Image: FAO Director-General QU Dongyu and Bill Gates.

U.S. business magnate and philanthropist Bill Gates has said that innovation in agriculture is necessary to deal with the effects of climate change.

Speaking at a special event during the 42nd Session of the Conference of the Food and Agriculture Organization of the United Nations (FAO), Gates, who is co-chair of the Bill and Melinda Gates Foundation, explained that helping smallholder farmers, especially in low-income countries, invest in results-oriented climate-resilient agriculture is essential to achieving the Sustainable Development Goals and avoiding a "catastrophic economic crash".

"Smallholder farmers are accustomed to overcoming incredible adversity and are constantly innovating based on changing weather and market demands," Gates said. "But they can't solve this alone."

Gates delivered the McDougall Memorial Lecture, which takes place every two years and honors the legacy of Frank Lidgett McDougall, an Australian agricultural expert who was instrumental in creating FAO.

The iconic technology entrepreneur who co-founded the Gates Foundation has a long-standing relationship with FAO. Last year, the Gates Foundation donated $10 million to the FAO-led fight against the Desert Locust upsurge in Africa. The two organizations also collaborate on a number of issues central to their missions.

In his lecture, Gates warned that climate change has already reduced growth in agricultural productivity and is expected to cut harvest yields by as much as 30 percent, raising food prices and increasing farmers' exposure to droughts and floods and plunging millions more people into hunger.

"It's particularly unjust that the nations who have contributed the least to greenhouse gas emissions - and who are now waiting the longest for COVID vaccines - are the ones most impacted by these challenges," he said.

He emphasized that Sustainable Development Goal 2 calls for ending hunger by 2030 and also the sustainable doubling of the income and productivity of small-scale food producers.

To make such ambitious targets meaningful, better data is needed to measure progress

towards them. The Bill and Melinda Gates Foundation is supporting FAO's statistical work to fill data gaps.

Gates commended the "50 by 2030" initiative, co-led by FAO, the International Fund for Agricultural Development and the World Bank, which aims to help 50 low- and middle-income countries gather, analyze and use data to track progress and improve policy making.

He also praised the Ceres2030 project for using new advances in machine learning to build a database of knowledge on effective interventions for smallholder farmers, and the African Union's work on an African Agricultural Transformation "scorecard" for monitoring trends.

Gates remarked on the "good work taking place across Africa to help farmers adapt and create long-term solutions to the threats posed by climate change. For example, farmers in East Africa are using big data to develop an early warning system for wheat rust outbreaks," whose costs run into the hundreds of millions of dollars, that has already prevented one epidemic. He also pointed to mobile platforms that allow smallholders to purchase inputs, obtain technical advice, apply for credit and crop insurance, and find buyers for their outputs.

Researchers at CGIAR, the global research network of which FAO is a part, are doing excellent work to improve nutrition, safeguard biodiversity and develop more productive and climate-resistant crop varieties, with a high return on investment, said Gates. "It is critical that FAO and other Rome-based agencies provide the technical assistance and financing to scale up the innovations and adoptions coming from CGIAR," he added.

In his opening remarks to Conference, Director-General Qu stressed FAO's commitment to data and innovation.

"The future of agriculture needs to be built on science, innovations and digital applications. Real-time data, innovations in technologies, policies, business models and mind-sets will be by people and for people," said the FAO Director-General. "Digital applications can produce significant gains in terms of increased efficiency, facilitate the good functioning of supply chains and enhance sustainability."