Addressing vitamin A deficiency through vitamin A-rich banana cultivars in East African farming and food systems

BACKGROUND
Vitamin A deficiency (VAD) remains a public health problem in Sub-Saharan Africa. In Eastern Africa, at least 4 in every 10 children under 5 years (>39%) have VAD, which is way above the WHO threshold point of 15%. Main reason is the consumption of monotonous diets mainly based on starchy staples with little or no animal source foods and yellow/orange/green vegetables and fruits.

WHY FOCUS ON BANANAS
• Important crop to the livelihoods of millions of both rural and urban people in Eastern Africa
• Food security crop (perennial, mixed / intercropped)
• Consumption in eastern Africa between 3-11 fingers/person/day and 0.70 kg/day/person in Uganda alone
• There is an affordable banana-based dish for any social-economic group
• Great banana germplasm biodiversity, managed by Bioversity (ITC Belgium)

CULTIVARS INTRODUCED IN EAST AFRICA

<table>
<thead>
<tr>
<th>Cultivar name</th>
<th>Country of origin</th>
<th>Bunch weight (kg)</th>
<th>Genome-Subgroup</th>
<th>Fruit ripening Stage</th>
<th>% contribution to Vitamin A daily need of &lt;5yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apantu</td>
<td>Ghana</td>
<td>25</td>
<td>AAB-Plantain</td>
<td>Unripe</td>
<td>80.42</td>
</tr>
<tr>
<td>Bira</td>
<td>Papua New Guinea</td>
<td>22</td>
<td>AAB-Pacific plantain</td>
<td>Unripe</td>
<td>74.08</td>
</tr>
<tr>
<td>Sepi</td>
<td>Papua New Guinea</td>
<td>28</td>
<td>AA-nd</td>
<td>Unripe</td>
<td>34.5</td>
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<tr>
<td>LahI</td>
<td>Hawaii</td>
<td>30</td>
<td>AAB-Pacific Plantain</td>
<td>Unripe</td>
<td>57.3</td>
</tr>
<tr>
<td>To’o</td>
<td>Papua New Guinea</td>
<td>13</td>
<td>AA-Dessert</td>
<td>Unripe</td>
<td>9.67</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Ripe</td>
<td>136.03</td>
</tr>
</tbody>
</table>

END USERS AND BENEFITS
• Small-holder communities dependent on banana for both food and income and vulnerable to vitamin A deficiency within East and Central Africa
• Target community actively involved in varietal testing and selection through participatory agronomic evaluation, sensory evaluation and knowledge sharing and transfer
• Enhanced access to appropriate knowledge and techniques regarding production, postharvest handling and dietary use of the vitamin A-rich bananas
• Enhanced access to diverse banana varieties to not only meet their calorie and income needs but also provide substantial levels of vitamin A

FAST-TRACKING PATHWAY
Network analysis on farmer-to-farmer resource sharing at community level (2017-on wards)
Monitor adoption of varieties within farmers’ farming and food systems (2015 : continuous)
TOT approach used to reach community members with information and materials distributed systematically (2014 : continuous)
Maintain mother gardens; multiplication (micro & macro propagation (2014 : on going)
12 varieties selected; agronomic trials established; sensory acceptability tests with local farmers (2010 : on going)
>400 accessions screened (2005 : 2008)

LEVEL OF ADOPTION OR USE
• 5 cultivars (Apantu, Bira, Lai,Lahi, Pelipita) selected by farmers following agronomic and sensory evaluation
• >11000 plantlets of the materials distributed to farmers in Burundi and DRC
• 9565 households directly reached with information on the utilization of vitamin A-rich bananas in the diet
• Intensified macropropagation in progress to reach more farmers with materials

CRITICAL GAPS AND NEXT STEPS
• Proof of concept with regards to effect on serum retinal level following human feeding (needs funds)
• Scaling out to reach more regions in Burundi and DRC and additional farmers in Uganda, Kenya, Tanzania and Rwanda

SCALEING STRATEGY
• Continued capacity building through TOT approach and inclusion of both male and female community members
• Decentralization of macropropagation to community level through trained TOTs to ensure more materials are accessible to more farmers within short time
• Strengthening the work in Rwanda, Tanzania and Uganda and initiating the same work in banana consuming regions of Kenya