ECHO Best Practices Note

No. 4 Institutional Agricultural Design

ECHO frequently receives questions from members of our network, asking how available land could be used to grow food and/or create income to augment an otherwise non-agricultural project. Broadly speaking, they are asking how to begin an institutional agriculture project—a coordinated agriculture effort undertaken by an institution or community of people, for the purpose of creating economic, environmental and/or nutritional benefits.

Some examples of institutional agriculture projects are:

- *40 laying hens which provide eggs for an orphanage*
- *a medicinal plant garden on the grounds of a village medical clinic*
- *Four hectares of rice, three hectares of fruit trees and 20 beehives operated by a vocational school*
- *a moringa seedling nursery at a small, private primary school*

This Best Practices Note *explores common pitfalls and challenges related to design and implementation of an institutional agriculture project. It also outlines proven principles and practices that a development practitioner can implement in a variety of settings.*

Challenges

Although many new institutional agriculture projects are started every year, few produce the expected positive results that were imagined during planning and implementation. The reasons for this lack of success are varied, but upon careful analysis, some common themes emerge. These include:

1. **A lack of purpose or clear vision.** Often a project is started without much thought given to what the specific outcome will be. An organization might simply say, "We want income to support our children's home," or, "We need to grow some vegetables to provide better nutrition." Both of these goals are good, but they are so vague that there is no effective way to measure or manage success. Participants may have very different views of what success means, and because specific desired outcomes have not been shared, or agreed upon, participants may have significantly different expectations.
2. **The initial excitement and energy which motivates the participants decreases over time,** causing unbalanced effort or outright labor shortages. Inevitably, the new promise of increased income and food energizes the participants during the early stages of an agriculture project. People create the space in their lives to help with clearing, planting, weeding, etc., but as the newness wears off enthusiasm wanes. A regular participant misses a work day, then two miss, then three. Soon a small fraction of the original participants are shouldering all of the work and hard feelings begin to grow.
3. **Lack of boundaries for the project, resulting in "mission creep."** Usually institutions are already taking on all they can handle. As resources are diverted to the agriculture project, core mission activities suffer. The overtaxed institution reacts by making wholesale cuts, or even cancelling the project, which leaves a sense of failure and the impression that agricultural projects are too difficult.
4. **Ownership is unclear,** leading to a disproportionate share of the load being carried by the institution instead of the community. Often an "outside" sponsoring organization might see an unmet need, or an income-generating opportunity, to which the community itself is blind. The organization moves ahead with the project before the commu-

What's Inside:

by ECHO staff

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nity has recognized the unmet need/opportunity and taken ownership of the solution. As a result, the community does not perceive the project to be its own, and consequently does not accept the responsibility to carry the project forward.

5. **Environmental catastrophes such as drought, flooding, pests and disease can wipe out investments of time and money,** and can also affect confidence and morale. Projects are often designed with "average" conditions in mind. Because worst-case scenario resiliency is not planned into the project, major events destroy progress and reinforce feelings of inadequacy.
6. **Staff with appropriate gardening/agriculture and management experience may not be available** and/or key project leaders may leave before the project is mature and self-directing. Agriculture projects require an appropriate managing and implementation level of knowledge and experience to address the inevitable challenges and obstacles. If a complex project relies on expertise that is not readily available in the community, it risks failing should the "imported" expertise become unavailable.
7. **The true cost of producing small quantities of food may be higher than the local market price.** Often, only after a great deal of work has been invested, it is discovered that the cost of producing basic agricultural goods is nearly equal to, or higher than, the price in the local market. What was hoped to be a profitable enterprise results in a loss of manpower, money and goodwill.
8. **The existing physical resources are not well suited for an agriculture project.** There may be one or more issues, such as availability of irrigation water, drainage, steep terrain, access to transportation and access to markets that create challenges that even the most well organized and resourced project would have a hard time overcoming. One of the first questions an institution needs to ask is whether or not their land and/or location is suited for an agriculture project.

Project Planning and Management Principles and Best Practices

The principles and corresponding best practices with regard to an institutional agriculture project can be broken into two broad categories. The first category consists of those principles and practices which have to do with project planning. The second consists of principles and practices that apply to project implementation and ongoing management.

Planning principles and best practices

Principle: Know where you are

An important first step in the creation of an agriculture project is the careful analysis and inventory of the existing assets and liabilities which impact the project. This analysis should include more than just the physical characteristics of the project: e.g., number of hectares and terrain. It should also include environmental and community/social factors.

