



Farmer to Farmer Spread of Agroecology in the Eastern Region of Burkina Faso

Introduction

Burkina Faso ranks as the sixth poorest country in the world according to the 2015 UN Human Development Report. Recent studies estimate that 46.4% of the population in the Eastern Region lives below the poverty line. These people are caught in a vicious cycle of degrading natural resources, declining soil fertility, and increasing hunger. In the past farmers used to fallow their land for 10-20 years to restore soil fertility, and clear new land to plant. This is no longer possible due to the increased population of people and livestock. As food production declines, the poorest 30% of farmers often sell their animals and other assets, or obtain high interest loans to buy grain. Many families are unable to escape this cyclical trap of debt and hunger.

In this incredibly challenging context, farmers, local NGOs, and agricultural researchers in Burkina Faso have tested and adapted a number of effective agroecological farming practices over the last 30 years that have proven capable of restoring soil fertility and increasing food production for smallholder farmers. These include: soil and water conservation techniques that build on traditional practices, such as “zai” and “half-moon” and permeable rock contour barriers; the use of compost to increase organic matter in soil; and the promotion of “farmer managed natural regeneration” of trees (FMNR); dry season vegetable gardening by women’s groups; and the use of short-cycle seeds. The key challenge is that these practices are currently adopted by limited numbers of farmers, and these “islands of success” need to be scaled dramatically and quickly to address the crisis.

Response

Association Nourrir sans Détruire (ANSD) is a NGO in Burkina Faso working to strengthen rural communities to overcome hunger and promote socio-economic development. Their work is concentrated in three districts, Bilanga, Gayeri and Tibga, which have 125 villages. To test and spread effective agroecological practices, ANSD collaborates closely with farmers’ organizations, local NGOs (Association for Research and Training in Agroecology or ARFA, and Association for Rural Promotion Gulmu or APRG), the National Institute of Environment and Agricultural Research (INERA), local government officials, and traditional leaders.

ANSD believes that farmers and community-based organizations must lead in their own development, and works to strengthen their capacity to do so in sustainable ways. When initiating the program in 2010, ANSD facilitated a participatory analysis with community members to identify the main reasons for the limited adoption of effective agroecological techniques, and create plans to spread them. Key reasons expressed by farmers for limited adoption included their lack of opportunities to learn about some of these techniques, and limited extension services and support for adopting them. Nationally most government policies and support favour areas of high agricultural potential (better land, larger farms, export crops), rather than focusing on programs and policies to enable improved livelihoods for smallholder farmers. Farmers also identified the need to strengthen their organizational capacities to better test and spread agroecological practices.



Description of the Agroecology system

In many parts of Burkina Faso, agriculture of sorghum, millet and cowpeas and animal husbandry are the foundation of the rural livelihoods. Annual rainfall varies between 500-700mm. Significant decline in soil fertility and productivity in recent years have been caused by: increased population pressure on the land, reduction or elimination of the following practices traditionally used to maintain soil fertility, and climate change contributing to more frequent droughts. Since 2012, the number of people needing humanitarian aid to survive in six Sahelian countries has remained above 20 million (costing about US\$1.8 billion annually), greatly exceeding historical patterns since 1965. Most of these people are dry land farmers.

In order to reverse declining soil fertility and sustainably improve production on these traditional farming systems, ANSD first worked with farmers to visit and identify effective agroecological practices that exist in the country. These include:

- **Rock contour** bunds to conserve soil and stop erosion during heavy rains.
- **Zai and half-moon planting pits**, which farmers create in the hardpan soil using hand tools or plows and animals. These act as micro-water catchments, holding about four times the amount of water that normally runs off the land. Production is increasing as seeds, compost and water are held in the pits.
- **Compost** is used to improve soil fertility.
- **Farmer Managed Natural Regeneration of trees (FMNR)** is a strategy of farmer-led agroforestry



Figure 1. Zai planting pits

and re-greening to improve soil organic matter and fertility. As noted, traditionally farmers have cleared and burned their land, and then allowed it to fallow for extended periods once soil fertility was depleted. To protect and restore the degrading landscape, many projects in West Africa's Sahel have tried and failed at reforestation through planting trees out from nurseries. Yet farmers and NGO staff have observed that in spite of annual cleaning, a living forest of roots remains beneath the land, with shoots of native trees returning from stumps every year. Farmers have learned to allow selected trees to regrow, such as *Piliostigma reticulatum* and *Faidherbia albida* to prune and manage them, and to integrate them into their farming systems. Different species fix nitrogen, act as windbreaks, produce fodder for animals, produce fuelwood, and generate leaves that restore organic matter to soils.

The next challenge was to develop a farmer-led process to test and spread these. ANSD worked with farmers to develop a process at the levels of depth (on farm), horizontally (farmer to farmer spread) and vertically (creating a more enabling context). ANSD also strengthened the capacity of community-based organizations to manage this process independently.

Depth strategies allow farmers to continuously test, innovate, and adopt a growing set of complementary agroecological practices on their own farms in order to create more productive and resilient farming systems:

- **Learning visits** by farmer leaders as well as local government and ministry officials, religious and traditional leaders, to other villages to learn from farmers practicing key agroecological techniques.
- **Participatory analysis and planning** with villages to identify their challenges and plan on farm experiments.



