

### The story of a smart water harvester in Tigray Region, Ethiopia

The Central Zone of Tigray Region in northern Ethiopia is a highland area with irregular rainfall of not more than 600 mm annually. The wet season lasts from July to September / October and is followed by a long dry season. Local farmer Abadi Redehey has less than 0.5 ha of cropland on reddish and clay soils to sustain his family. He has to be innovative to solve drainage problems on his sloping lands and improve crop productivity. On a visit to the town of Axum, Abadi observed the sewerage system, which drained water in open canals rather than letting it remain on the soil surface as was happening on his farm. After seeing this, he began to dig canals to ensure drainage, capturing excess runoff water and groundwater from deeper levels.

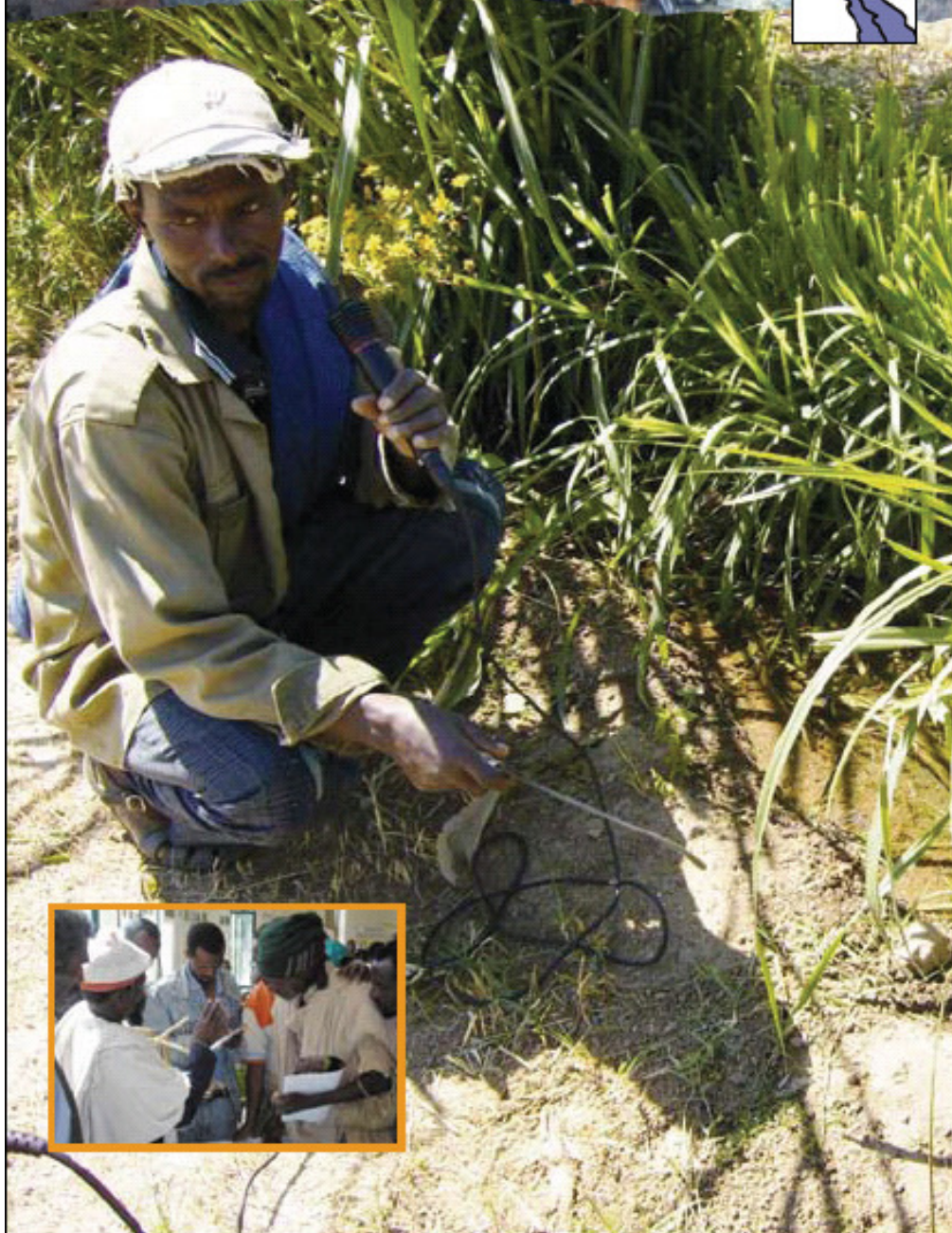
This innovative farmer excavated long, deep canals diagonally across the slope and placed long, flat stones down both sides of the canal to help the water pass easily. Finally, he placed more flat stones on top as a cover, covering them with soil. The canals now lie 40 to 180 cm under the soil surface.

The water is led through the canals to dug pits with earth walls. These water-collection points fill up in 8-12 hours during the wet season, and the excess water drains to a nearby small river. During the dry season, water from the pits can be drawn out for irrigation, using a treadle pump.

Abadi discussed his ideas and practices with other farmers and gradually expanded the system throughout the plot, connecting canals and leading the water to three collection points. He is now able to get three harvests per year from his plots: a cereal crop during the wet season and one or two harvests of vegetables such as cabbages, onions, garlic, lettuce and tomato during the dry season. He also grows some fruit trees on his farm such as guava, orange, mango and lemon and earns some additional income by selling onions on the market.

He has diversified his cropland and livelihood and can now ensure food security for his family. He made his innovation using entirely his own resources and at his own expense, in terms of materials and time.





Abadi and other local farmers were invited to a workshop in Axum to present their innovations. Abadi made a diagram sketch to explain how he manages the water during the wet season and manages its scarcity during the dry season. Other farmers expressed keen interest in his system of removing excess water and storing it for later use. This innovation was selected for further study in a participatory innovation development process.

Abadi and three other farmers formed a farmer research group to study how effective this innovation is in different farm settings, and to provide training for other farmers. During the wet season regular meetings were held to observe, discuss and plan activities, as a form of monitoring and evaluation. Sometimes outside experts joined their meetings to advise, research and document the drainage technology and to ensure broader implementation. Giving recognition to the farmers' creativity is the entry point for participatory research and development, in which farmers are seen as genuine partners with a lot to offer and in which the farmers are also open to receiving ideas from people who respect them.

Abadi is proud and happy to be listened to by district administrators, experts and farmers. 'Now many people - including officials and educated people - respect me,' he said.

**Information:**

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◀ 'Explanation of technology, sharing of knowledge and inspiring others are important success factors' according to farmer Abadi (photo: Hallu Araya).  
 Insert: Farmers and development agents discussing farmer's innovation at an agricultural show in Tigray, Ethiopia (photo: Hallu Araya).