

ETHIOPIA



Innovative trench gardening in the arid region

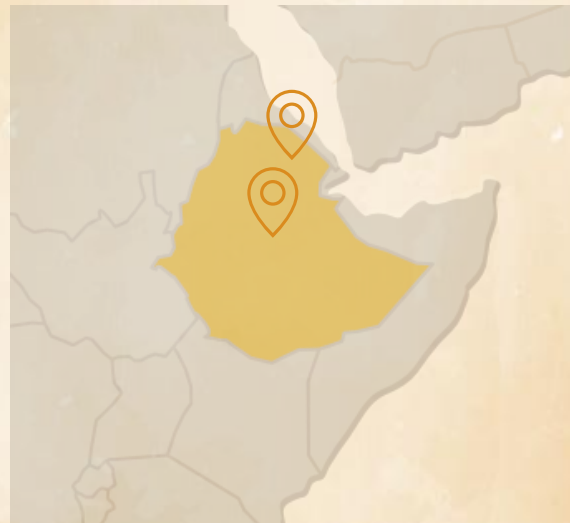
Vegetable production in arid and semi-arid areas using innovative trench gardening techniques:

The mission of the initiative is to enable farmers to produce vegetables and fruit using innovative moisture conservation techniques so as to minimize food and nutrition insecurity and thereby create a better life for communities in dryland areas.

Map

The trench gardening initiative (Vegetable production in arid areas using a moist sunk bed) is being implemented in Koneba and Semu Robi districts, Afar Regional State, Ethiopia. This fact sheet focuses on the trench gardening initiative implemented at Hadel hange village in the Semi Robi district.

The village is situated in the Rift Valley of Ethiopia where there is little or no rainfall and where pastoralism is the dominant economic activity. It is located 20 kilometres from the city of Shewa Robit.



Context of the initiative



The ecology of Semi Robi is shaped by a desert and semi-desert climate. Livestock is the basis of the livelihoods of the population of the area, which is prone to recurrent droughts resulting in heavy livestock mortalities. The region experiences the highest temperatures and lowest rainfall in the country. It is generally an inhospitable lowland area, where the majority of the land is rocky and unsuitable for crop farming. People in the region, therefore, depend mainly on livestock production for their livelihoods. However, it is possible to grow crops using irrigation in selected ecological niches.



Description of the initiative

Trench gardening is a **manageable vegetable growing approach** that can be built and maintained easily on small area around the homestead. In this system, a trench (lowered bed) is dug into the ground to conserve moisture. The initiative is being implemented by mainly **women pastoralists** since 2018 after being introduced by the NGO PELUM Ethiopia in collaboration with its partner organizations BPA (Best Practice Association) and VWDO (Voice of Wilderness Development Organization) to locally produce vegetables in dry and drought prone areas of Ethiopia by conserving moisture.

Trench gardens are mostly practiced in **areas that face water scarcity/shortage**, have a rocky landscape and poor or disease infected soil that cannot otherwise support the growing of any kind of vegetables or herbs. Trench gardening practice requires the creation of fertile soil by mixing fertile topsoil, compost, manure and /or organic material, which is then placed in the trench. This technology has been tested and accepted by grass-root communities living in dryland areas. People living in moisture stress areas are not only food insecure because of lack of access to crop production, but they are also nutritionally insecure due to unfavourable climatic conditions that limit their ability to grow diverse varieties of crops. This technology has specially become popular for **empowering women, elderly people, children and people with disabilities** because of its applicability around homestead areas and because it requires less water.

Women agro-pastoralists Zeyneba Ali and Toyba Mohammed of Hadel hange village are the leading women growing cabbages, peppers, mustard, bananas, carrots and tomatoes for home consumption with trench gardening techniques. They explain that the **serious moisture stress of the area** was their main motivating factor to start the trench gardening initiative as it enables them to **produce diverse food**. They obtained seed, seedlings, barbed wire (for fencing) and plastic sheeting (to be laid down in the trench) from the district agriculture office and PELUM Ethiopia. They used topsoil, manure and compost to fill their 2.4m x 1m trench. There are 18 females within the initiative practicing these techniques, reflecting a growing level of participation of women in support of their families' food security.

The members of the community identify shortages of water, long distances to fetch water, lack of technical support (watering can, hoe and plastic sheets) and lack of follow-up from the district agricultural extension as the main constraining factors on their trench gardening. The positive factors that contribute to promoting the practice are its **effectiveness, the rich culture of knowledge sharing among the community, and transporting water using donkeys**. However, due to the recent security problems in this part of Ethiopia, the initiative has recently struggled.



