



A household member from Adale Bise kebele of Mattu district who is simultaneously producing organic fertilizers using vermicomposting and biogas/bioslurry production technology. (Gerba Leta)

## Integrated Soil Fertility Management (ISFM) (Ethiopia)

Qindoomina Misooma Gabbina Biyyee (Afaan Oromoo) /Yeteqenaje ye Afer Limat (Amharic)

### DESCRIPTION

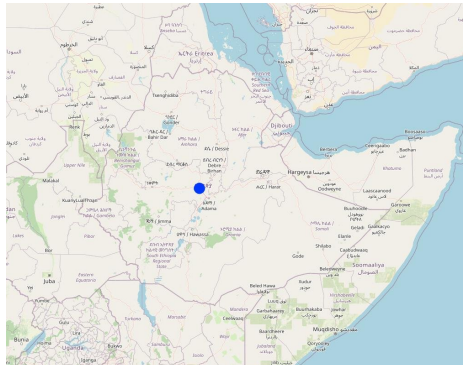
The Integrated Soil Fertility Management (ISFM) approach has been adopted under the Integrated Soil Fertility Management Project (ISFM+). It was introduced as a quick-win solution to increase both crop and biomass production through the incremental promotion of varied but complementary technology packages.

The Integrated Soil Fertility Management (ISFM) approach is intended to increase both crop and biomass production through the incremental promotion of varied but complementary technology packages. These include the production and use of organic fertilizers, treatment of soil acidity, and improved retention of crop residue. All help in reducing the depletion (mining) of soil nutrients. One characteristic feature is the engagement of research and development partners at all levels such as in joint problem identification, learning, participatory planning, piloting technology, and exchange visits. The approach involves model farmers and also focuses on farmers with limited means to purchase chemical fertilizers. It enhances the production of organic fertilizers to increase both soil fertility and crop productivity. Furthermore, ISFM enables farmers to generate off-farm and on-farm income through the production and sale of organic fertilizers, vermiworms, and green manure seeds, etc. The partners assist in identifying soil-related issues, as well as enhancing the adoption and institutionalization of the approach. ISFM aims to improve stakeholders' understanding of land degradation issues and the necessity of SLM by creating access to relevant seasonal training, exposure visits, collective learning, and action.

Project focal persons representing partners at different levels and development agents (DAs) are used to facilitate the process and serve as potential links with stakeholders. At the local level, the Farmers Research and Extension Group (FREG) sub-approach supports the implementation of the technologies on an incremental basis (see WOCAT database). Also, the Soil Fertility Improvement Cluster approach (see WOCAT database) assists in scaling out of the ISFM approach by adopting and superimposing technologies such as vermicompost with improved compost production. Farmer ambassadors are identified from the FREG model based on their performance. They assist in mainstreaming and dissemination of the approach and technologies to indirect beneficiaries. The implementation process of the ISFM involves district and kebele selection, identification of watersheds and voluntary farmers, provision of capacity-building training, conducting participatory planning, supplying inputs, and technical support. To realize the aims, the ISFM+ allocates financial support to the partners at different levels via Local Subsidy Contract.

Project staff including federal and regional advisors are involved. They provide training, technical backstopping, reviewing progress, M&E, and feedback services. District focal person closely follows up on the implementation - with the support of DAs in steering farmers' group meetings and collective learning. In addition, DAs assist in piloting on farm short and long-term demonstrations, organizing field days and exchange visits, collecting data, and overseeing activities.

### LOCATION



Location: Addis Ababa, Ethiopia

#### Geo-reference of selected sites

- 38.79984, 9.02149

Initiation date: 2015

Year of termination: 2025

#### Type of Approach

- traditional/ indigenous
- recent local initiative/ innovative
- project/ programme based

Land users like the technologies introduced and implemented via the ISFM approach. The promotion of collective learning and action leads to increased soil fertility, and improved crop production and smallholders' livelihoods. The creation of new sources of income for land users is among the benefits they appreciate the most. However, farmers are less enthusiastic by the way that group meetings clash with their other activities and this leads to some members dropping out. Also, the cost of technologies promoted by the ISFM such as combined uses of chemical fertilizers, bio-fertilizers (for legumes), organic fertilizers, and quality seeds are envisaged as a possible constraint among others.



ISFM+ focal persons and other member of the development partners progress assessment and planning meeting. (Gerba Leta)

## APPROACH AIMS AND ENABLING ENVIRONMENT

### Main aims / objectives of the approach

The main objective of the approach is to promote the integration of technologies, collective learning, and action for treating degraded soil, increasing soil fertility and crop productivity while ensuring sustainable uses of land.

