APBAConf2025 IITA Side Event

Theme: Breeding for Tomorrow (B4T) and Better Diets for Nutrition (BDN) Linkage Event at the African Plant Breeders Association (APBA) Conference

Date: October 68, 2025 **| Venue:** Matesi Room, Elephant Hills Resort, Victoria Falls, Zimbabwe | Time: 2 - 4 pm

Background: Micronutrient malnutrition, commonly referred to as "hidden hunger'', affects over two billion people worldwide, with Sub-Saharan Africa carrying a disproportionate share. Heavy reliance on calorie-rich but nutrient-poor staples has left millions deficient in essential minerals and vitamins. Biofortification science now offers a cost-effective and scalable solution by enhancing the nutrient density of widely consumed crops. Through multi-location trials, genome-wide association studies, and marker-assisted selection, researchers are identifying nutrient-dense genotypes, unlocking genetic targets, and developing predictive markers to accelerate breeding for iron, zinc, calcium, and provitamin A. Already linked with African breeding programs and fast-tracked varieties, these efforts show that biofortification can deliver not only higher yields and climate resilience but also improve diet quality and gain consumer acceptance - offering a pathway to transforming diets, improving nutrition and health outcomes, and strengthening livelihoods across the region.

With a keynote address from Prof. Raymond Glahn, this session highlights the synergy between the CGIAR Breeding for Tomorrow (B4T) and Better Diets for Nutrition (BDN) Science Programs and convenes leading scientists driving advances in the biofortification of beans, finger millet, rice, and sorghum to confront hidden hunger. Presentations will showcase breakthroughs in genetic mapping, marker-assisted selection, and breeding innovations for enhanced micronutrient content, alongside new evidence on yield stability, resilience traits, and consumer acceptance. Drawing on collaborative programs across Africa and global research partnerships, the session will demonstrate how cutting-edge science is advancing the biofortification agenda across Africa to support national policies and development priorities.

Objectives:

- Selected abstracts will showcase a pipeline of innovations in the biofortification of finger millet, rice, and sorghum—ranging from germplasm screening (finger millet, rice) to QTL discovery and marker development (sorghum iron/zinc and sorghum provitamin A).
- The keynote address will highlight compelling evidence that alleviating iron deficiency requires not only increasing iron levels in beans but also enhancing iron bioavailability.
- An interactive session with the audience will capture feedback and distill key priorities for defining a roadmap for mainstreaming and scaling biofortification in African breeding programs.

Agenda: PART 1-5

Part I
2:00 pm – 2:10 pm: Opening remarks from Dr. Mercy Lung'aho (IITA)

Part II
2:10 – 3:10 pm: Selected abstracts (40 minutes presentation + 20 minutes QnA)

1. Finger Millet for Hidden Hunger (10 minutes)
   Henry Ojulong (ICRISAT), Eric Manyasa (formerly ICRISAT), Patrick Sheunda (Kenya Seed Company Ltd), Daniel Ajaku (University of Queensland)

- Trials across multiple environments identify nutrient-dense finger millet accessions with high calcium, iron, and zinc, demonstrating resilience under drought and poor soils. Several accessions are now being fast-tracked for release, positioning finger millet as a climate-smart, nutrient-rich food security crop.

2. Zinc-Rich Rice: Unlocking Natural Genetic Variation (10 minutes)
   Talent Mabambe, Alex Douglas, Gareth Norton (University of Aberdeen)
   - Genome-wide association studies of 243 Aus rice genotypes are uncovering genetic regions linked to zinc accumulation. Findings provide new targets for breeding zinc-rich rice varieties to combat hidden hunger in populations heavily reliant on rice.

3. Sorghum Biofortification with Iron and Zinc (10 minutes)
   Rae McDowell, Davina Rhodes, Geoffrey Morris (Colorado State University)
   - QTL mapping in diverse sorghum families is identifying candidate genes for grain iron and zinc enrichment. Marker-assisted selection tools (KASP markers) are being developed and tested in African breeding programs, offering a pathway for faster delivery of biofortified sorghum.

4. Provitamin A Sorghum: From Genes to Traits (10 minutes)
   Linly Banda, Clara Cruet-Burgos, Rae McDowell, Yazachew Genet, David Zapata (Colorado State University); Baloua Nebie (CIMMYT, Kenya); Jacques M. Faye, Cyril Diatta (Institut Sénégalais de Recherches Agricoles); Geoffrey P. Morris, Davina H. Rhodes (Colorado State University)
   - Forward and reverse genetics are being combined to mine alleles that boost carotenoid content in sorghum. Predictive markers are enabling breeding for higher provitamin A while maintaining grain quality and consumer acceptance.

Part III
03:10 – 03:35 pm: Keynote address
Working at the Interface of Agriculture and Nutrition: Opportunities and Strategies to Alleviate Iron Deficiency – Prof. Raymond Glahn (Cornell University, USDA-ARS)

Part IV
3:35 – 3:55 pm: Interactive session with audience on advancing biofortification efforts in African breeding programs (with facilitator)

Part V
3:55 – 4:00 pm: Closing remarks from Dr. Hapson Mushoriwa (IITA)