Director's Viewpoint

Science Without Humanity

Human population of 2-20 million about 10 thousand years ago at the dawn of settled agriculture has increased to 8 billion in 2022 and is projected to reach 9.7 billion by 2050 and 11.2 billion by 2100. Scientific advances in medical and agricultural sciences, along with human nutrition and value addition of agricultural products have enhanced access to safe and nutritious food and improved human health and wellbeing . Yet, 2.37 billion people (one in three persons) do not have access to adequate food ,1.2 billion(2 in 7 persons) are undernourished and 2 billion (1 in 4 persons) are malnourished. Problems of under and malnourishments are aggravated by three Cs : COVID, Climate Change and Conflicts (i.e., Ukraine). Since September 2015, when the United Nations Sustainable Development Goals (SDGs) were launched to provide nutritious and adequate food for all (SDG Target 2.1) and eliminate all types of malnutrition (SDG Target 2.2) by 2030, these targets are not on track to be accomplished for many reasons especially due to the 3 Cs outlined above. On the contrary,660 million people will be prone to hunger by 2030.Over and above the adverse effects of 3 Cs,both quantity and quality of food produced are also affected by the extent and severity of soil degradation by wide range of degradation processes. Indeed, soil degradation is the major cause of human malnutrition. Depletion of soil organic carbon content in the surface layer of almost 500 million small land holders in the developing world ,who cultivate less than 2 acres and follow mostly extractive farming practices, to less than 0.25 % in the root zone is the principal driver of deficiency of micronutrients in food grown on highly depleted and severely degraded soils. The problem is aggravated because these resource-poor farmers cannot afford to invest in soil restoration and use of the site-specific best management practices.

Yet, scientific information on sustainable management of these soils is available .The problem lies in translation of this science into action so that degraded and depleted soils can be restored and sustainably managed to produce healthy, nutritious and safe food. There is also lack of scientific information based on the on-farm assessment of the rate of soil carbon sequestration under real world situation .Thus, FFAR -funded C-FARM project implemented by the CFAES Rattan Lal Center for Carbon Management and Sequestration in cooperation with Co-PIs from 12 universities and USDA/USGS and other stake holders is implemented in USA and South America to monitor management induced changes in soil health through sequestration of soil organic carbon .

The C-FARM project is an example of scientific projects aimed at addressing the involvement of science to addressing problems of the humanity. Indeed, the C-FARM project will help advance both SDG #1 (End Poverty) and SDG#2 (Zero Hunger) and make science useful to humanity.

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