

Highlights

CIAT in Africa

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The Highlights series summarises research results and policy implications from the work of CIAT and its partners in Africa

Differential entry points to address complex natural resource constraints in the highlands of eastern Africa

Given steep slopes, high population density and land shortage, accompanied by intensive cropping and high rainfall intensity, decline in soil fertility is very apparent in the African highlands. Three out of the five principal problems listed by farmers are commonly related to soil

fertility decline. The research team of the African Highlands Initiative (AHI) in collaboration with CIAT and the Ethiopian Institute of Agricultural Research (EIAR) employed several participatory techniques in order to:

- (1) Develop strategies to address complex natural resource management (NRM) issues.
- (2) Foster a change from a commodity orientation to a more holistic and participatory approach in the research system.



Land degradation became a threat to livelihoods in the Highlands of Wollaita, Ethiopia.

Farmers were in the forefront throughout the processes of technology development, technology dissemination and impact assessment.

Implementing integrated approaches

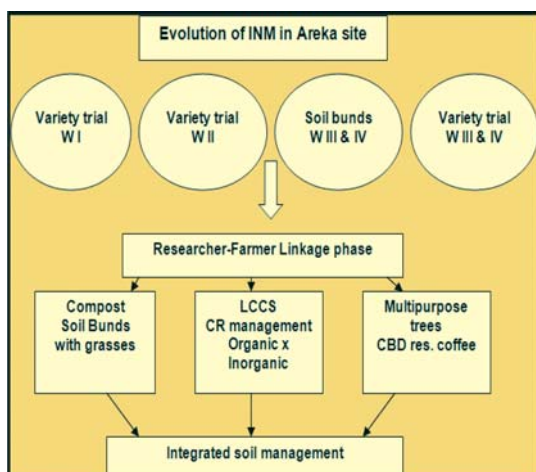
Prior research efforts revealed that better understanding and integration of socioeconomic organisational and cultural values of farmers at different resource endowment levels is essential, given that small-scale farmers manipulate and integrate farm components to maximise returns from a sub-optimal and unpredictable environment.

NRM agendas demand high levels of farmer participation and control in the research and development process. Involvement of a number of specialists working beyond their areas of expertise helped to improve the system through better integration. In Areka, an AHI site in southern Ethiopia, various entry points were identified for clients with various types and levels of resource endowments.

Entry points for resource poor farmers

About 70 to 75 percent of households are considered by the community to be poor. The main production constraint for these groups mentioned during participatory Rural Appraisal (PRA) was decline in land productivity. They rarely own livestock; hence they did not have access to manure to enhance crop yields.





The evolution of participatory research from varieties to land management in Areka, Ethiopia.

The entry point favoured by this group was to employ strategic soil and water conservation measures. They chose to secure soil bunds by planting elephant grass, multipurpose trees and pigeon pea on the top and sides. As forage grasses accompany soil bunds, farmers are able to produce dry season feed estimated to cover at least 35 percent of their feed demands. After minimising soil loss in these ways, farmers asked for additional soil fertility improvement measures. For this endowment category, crop residue management and legume cover crops were suggested by farmers and researchers as potential alternative interventions. Later on, they picked gully stabilisation and water drainage from neighbouring fields as areas of innovation, through the use of stone blocks and cultivation of indigenous trees. They have also planted more Eucalyptus trees to increase income and fuel wood production so as to offset negative trade-offs.

The evolution of integration among the different farm components was very fast, primarily because their production system relies heavily on internal resource flows and rarely involves external inputs. With this farmer category, the role of researchers became that of monitoring the fate of selected varieties. As a follow up strategy, farmers were provided training in seed systems at their own request, enabling them to multiply promising varieties, share them with non-participating fellow farmers and sell them to neighbouring communities. Coffee, the major cash crop in the area, was affected by coffee berry disease (CBD). Farmers in this group targeted pesticides in the short term and CBD-resistant coffee varieties in the long term.

After resolving their primary constraints and witnessing effective soil erosion control measures being undertaken by neighbouring (resource poor) farmers, these groups engaged in more integrated farming systems approaches and development of “win-win” technologies—those that increase productivity while also improving NRM.

Entry points for watershed management

- Natural resource management at a landscape level can be successfully implemented only when accompanied by farm level technological successes. Unless community members witness the effectiveness of interventions at plot level, farmers may not make a collective decision to manage landscapes.
- At a landscape scale, issues of importance to diverse social groups (by gender, age, wealth, landscape position & village) are being considered as important entry points to participatory watershed management. Such issues are being identified through focus group discussions and individual interviews.
- Relative to the integration of on-farm technologies, the success of watershed management relies more heavily on policy interventions at community, district and national levels. Strengthening local policy could be a key element in managing communal resources, as illustrated by the difficulty of integrating trees on barren lands without a local by-law prohibiting free grazing.
- Watershed agendas can be sustainably implemented only if supported by interventions that give immediate benefits to farmers.

Entry points for resource endowed farmers

Farmers in this category own animals, produce enough food to cover household demands, and are in a position to purchase external inputs. The priority intervention chosen by this group was improved inputs (primarily fertilisers and seed). These farmers have conducted varietal trials on four major food crops: wheat, teff, beans and maize.



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