Principle: Know where you want to go

The quintessentially quotable Yogi Berra (a famous American baseball player) once said, "You got to be very careful if you don't know where you're going, because you might not get there." An essential part of project planning is articulating the purpose and vision for the project, and, as comprehensively as possible, describing how the project will operate, what it will produce, how and when the products will be used or marketed and how success or failure will be measured. Step-by-step goals attached to achievable timelines are critical.

Principle: Get honest, objective and qualified feedback

Even the best project plan can benefit from an objective review from a qualified outside source. Find a person or, even better, two or three people who have experience with the type of project you are planning and have worked in your project's setting. Make sure they have the freedom to give constructive criticism and the time to thoroughly review the plan. An objective, outside evaluation has two distinct benefits. First, it can help keep the focus on reachable goals and, thus, prevent the loss of optimism that results from unrealistic and unmet expectations. Second, an outside viewer may be able to identify missed opportunities and underutilized assets.

Project Implementation and Management Principles

Principle: Create systems for the management of routine activities

In his classic business book, "The E-Myth," Michael Gerber advocates that a core ingredient in successful and sustainable enterprise is the implementation of systems of step-by-step activities. The systemization of the routine activities that take place in an agriculture project offers several advantages. A good system creates a platform for communicating how a task should be done, which in turn allows for consistent training and follow through. It also serves as a framework for situational decision making. Rather than being constrained to complete a task a certain way, even when the conditions indicate a change is needed, a good system keeps the emphasis on the purpose and desired outcome of the work, giving freedom to improvise and modify

tasks as needed. A good example of this would be the system of Integrated Pest Management (IPM), which provides objective benchmarks that inform how pests that can damage crops are to be managed.

For a system to work properly over time, it must be consistent with the local culture. If you are designing systems for a project and do not possess a long-term, in-depth understanding of local cultural norms and practice, you would be wise to lean heavily on the direction and advice of those for whom the culture is first nature.

Principle: Build the capacity of the team

The long-term sustainability of an agricultural project is tied to the growth in knowledge and skill of those managing and working on the project. Markets change, growing conditions change, and community dynamics change. Capable staff can help turn change into opportunity. People who feel competent and who recognize growth in their abilities generally approach their given tasks with a positive attitude, and often provide insight and innovation that brings a level of success that the original plan never envisioned.

Principle: Foster good communication

Good communication may seem an obvious principle to good project management, but it cannot be taken for granted. Systems will help ensure regular and purposeful times for feedback and sharing. Create space for everyone to feel empowered to communicate their ideas and concerns.

A well-managed project provides more than just profit; it also provides hope and joy.

Best Practices

The following best practices have been successfully used in a wide variety of project planning scenarios. They also will help organize information that team members can use to create operating systems and measuring matrices.

SWOT analysis

As the acronym suggests, a SWOT analysis is a careful look at the Strengths, Weaknesses, Opportunities and Threats that correspond with your project. Here are some questions you might ask in each of the four categories:

Strengths

What do we do well?

What are our physical assets?

What are our core competencies?

What experience do we have?

Weaknesses

What training or knowledge resources do we lack?

What physical resources do we lack?

What can we do better?

Opportunities

What new needs of customers could we meet?

What are the economic trends that benefit us?

What are the emerging political and social opportunities?

What technological or infrastructure improvements can be leveraged?

Threats

What are the negative economic, political and social trends?

Where might other producers of our product or service have an advantage?

How will the project function if outside resources fail?

What is the risk of natural disasters, drought/flood or other extreme weather events?

Asset Mapping

Asset mapping is a comprehensive and detailed description of the current state of the project. If the project has not yet begun, an asset map would describe the current environment in which the project will commence. Descriptions include both the tangible and the abstract. Tangible items might include: descriptions of the size of the land, soils, the terrain, current use, water, climate, existing structures, nearby land uses, available financial resources, etc. Abstract items might include: descriptions of relationships within the community in which the project will take place, the potential markets for your products, the political climate, expertise of those involved in the project, etc.

Following is a list of major categories (including physical characteristics, environmental factors and community factors), with a partial list of subcategories. This information was used to make a current situation analysis of a farm plan in Central America. There is no one right method for constructing a current situation analysis, so use this list to help inspire your own creativity.