### Conditions enabling the implementation of the Technology/ ies applied under the Approach

- **Availability/ access to financial resources and services:** Access to financial resources improved farmers' access to materials and inputs on their own. This promotes the adoption and scaling up of the technology using ISFM approach.
- **Institutional setting:** Institutional setting such as farmers' group formation promotes collective learning and action.
- **Collaboration/ coordination of actors:** Is central to promoting effective implementation of the approach that entails various research and development actors.
- **Policies:** Such as adopting lime production, distribution and use policy enables successful implementation of the approach.
- **Workload, availability of manpower:** Family labor enables production of organic fertilizers and effective implementation of lime and other technologies which are labor intensive.

### Conditions hindering the implementation of the Technology/ ies applied under the Approach

## PARTICIPATION AND ROLES OF STAKEHOLDERS INVOLVED

### Stakeholders involved in the Approach and their roles

What stakeholders / implementing bodies were involved in the Approach?	Specify stakeholders	Describe roles of stakeholders
local land users/ local communities	Model farmers, and other smallholders (followers).	Lead group meeting, facilitate collective learning and action based on the pilot practices/activities.
SLM specialists/ agricultural advisers	Focal persons and experts from soil fertility improvement /extension unit of the district.	Facilitate implementation of the technology via the approach, and serve as a link between stakeholders.
researchers	Soil researchers from Regional Research Institutes, and respective technologies.	Soil testing, production of bio fertilizer, and supporting the different technologies with research findings.
NGO	SNV Ethiopia, Nutrition Sensitive Agriculture, and other GIZ projects.	Integration of efforts such as on biogas/bioslurry production and other respective project implementation activities.
private sector	Agro dealers, and other services providers	Facilitate the distribution of lime and improved seeds, provide services on mechanization such as maintenance, etc.
local government	District office of agriculture, and woreda administration.	Partnerships, acknowledge implementation of the project and provide administrative support when

		required.
national government (planners, decision-makers)	Ministry of Agriculture and Research System.	Support in mainstreaming the technology and approach, policy formulation and research support testing soil and tools...
international organization	CIAT, CIMMYT, ICRISAT...	Provide research and technical support in joint areas of intervention.

**Lead agency**

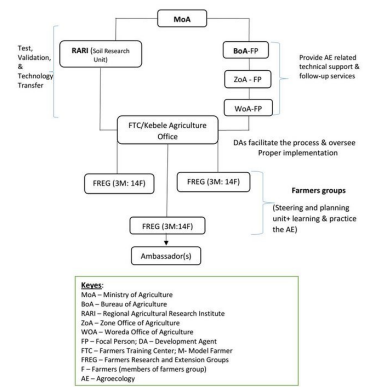
Integrated Soil Fertility Management Project (ISFM+).

**Involvement of local land users/ local communities in the different phases of the Approach**

	none	passive	external support	interactive	self-mobilization	
initiation/ motivation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	District focal person and development agents. Facilitate the implementation right from awareness raising, farmers' group formation, training, supply inputs, and technically support the implementation. Regional advisor, focal persons, and the farmers. Each engaged in a participatory planning exercise.
planning	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Farmers, focal persons, and development agents. Farmers implement the technologies being guided by the approach. Whereas, the focal person and development agents oversee and provide technical support. Focal person, development agents, and land users. They conduct participatory M&E to ensure collective learning.
implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
monitoring/ evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Flow chart**

ISFM approach that run from the federal to kebele where FREG is the pillar approach serving the land users as a platform for collective learning and action at local level.



Author: Gerba Leta

**Decision-making on the selection of SLM Technology**

Decisions were taken by

- land users alone (self-initiative)
- mainly land users, supported by SLM specialists
- all relevant actors, as part of a participatory approach
- mainly SLM specialists, following consultation with land users
- SLM specialists alone
- politicians/ leaders

Decisions were made based on

- evaluation of well-documented SLM knowledge (evidence-based decision-making)
- research findings
- personal experience and opinions (undocumented)

**TECHNICAL SUPPORT, CAPACITY BUILDING, AND KNOWLEDGE MANAGEMENT**

The following activities or services have been part of the approach

- Capacity building/ training
- Advisory service
- Institution strengthening (organizational development)
- Monitoring and evaluation
- Research

**Capacity building/ training**

Training was provided to the following stakeholders

- land users
- field staff/ advisers

Form of training

- on-the-job
- farmer-to-farmer
- demonstration areas
- public meetings
- courses

Subjects covered

Soil degradation, rehabilitation of the degraded soil using different technologies and agronomic practices notably lime, organic fertilizers, bio fertilizer, crop residue management, mixed cropping, green manuring, application of minimum tillage practices, etc.

## Advisory service

### Advisory service was provided

- on land users' fields
- at permanent centres

Advisory services are provided by the focal person and development agents at Farmers Training Center and on the farmers' field.