- **Support for farmer experimentation** in pilot villages to assess the costs and benefits in comparison to other practices.
- **Technical training sessions** for interested farmers in four “foundational” agroecology innovations (zai planting pits, stone contour bunds, half-moon water catchment areas, and FMNR).
- **Ensuring gender and economic equity** by developing strategies to allow women and the most vulnerable households to participate, such as: formation of women’s savings and credit groups; dry season vegetable gardening for consumption and sale at local markets; improved practices for raising livestock; and simple methods to process produce for storage and sale.
- **Organizational capacity building** with existing farmers’ groups through organizational self-assessments and follow up activities to strengthen village agricultural committees in planning, assessing results of experiments, and coordinating farmer-to-farmer extension.
- **Generating knowledge** through participatory monitoring and evaluation.



Figure 2. Women practicing FMNR

Horizontal strategies focus on spreading principles and practices farmer-to-farmer.

- **Decentralized geographic and “cascading training”** accelerates the spread of agroecological practices. Villages are grouped into clusters of 3-4 villages, which then select a pilot village and motivated farmers to engage in a Farmer Field School approach to experiment with a limited number of agroecological practices on test plots on their land. This allows for rapid spread and costs innovation.
- **Developing a network of village agricultural committees and volunteer farmer-to-farmer promoters** (both women and men). Promoters provide practical demonstration, teaching and troubleshooting with other farmers on successful agroecological principles and practices, while village agricultural committees coordinate the farmer-to-farmer extension process.
- **Use of popular media**, such as community radio and sharing videos.

Vertical strategies focus on creating a more enabling context, to shift government policies and programs to be more supportive of smallholder farmer agroecology, as opposed to technology packages with larger farmers. Strategies include strengthening farmers’ organizations, documenting evidence such as reports and human interest stories, and engaging with government officials at local levels to share lessons and make plans.

Outcomes of the practices

In 2010, ANSD began working with 20 villages, and in 2016 ANSD is working with a total of 60 villages. They hope to eventually reach all 125 villages in the three districts. Some results include:

- Community members established village agricultural committees in 58 of 60 villages, and 47 of these developed their own action plans for promoting agroecological practices in 2015. Over 1,000 women and men are involved as voluntary farmer promoters.
- Between 2014 and 2015, a total of 221 Farmer Field Schools were organized, with 3,559 farmer experimenters (1,724 women and 1,835 men). Of these, as of mid-2015 a total of 2,945 farmers have adopted FMNR and related agroecology techniques on their fields.
- A survey conducted in 2014 of 64 Farmer Field Schools using five different combinations of



mostly agroecological techniques revealed that yields of experimental plots of sorghum increased from between 40% to over 300% compared to control plots based on existing farmer practices. As the experiments were undertaken on farmers' fields, there was considerable variation on the yields of the control plots (from 322 kg/ha to 610 kg/ha) and in the level of increased yields, because of factors such as the existing level of soil fertility, and the presence of a noxious parasitic weed called striga.

- Through the geographic spread strategy, from 2010 to 2014 a total of 16,325 farmers have been engaged in learning activities. Assessments are planned to understand their levels of adoption.
- At least 3,000 children and youth have become engaged in environmental protection activities. The ministry of environment facilitated access to local public radio to broadcast programs to promote FMNR and other agroecological techniques and government officials and religious leaders are supporting FMNR and agroecology within their organizations.

ANSD's strategy for strengthening the capacity of rural communities to scale agroecology is highly cost effective. For example, at least 1,000 skilled farmer-to-farmer volunteer promoters have been trained in a four years which was about 5 times cheaper per promoter compared to other NGO strategies.

Lessons Learned and Next Steps

ANSD estimates that tangible, lasting and widespread change in the three districts will take between 6 and 10 years. The most critical point is that the approach to scaling agroecology does not transfer a pre-determined package of technologies. Instead, ANSD works with farmers to identify a "basket" of potential innovations, fosters farmer experimentation and farmer-to-farmer exchange on key agroecology principles and practices, and enables each household to apply the combination of practices that best suits their circumstances. Through this collaboration, they create an improved process for accelerating agroecological innovation. This process has the potential to help replace the negative cycle of declining soil fertility and food production, with a positive cycle of regenerating the local environment and improving the wellbeing of families. Key lessons and elements of success include:

- Rather than focusing only on technical work, or only on advocacy work, strategically combine efforts to deepen agroecological practices, with horizontal scaling, and vertical influencing.
- Cluster villages geographically and strategically to accelerate the spread of agroecology.
- Promote gender equity within both community level and scaling strategies.
- Strategically select high potential and "foundational" agroecological techniques, identified from existing effective practices in similar areas as well as innovative local farmers.
- Support farmer experimentation, and early recognizable success to generate enthusiasm.
- Creatively use field visits, media and rural radio to spread awareness.
- Progressively combine and sequence agroecological innovations to achieve synergy.
- Work to achieve a critical mass of adoption of agroecological practices in each village.
- Encourage the creation of multi-actor networks for improved learning and coordination.

Message from farmer to farmers

"We didn't know the techniques of how to dig zai and half-moon. Now that we have this knowledge, we are able to manage the land and sow seeds. Even if there is no rain for 10 days, the seeds will stay alive. I'm happy about this. Since I have applied this to my farm, I now train other people."

— Naba Telijieba, rural farmer in the village of Diora