A. Physical Characteristics
    a. Land size
    b. Terrain
    c. Soil types
    d. Water
        i. Existing water sources
        ii. Possible water sources
    e. Infrastructure
        i. Fences
        ii. Buildings
        iii. Roads
        iv. Ditches
    f. Existing crops/plants
B. Environmental Factors
    a. Climate
        i. Rainfall
        ii. High/Low temperatures
        iii. Seasons
        iv. Extreme weather events
    b. Sunlight
        i. Day length
        ii. Shade/Full sun mapping
    c. Erosion issues
    d. Local crop growing seasons
C. Community Factors
    a. Local institutions
    b. Neighboring properties
    c. Labor
    d. Security

e. Existing markets

f. Local food preferences

g. Property use/ownership

Appreciative Inquiry

Appreciative inquiry is a method of assessment and planning that focuses on building upon what is working and thriving rather than concentrating on what is wrong and needs to be improved.

The appreciative inquiry method generally includes four steps and is particularly useful in the initial dreaming phase of project planning.

The four steps often described use the designations *Discover*, *Dream*, *Design*, and *Deliver*.

Discover, appreciating and valuing "What is?"

This is a time to reflect on what the organization or community is doing well right now, what it has accomplished in the past, and, most importantly, exposing and evaluating the qualities that brought about these good results. These assets will then be mobilized to bring about success in the new project.

Dream, envisioning: "What could be?"

During this phase of the appreciative inquiry process, the possibilities are endless. "Given the success of the past and the ways those experiences helped prepare us for the future, what wonderful things might we attempt?"

Design, dialoguing: "What should be?"

The first two steps focused on a world of wide-open possibilities. This third step will help to channel the discussion into one that prioritizes and then chooses a path forward from the many available paths. Here, one or perhaps a few project possibilities are chosen. These are projects for which you feel most confident that success can be achieved, and ones for which you have a fairly sure sense that the way forward is the best option available.

Deliver, innovating: "What will be?"

Finally it is time to begin building the "to do" lists and assigning deadlines. Here, the project can be broken down into its components so that the action steps can be prioritized. This will be the time for budget writing, system building, resource collecting and very practical things like soil building.

Agricultural Principles and Practices

The best agricultural practices for a specific project vary far too widely to be addressed here. There are, however, some important principles that apply to just about any conceivable agriculture undertaking, and these are always worth reviewing.

Conserve and build soil

Healthy soils, full of organic matter and microbial life, are the foundation of good agriculture and of every sustainable agricultural endeavor. In areas where erosion is a serious threat, efforts must be made to slow and stop the process. Composting, the use of green manure cover crops, leguminous companion planting, and heavy mulch covers are just some of the methods that help increase life in the soil and create resilient and productive environments for plants.

Conserve water

Water is often a limiting factor in an agricultural project. The collection of rainwater, efficient drip irrigation, zai holes, and bunds are just a few of the many tools available to help conserve water and stretch growing seasons. Heavy mulch keeps the soil moist long after the last rains have fallen. In addition, choosing perennial vegetables such as chaya, katuk and moringa, is a good way to produce greens with less reliance on irrigation.

Cooperate with nature

Each ecosystem and climate has an inventory of plants and animals that are well adapted. Take local climate conditions into account when selecting plants and animals to work with and in scheduling planting and harvest activities. By mimicking the cycles of nature in any given place, a project can reduce or eliminate its need for outside inputs and can greatly reduce the energy and labor needed to maintain productivity.

Incorporate biodiversity

Natural ecosystems are resilient largely due to their immense biodiversity. Beneficial organisms cooperate to keep pests at bay, and provide each other with resources and nutrients. The less biodiversity, both plant and animal, in an agriculture system, the less resilient the system will be, and the more outside energy and inputs (often toxic or scarce) it will require. Livestock, when appropriate, can help maximize the return of nutrients while lessening the need for outside inputs. Polycultures of crops can also help increase production in a limited space.

Minimize waste

Waste is evidence of poor stewardship. Projects should be planned in such a way that one organism's waste becomes another's resource. This can this help cut down on, or eliminate, costs. It also helps build natural resiliency and potentially creates new streams of economic opportunity.

A best practice case study

An Effective Farm for Children

From ECHO Technical Note *#74 , "Agriculture Components for Small Institutions"*

Approximately 25 acres (10.12 ha) of property are managed by a children's home near Yangon, Myanmar. This farm offers some useful insights into how effective management of adequate land and water resources, and of labor, can yield a significant degree of savings and food security for children.

The operation is divided into three main components. A one-acre (0.40 ha) plot, where the primary residence for the children is located, also contains a vegetable patch, pig pens, a rice mill, a small pond and a few milk cows. Adjacent to this site is 20 acres (8.09 ha) of rice paddy. Another 2.5 acre (1.01 ha) plot, a few miles away, is where most of the vegetables are raised, along with a few more pigs and approximately 15 goats.