## Institution strengthening

### Institutions have been strengthened / established

- no
- yes, a little
- yes, moderately
- yes, greatly

### at the following level

- local
- regional
- national

### Describe institution, roles and responsibilities, members, etc.

Farmers Research and Extension Group (FREG) has been established at the local level and has been serving as an approach at the local level. It has been serving as a local platform that brings members of the farmers' group together in participatory planning and joint learning of the technologies piloted on the farmer's field and short and long-term demonstrations.

### Type of support

- financial
- capacity building/ training
- equipment

### Further details

The project provides financial support through the Local Subsidy Contract. Capacity building is central to the implementation of the project. Farm tools as an incentive for the best-performing farmers and on-field soil testing equipment are provided to support the partner organizations scaling out the implementation of ISFM.

## Monitoring and evaluation

Monitoring and evaluation is the pillar of the project activities and the adopted approach. The project along with implementing partners pilot short-term and long-term demonstrations, monitor the progress, and evaluate the achievements. Therefore, M&E is a regular activity in which the federal and regional project advisors rely on to generate feedbacks to amend or improve the implementation of the project activities.

## Research

Research treated the following topics

- sociology
- economics / marketing
- ecology
- technology

The research targets the feasibility of the technologies introduced via the ISFM approach and the project itself. The role of integrating different technology packages in improving soil fertility and crop productivity is also among the focuses of the research.

## FINANCING AND EXTERNAL MATERIAL SUPPORT

### Annual budget in USD for the SLM component

- < 2,000
- 2,000-10,000
- 10,000-100,000
- 100,000-1,000,000
- > 1,000,000

Precise annual budget: n.a.

ISFM+ is the source of the budget. A local Subsidy Contract (LSC) has been provided to partner organizations to effectively implement and follow up the activities with an additional allocation of finance for inputs and services.

### The following services or incentives have been provided to land users

- Financial/ material support provided to land users
- Subsidies for specific inputs
- Credit
- Other incentives or instruments

## Financial/ material support provided to land users

The project introduces technologies, provides inputs (improved seeds, chemical fertilizers, lime), and seldom supplies farm tools for a few well-performing models as an incentive.

## Other incentives or instruments

Farm tools for outstanding farmers as well as a solar panel for residents in a rural setting as an incentive for well-performing in adopting the approach and proper implementation of the project.

## IMPACT ANALYSIS AND CONCLUDING STATEMENTS

### Impacts of the Approach

Did the Approach empower local land users, improve stakeholder participation?

Land users learned the benefit of integrating three or more technologies/practices to improve soil fertility, and crop productivity and ensure the SLM is being in place.

- No
- Yes, little
- Yes, moderately
- Yes, greatly

Did the Approach enable evidence-based decision-making?

The approach certainly enables evidence-based decision-making by comparing the yield from the plots with treatment (technology packages) versus the control (without full packages).

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Did the Approach help land users to implement and maintain SLM Technologies?

The combination of three or more technologies, all in one inspires the land users to adopt and sustainably implement the SLM technologies.

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Did the Approach improve coordination and cost-effective implementation of SLM? Coordination at a local level is not up to the expectation.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach mobilize/ improve access to financial resources for SLM implementation?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach improve knowledge and capacities of land users to implement SLM? It improves the knowledge and skills of land users to implement SLM by promoting collective learning and action that highly increases peer learning through observation and social learning.	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Did the Approach improve knowledge and capacities of other stakeholders? It impacts or improves the knowledge and skills of indirect beneficiaries through farmer's ambassadors.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach build/ strengthen institutions, collaboration between stakeholders? It strengthens the inter-farmers collaboration and coordination that is seldom constrained by the overlaps with local activities such as public meetings and other communal affairs mostly known as new arrivals.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach mitigate conflicts?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach empower socially and economically disadvantaged groups? Farmers who have no financial means to access and use chemical fertilizers and other inputs involved via the approach.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach improve gender equality and empower women and girls? One-third of a member of the farmers' group are women farmers- a signal for improvement of participation by gender.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach encourage young people/ the next generation of land users to engage in SLM? There is an assumption that young people learn from the family and neighbors who engaged in the implementation of the approach. This certainly inspires the young generation to take up and implement SLM activities.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach improve issues of land tenure/ user rights that hindered implementation of SLM Technologies?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach lead to improved food security/ improved nutrition? Through promoting technologies/practices that improve production and productivity. By promoting legumes crop production using biofertilizers and as part of intercropping practices that ensure the nutrition security of the family farmers.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach improve access to markets? It improves participants' access to the inputs market (selling organic fertilizers, green manure seeds, vermiworms, and surplus products).	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach lead to improved access to water and sanitation?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach lead to more sustainable use/ sources of energy? Mainly through supporting biogas/bioslurry technology, and the introduction of woodlots to family farmers via agroecology projects that adopt a similar approach.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach improve the capacity of the land users to adapt to climate changes/ extremes and mitigate climate related disasters? This is partly through adopting minimum tillage practices, crop residue management, and the production and use of organic fertilizers that reduce carbon emissions and foster carbon sequestration.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did the Approach lead to employment, income opportunities? It creates income opportunities by promoting surplus production, production, and sale of organic fertilizers, vermiworms, and green manure seeds.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

