

*Funded by the BBSRC Food and Nutrition programme, Millets and Nutritional Enhancement Traits for iron bioavailability (MILNET<sub>i</sub>) programme investigated approaches to enhancing nutrition in The Gambia and Ethiopia by increasing the amount of iron in millets, and improving the bioavailability of this iron through food preparation practices. In The Gambia the focus was on the effects of biofortified pearl millet previously developed by ICRISAT. In Ethiopia (where finger millet is consumed presently) the potential to introduce pearl millet, and the biofortification of finger millet, was investigated.*

Approaches to enhancing the amount of iron in millets through crop breeding and shifts in farming methods were explored. ICRISAT evaluated the effects of agronomy and landscape on micronutrients in millets, and NIAB characterised pearl millet biofortification for translation to other millets.

University of Cambridge researchers investigated the traditions and hierarchies of millet consumption in communities in The Gambia and Ethiopia. Work focused on Identifying Nutrition Sensitive Pathways in both countries alongside a qualitative investigation to develop a sustainable strategy for healthy diets across communities in The Gambia.

Nutrition researchers at Kings College London and Bahir Dar University conducted in vitro (lab-based) experiments to investigate the effects of fermentation and other traditional and contemporary Ethiopian cooking practices on making iron in pearl and finger millets bioavailable and bio accessible to human digestive cells. Researchers at the MRC Unit in The Gambia conducted an in vivo study to assess the iron bioavailability of biofortified Dana Shakti pearl millet in people.



Millets Festival in The Gambia



Cooking demonstrations in Ethiopia



The new Bio Lab in Ethiopia

**Knowledge Exchange and Capacity Development:** During the COVID-19 pandemic restrictions, resources were pivoted towards equipping a biolab at Bahir Dar University, including a laminar flow cabinet, CO2 incubator, microplate reader, microscope and cell culture consumables for iron bioassays. Researchers at Kings College London developed training videos in tissue culture bioassay methods and assisted the Ethiopian team online during micronutrient bioavailability assays.

**Outreach and Impact:** In The Gambia engagement with local communities was based on household surveys on food use and preparation. Research insights and findings were presented to communities through a Millets Festival run by MRC Unit in The Gambia. In Ethiopia a programme to enable last-mile research and innovation with smallholder farmers called 'Innovation Communities' was established by the Centre for Global Equality, an Ethiopian community development organisation JeCCDO and Bahir Dar University. Community members shared their food preparation methods with researchers, and researchers conducted nutrition workshops for communities.

Visits to India by Ethiopian researchers to attend TIGR<sup>2</sup>ESS events catalysed the development of new finger millet food products. Inspired by additional work on Millets in India, MILNET<sub>i</sub> researchers collaborated with local industry to develop nutritious cookies and cakes for the urban market in Ethiopia.

**"Recommendations to funders and policy makers:** increase in equitable partnerships; involve and engage communities. This leads to co-creation of ideas and co-authorship of research papers. Crucially it encourages scientifically excellent research, driven by the needs of research users and policymakers in LMICs." - **Prof Nyovani Madise**, Director of Research for Sustainable Development Policies, AFIDEP