All of these farm components are interlinked, so that each one supports another in some fashion. For example, the rice field produces a considerable amount of grain for the children's home; about five months' worth, after a major portion is taken out to compensate outside labor needed to tend the crop. But the rice farm also produces straw that feeds the farm's milk cows, especially when other forage is scarce during the dry season. The farm's four cows, with occasional contributions from the goats, reportedly provide all of the milk needed to nourish the home's 47 children.

The cow, pig and goat manure produced at the farm is composted and applied to the vegetable plots planted over almost three acres. A continuous yield of homegrown vegetables is the farm component's biggest contribution to the children's diets.

During a follow-up visit, we encountered well-tended plots of water spinach (*Ipomoea aquatica*) and leaf amaranth in addition to trellised bottle gourd yielding edible shoots and fruit. The farm also makes use of a few types of indigenous perennial vegetables such as *su pout ywet* (*Acacia pennata*) and a species of *Clerodendrum*. Additionally, fruits such as guava, banana, papaya and pineapple are grown.

Water conservation measures, such as mulching and careful hand watering, are employed during the dry months. But according to the director of the children's home and farm, the dry season—with a corresponding low disease pressure—is the easiest time to produce vegetables, despite the challenge of keeping crops watered.

Asked whether he thinks it might be possible to widen agricultural operations, the director replied that apart from the possible addition of a fish pond (to provide both protein and water storage), the farm is operating at near capacity. He is concerned that expanding the farm work load might have a negative impact on priorities related to educating and caring for the children.

The children help out on the farm; the director explained that the young people are allowed to engage in farm chores for about one hour per day after school, in addition to involvement on Saturdays and school holidays. They reportedly enjoy participating in appropriate outdoor work activities, and most are from farm communities. Since half of the children will probably return to agricultural communities, the director believes that farm experience gained at the home will better prepare them to become food producers themselves.

How much does the farm operation actually benefit the ministry budget? The director estimated that without the supplemental food produced at the farm, monthly costs would be at least 25 percent higher.

References and Resources

Planning Resources

FAO School Gardens website: http://www.fao.org/schoolgarden/

FAO 2005. Setting up and running a school garden. http://www.fao.org/docrep/009/a0218e/a0218e00.htm

Savory, A. 1999. Holistic Management: A New Framework for Decision Making. 2nd Ed. Island Press, Washington, DC

Henderson E., K. North, and J. Langer. 2011. Whole-Farm Planning: Ecological Imperatives, Personal Values, and Economics

Gerber, M. The E-Myth Revisited: Why Most Small Businesses Don't Work and What to Do About It - (note: this book is a useful guide for creating management systems)

Morrow, R., and R. Allsop. Earth User's Guide to Permaculture. 2nd Ed. Kangaroo Press, Kenthurst, Australia.

Agriculture Practice Resources

Bunch R. 2012. Restoring the Soil: A guide for using green manure cover crops to improve the food security of small holder farmers.

Lowenfels, J., and W. Lewis. 2006. Teaming with Microbes: A Gardener's Guide to the Soil Food Web

Kroll, R. 1997. Market Gardening (part of the Tropical Agriculturalist Series from CTA)

Jeavons, J. 2006. How To Grow More Vegetables (and Fruit, Nuts, Berries, Grains and Other Crops) Than You Ever Thought Possible On Less Land Than You Can Imagine

Berke, T. 1993. Plants of Economic Importance in Haiti

Martin F., and R. Ruberté. Techniques and Plants for the Tropical Subsistence Farm. (USDA Pub)

ECHO Resources

Motis, T., and D. Berkelaar. 2012. Agriculture Options for the Small Scale Farmer: A Handbook for Those Who Serve Them

ECHO Articles

Soil Fertility (*TN* 57)

Green Manure Crops (*TN* 10)

Foundations for Farming (*TN* 71)

Agriculture Components for Small Institutions (*TN* 74)

Selecting the Best Plants for the Tropical Subsistence Farm (*TN* 20)

Should an Institution Grow Its Own Food (*TN* 45)

Agriculture Components for Small Institutions (*TN* 74)

Where There Is No Farm Advisor

Community Gardens Tool Kit

Farm Economic Tools (Several tools listed in "Other Useful Documents" Section)

Community and Schoolyard Gardens (*EDN* 114)

Planning an Agriculture Project (*EDN* 118)

Implementing Your Agricultural Project / Farm Plan: Farm Management Principles (*EDN* 120)