#### Main motivation of land users to implement SLM

- increased production
- increased profit(ability), improved cost-benefit-ratio
- reduced land degradation
- reduced risk of disasters
- reduced workload
- payments/ subsidies
- rules and regulations (fines)/ enforcement
- prestige, social pressure/ social cohesion
- affiliation to movement/ project/ group/ networks
- environmental consciousness
- customs and beliefs, morals
- enhanced SLM knowledge and skills
- aesthetic improvement
- conflict mitigation

#### Sustainability of Approach activities

Can the land users sustain what has been implemented through the Approach (without external support)?

- no
- yes
- uncertain

As the production of organic fertilizers adopted on an individual basis and tangible benefit acquired from the implementation of the integrated approach introduced via the approach as well as the increasingly growing supply of lime for acid soil amendments similar to other chemical fertilizers, the likelihood of sustaining the approach for implementing integrated technologies is inevitable. Besides, the public organizations for instance bureaus of Agriculture and line offices such as in west Oromia of Jimma and Buno-Bedele zones institutionalized the production and uses of organic fertilizers via huge investments in establishing vermiculture centers to reach out to the large majority of smallholders subjected to soil degradation issues.

## CONCLUSIONS AND LESSONS LEARNT

#### Strengths: land user's view

- It promotes collective learning and action among smallholders living in a homogenous landscape facing similar land/soil degradation issues.

#### Weaknesses/ disadvantages/ risks: land user's view how to overcome

- Integrating technologies/practices and inputs via the approach has cost implications. Promote the land user's awareness of the cost-

- It enhances soil fertility and soil health by introducing integrated technologies and creating evidence-based learning.
- Gain widespread publicity that allows the public and land users to build trust in the approach and component technologies that positively impact the livelihood of smallholders and the land in general.

#### Strengths: compiler's or other key resource person's view

- The approach has been adopted and institutionalized within the government's mainstream rural development and agricultural extension.
- The project and the implementation approach are in line with the government's short and long-term plan to ensure the food and nutrition security of the nations while conserving natural resource basis.
- Integration is basic to address the nexus of issues that combine knowledge and skills development, the introduction of important agricultural inputs, technologies, or practices, all in one.

benefit of adopting the approach and introduction of subsidy to some inputs such as agriculture lime for acid soil amendments.

- The approach drives labor-demanding technologies and practices. Promote collective action through adopting labor share arrangements as well as efficiently use family labor for follow-up of the production of organic fertilizers by task sharing.
- The high investment cost for some technologies is promoted by the approach. Enable land users to make the right choices of diverse technologies catered through the project and the adopted approach.
- Delay in supply of agricultural inputs such as agricultural lime Encourage private sectors involvement or the agro dealers in the supply of the agricultural inputs.

#### Weaknesses/ disadvantages/ risks: compiler's or other key resource person's view how to overcome

- The limited scope of the project implementation sites. To try to reach out to similar landscapes with similar land degradation issues including the marginal regions. Or else, institutionalize the approach at the national level so that the public sector takes up and popularizes it in areas with similar problems.
- The collaboration and collective action at local levels through the existing platform is staggered by new arrivals and other local administrative chores. Local government actors and partners need to be well aware and give due emphasis beyond considering the intervention implemented through ISFM as merely project activities that usually come and go.

## REFERENCES

#### Compiler

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#### Full description in the WOCAT database

[https://qcat.wocat.net/en/wocat/approaches/view/approaches\\_6732/](https://qcat.wocat.net/en/wocat/approaches/view/approaches_6732/)

#### Linked SLM data

Technologies: Bioslurry [https://qcat.wocat.net/en/wocat/technologies/view/technologies\\_6646/](https://qcat.wocat.net/en/wocat/technologies/view/technologies_6646/)

Technologies: Cover crops [https://qcat.wocat.net/en/wocat/technologies/view/technologies\\_6628/](https://qcat.wocat.net/en/wocat/technologies/view/technologies_6628/)

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#### Key references

- Leta, G., Schulz, S., Alemu, G. 2020. Agricultural extension approach: evidence from an Integrated Soil Fertility Management project in Ethiopia. *Frontiers of Agricultural Science and Engineering*, 7(4): 1-13. DOI: 10.15302/J-FASE-2020331: Free online

#### Links to relevant information which is available online

- Integrated Soil Fertility Management: <https://ifdc.org/integrated-soil-fertility-management-isfm/>

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