plants and crops. The groups talked about the RD principle of biodiversity and how it works with factors like water and slope to help stabilize and fortify soils, while at the same time providing year-round supplies of food, fodder and fuel.

The next day, the training participants arrived for the morning welcome with the community to find the table in the meeting area laden with piles and bags and bowls full of every kind of seed one could think of: squashes, small grains, leafy vegetables, papaya, pigeon pea, and a half dozen different kinds of beans and legumes. Everyone could witness for themselves the rich biodiversity that exists in that community, but the expression of that biodiversity was limited to small pockets of land because farmers lacked the water resources to let it flourish. Understanding that biodiversity, soil health and water resource management are all mutually reinforcing helped participants start to see the potential in the landscape around them. This was not a barren ecosystem, it was only dormant, waiting for the right set of tools to restore its functionality.

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