

RESILIENCE DESIGN IN SMALLHOLDER FARMING SYSTEMS

Tip Sheet

Principles

Aim: Use the Resilience Design Principles as guiding questions to help think about the resources available on a site, and the relationship between them, to inform a more integrated design.

Key Takeaway: The Resilience Design Principles are guiding questions that help us to ensure the site design is best adapted to its local context, which will in turn improve its resilience to shocks and stresses.

	PRINCIPLE	DESCRIPTION	QUESTIONS TO CONSIDER DURING SITE DESIGN
1	Observe and mimic healthy and resilient living systems.	Observe patterns in healthy systems within the local landscape (e.g., naturally occurring polyculture examples) and identify how they could be used to inform the site design.	What healthy and resilient living systems are there locally that I can mimic in my farm system?
2	Start small and simple.	Lots of small activities can be more effective than one big one. This can be as small and simple as planting a tree within or beside a water-harvesting basin.	What are some simple changes I can make to improve the efficiency of the system?
3	Start at the top (highest point or source) and work down.	Water (and everything it carries with it) travels downhill. Start at the top, or source of water runoff, where it is easier to manage because there is less volume and velocity.	Where does the water begin to flow across or down the land, and how can I work from there to slow water and nutrients?
4	Slow, spread, and sink the flow of water and nutrients.	Rather than having water quickly run over and erode the land's surface, encourage it to spread out and infiltrate into the soil. For example, place a swale and perennial plantings on-contour at the top of the site to slow and help infiltrate water into the soil as it begins to flow downhill.	What is the direction of the slope, and am I using any techniques (e.g., vegetation, mulch, berms, swales) to slow and sink the water?
5	Grow natural resources.	Grow some natural resources that can be used in the farming system rather than having to buy or build them. For example, grow rather than build a multi-functional living fence (e.g., Moringa oleifera and a thorny acacia or opuntia) that provides protection, mulch, fertility, food and fodder.	What natural resources are currently growing in the area, and how could their growth and health be enhanced? What new resources could I introduce?

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6	Place every resource for energy efficiency.	Place resources in a location that allows for efficient tending of the resource and for beneficial connections to other resources. E.g., If a farmer visits the chicken coop four times a day, place it closer to the house to reduce time spent visiting the coop. Also, place it up-slope from the garden or cropland, so nutrients flow down naturally with gravity to where they are utilized. On the way to the chickens, the farmer can pick weeds from the garden that can then be fed to the chickens.	Can I place resources differently to enhance production and reduce the time spent tending them?
7	Locate and use each resource so that it provides several benefits to the farming system.	Situate and use resources that are grown or built in such a way to provide several benefits to the farming system, instead of just one. E.g., Plant a tree where it will shade a home or gathering area from the hot afternoon sun in the west. Select a type of tree that will also provide food, medicine, and/or other benefits. Use the runoff from the house roof or gathering area to water that tree.	Am I making the most efficient use of my resources? Where could I place resources to provide more benefits?
8	Ensure critical functions in the farm system are supported in several ways.	Ensure critical functions (e.g., water, soil health, crop fertility needs, seeds, labor, market and income) are supported in several ways so that the system is more resilient. E.g., If water is the critical function, a household may access water by harvesting it from a rain fed water tank, from a well, from a river, from a road diverted into an agricultural swale, or from reusing wash water.	What are the farm critical functions and are they supported in several ways?
9	Change a problem into a benefit.	Think about how a problem on or around the farm site could be transformed into a benefit. E.g., if a road channels rainfall and runoff, creating an erosive gully that dehydrates the land, consider strategies to capture and redirect the runoff at multiple access points along the road to where it will be a resource, such as to irrigate crops.	What are currently potential problems, and how might they be redesigned to provide benefits?
10	Continually reassess the system using the feedback loop.	Observe how the changes made affect the site over time. Use all the principles again to see if there are ways to improve the system. Remember to use the principles to continually try to look at things in a new way in order to discover potential or possibilities not yet realized.	What potential has not yet been realized?