Results & Benefits



The initiative helps to improve the livelihood and nutritional status of individuals, families and communities by producing different types of vegetables. This also improves balanced nutrition to mitigate malnutrition of families, mainly children and mothers.

Sunken trench gardening has proved to be a sound alternative gardening method since it utilizes conserved scarce water and moisture in dry areas which may not be able to support and/or sustain crop production, and has enabled families with limited/ very small plots of land at their homesteads to produce vegetables.

By collecting fertile soil from nearby alluvial areas gardeners have been able to create fertile soil in an area that has poor soil, and thus to support the cultivation of diverse vegetables and herbs. Engagement in food production has helped to empower women, people with disabilities and elderly persons by using trench gardening as a source of income and food since it can be easily managed by family labour.



In the past three and half years, communities practicing trench gardening in the districts have gained a reputation for producing good quality, sustainably produced organic vegetables for home consumption and for the local market. Root crops, lettuce, beans, onion, tomatoes and peppers grew better and provided good yields when grown using trench gardening practices.

Trench gardening is environment-friendly and reduces the use of synthetic chemical inputs (inorganic fertilizers and hazardous chemicals) to grow vegetables. Organic production techniques also reduce the occurrence of soil-borne diseases and pests. Added layers of organic materials decompose slowly and release nutrients to the soil over time, enabling the production of healthy and nutritious vegetables. It is an inexpensive approach as a trench garden can be constructed with low-cost materials supplemented by materials that can be found within the farm premise.



Over the years the members of the community have learned new practices, deepened their knowledge and strengthened their ability to manage their natural resources optimally so as to improve their well-being.

Trench gardening plays a vital role in making arid and semi-arid areas suitable for producing vegetables all year round. The design of trench gardens prevents the percolation or loss of water into the ground. As an agroecological practice, trench gardening helps to produce different vegetables/companion crops on small plots of land and helps poor households and disadvantaged families by supplying fresh vegetables for their daily diet, helps to generate supplementary cash income.

However, poor access to water and the current war and its associated security problems are key challenges to sustaining the benefits of the initiative and to extend the initiative.

Lessons learned & reflected FAO principles



Resilience

The trench gardening vegetable production initiative conserves moisture in dryland areas and it tries to adapt with the natural ecology of the area. Hence, it makes the system resilient to climate change effects.



Human and social values

Training manuals were developed in consultation with the local community representatives, translated into different local languages and are distributed to farmers and institutions.



Diversity

The initiative supports diversity as it encourages the production of a variety of vegetables and herbs and even some fruits.



Culture & food traditions

The products of the trench gardening are complementary to the food tradition and culture of the Afar people also the vegetable products are aligned with the culinary traditions of the communities of the area.



Co-creation & sharing of knowledge

The initiative has been based on the following three basic pillars: (i) Local knowledge (ii) Innovations and (iii) participatory approaches. The processes has been participatory from the beginning and now it is promoted through community learning groups.



Efficiency

The vegetable production by the initiative is effective in terms of use of water, biomass, food and nutrients and local materials in the dryland areas.



Synergies

By using locally available materials in an efficient production system, the initiative creates synergies within the environment and the social and economic systems.



Responsible governance

This initiative is implemented with the full involvement of the local people and local administration; the local people are responsible for the management of the initiative through establishing learning groups. They manage through community learning among their members.



Recycling

Mulching, composting, liquid fertilizer and farmyard manure are used to increase soil fertility. This depends on recycling available crop residues, broad leaved weeds, and manure.



Circular & solidarity economy

The target beneficiaries are closely linked to and getting assistance from NGOs like PELUM Ethiopia on how to improve their income from their nearby village consumers. In solidarity, village consumers visit trench garden farms in order to learn and to emulate the practices.

Contacts and Bibliography

Contacts :

Dr Hailu Araya



hailuara@yahoo.com



+251 9 11 24604



Addis Ababa
1110, Code 1000

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The AVACLIM project aims to create the necessary conditions for the deployment of agroecology in arid areas.

For more information : www.avaclim.org

Financial partners:



Operational partners:



Contact :
gizawgeb@gmail.com



Contact :
agroecologie@cariassociation.org



Contact :
dryland@global.co.za

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