



TAKING ROOT

CLIMATE-RESILIENT AGRICULTURE PRESERVES WATER, IMPROVES LIVELIHOODS FOR SMALL-SCALE FARMERS

On the drylands of Telangana, India, Meedoddi Vinoda produces bountiful harvests of millet without irrigation, fertilizers or pesticides. She does this despite increasingly erratic rainfall patterns and ever-drier conditions in her region, the result of climate change.

Vinoda credits the biodiversity-based agricultural techniques she learned from the Deccan Development Society, a grassroots organization working with women's groups in Telangana, for her success. Vinoda grows hardy, nutritious millet along with other pulses and cover crops. These enhance the soil, allowing it to absorb and retain moisture for longer, leading to greater resilience and prosperity for Vinoda. Last year she earned approximately \$4,000 on her three-acre plot despite the drought, far more than her neighbours who farm more conventionally.

Climate change puts at risk many of the development gains the world has seen, including progress on ending hunger. It threatens human security, with women particularly vulnerable during climate-related disasters and ensuing conflicts.

Water stands at the epicentre of this threat. With climate change, rainfall patterns are becoming more erratic, with fewer days of rain and stronger downpours. Currently 1.6 billion people live in areas that suffer from water scarcity—a number expected to rise to 2.8 billion by 2025.

The 1.5 billion small-scale farmers, who produce much of the world's food, farm some of the most at-risk land, including



Agro-ecological practices are helping members of the Deccan Development Society (DDS, pictured here and above) preserve scarce water resources and increase production. DDS is supported by Canadian NGO Inter Pares.

SUPPORT FOR CLIMATE-RESILIENT AGRICULTURE CAN ENABLE SMALL-SCALE FARMERS TO PROTECT AND PRESERVE PRECIOUS WATER RESOURCES—AND ATTAIN SECURE LIVELIHOODS.

hillsides, deserts and floodplains. They depend almost solely on rain to grow their crops and water their animals.

Women farmers are especially vulnerable as they lack access to resources such as land, water and credit. Water shortages place more strain on their already heavy workloads, as women and girls are responsible for collecting water in much of the developing world. Gender inequality means women often have less decision-making power and less access to farming and marketing knowledge. These factors all limit their ability to adapt to climate change.

But, as the story of Meedoddi Vinoda illustrates, climate change can provide an opportunity for transformation to more sustainable agricultural systems that can withstand severe weather events and

longer periods of droughts. For example, water-harvesting technologies, permanent soil cover and drought-resistant crops are enabling farmers to take advantage of available precipitation without depleting precious groundwater. Water can be used more efficiently for livestock by improving animal health and production practices, and by raising more drought-tolerant animals.

Inexpensive drip irrigation kits can significantly improve water productivity in rain-fed systems. The timely application of just 100 to 200 mm of supplemental irrigation water can increase wheat yields from two tonnes to five tonnes per hectare.

With conservation agriculture and agro-ecological techniques—reduced or no tillage, mulch, and diversified crop rotations—farmers can improve soil quality, increase water retention, sequester soil carbon, and increase yields, producing positive outcomes for both farmers and the environment.

Agricultural extension services, farmer field schools, participatory radio programs, and cell phone applications all provide training in new and traditional knowledge.

Empowering farmers, especially women, to fight climate change can't happen without new investments in climate-resilient agriculture. Public investment from Canada and other aid donors is needed to spur environmental innovation on the farm. Canada was a global leader in supporting agricultural development from 2008-2011, but since then aid for agriculture has fallen by 25 percent.

More than 35 leading international development organizations and 10 prominent academics are urging the Canadian government to make a signature investment of \$2.5 billion in agricultural development over the next five years. This should be part of a growing aid budget, and will help make Canada a global leader in efforts to combat climate change, address water issues globally and empower women. It can help achieve a range of Sustainable Development Goals, and will help build a more peaceful and prosperous world.

Learn more at www.aid4ag.ca.



Sources: Sustainable Harvests: *How investing in agriculture can help farmers address environmental change* (Canadian Foodgrains Bank); *Agriculture for Clean & Inclusive Economic Growth* (www.aid4ag.ca); World Bank; Inter Pares; Farm Radio International.

One of Hiwot Tirfneh's best farming tools is a radio. From her farm in the drought-prone Tigray Region of Ethiopia, she tunes in to a weekly radio program supported by Canadian NGO Farm Radio International. The broadcast is helping Tirfneh and others survive the current drought. "I have learned that we have to save every drop we get from the rain. I am applying the techniques and I got good results," says Tirfneh. She credits water harvesting for the good harvest she enjoyed this year.