Biofortification of Food Staples: A Cost-Effective Approach (Already Being Implemented) that Links Agriculture and Nutrition

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Biofortification-breeding food crops that are more nutritious
HarvestPlus: USAID’s Role

- USAID involvement from very beginning
  - 1994 Annapolis, Maryland, USA
  - 1999 IRRI, Los Banos, Philippines
  - Co-contributor to core funding 2003-2014

- USAID missions fund HarvestPlus’ vitamin A orange sweet potato program in Uganda and vitamin A maize program in Zambia as part of the Feed the Future initiative

- Biofortified crops also prominent in USAID’s current list of scalable agricultural innovations and in its recent report to Congress on health-related research
Target Countries and Crops

More than 2 million farming households reached by HarvestPlus. Crops released are high-yielding with climate smart traits.
Infographic: Who is Growing What?
Mainstreaming Through Key Stakeholders

- National governments & regional frameworks (e.g. Brazil, Nigeria, Rwanda)
- Seed companies (e.g. Nirmal in India)
- Wholesaling, retailing
- International NGOs (e.g. World Vision)
- Multi-lateral agencies (e.g. World Food Program, Codex)
- International financial institutions
## Crop Testing for Variety Release

<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Kenya</th>
<th>Malawi</th>
<th>Mozambique</th>
<th>Tanzania</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beans (Iron)</strong></td>
<td></td>
<td></td>
<td>T</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td><strong>Cassava (Vit A)</strong></td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td><strong>Maize (Vit A)</strong></td>
<td>T</td>
<td></td>
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</tr>
</tbody>
</table>
### Ten Bean Varieties Released in Rwanda

#### Agronomic Properties of Iron Bean

<table>
<thead>
<tr>
<th>Names</th>
<th>Pictures</th>
<th>Type</th>
<th>Yield Potential</th>
<th>Adaptation</th>
<th>Iron Content</th>
<th>Maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWV 3316</td>
<td></td>
<td>Climber</td>
<td>4 t/ha</td>
<td>High altitude</td>
<td>91.6 ppm</td>
<td>110 Days</td>
</tr>
<tr>
<td>RWV 3006</td>
<td></td>
<td>Climber</td>
<td>3.8 t/ha</td>
<td>High altitude</td>
<td>91.7 ppm</td>
<td>110 Days</td>
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<tr>
<td>MAC 44</td>
<td></td>
<td>Climber</td>
<td>3.5 t/ha</td>
<td>Mid to low altitude</td>
<td>78 ppm</td>
<td>87 Days</td>
</tr>
<tr>
<td>RWR 2245</td>
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<td>Bush</td>
<td>2.5 t/ha</td>
<td>Mid to low altitude</td>
<td>75 ppm</td>
<td>87 Days</td>
</tr>
<tr>
<td>RWR 2154</td>
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<td>Bush</td>
<td>2.5 t/ha</td>
<td>Mid to low altitude</td>
<td>75 ppm</td>
<td>87 Days</td>
</tr>
<tr>
<td>RWV 1129</td>
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<td>Climber</td>
<td>3.5 t/ha</td>
<td>Mid to high altitude</td>
<td>81 ppm</td>
<td>110 Days</td>
</tr>
<tr>
<td>Cab 2</td>
<td></td>
<td>Climber</td>
<td>3 t/ha</td>
<td>High altitude</td>
<td>94.8 ppm</td>
<td>115 Days</td>
</tr>
<tr>
<td>RWV 3317</td>
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<td>High altitude</td>
<td>74 ppm</td>
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<tr>
<td>RWV 2887</td>
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<td>93.7 ppm</td>
<td>106 Days</td>
</tr>
<tr>
<td>MAC 42</td>
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<td>Climber</td>
<td>3.5 t/ha</td>
<td>Mid to high altitude</td>
<td>91 ppm</td>
<td>81 Days</td>
</tr>
</tbody>
</table>
Rwanda: Location of combined activities in 2014
Fourteen Efficacy Trials either completed or in process

- High iron crops ✅
  - Meta-analysis completed for beans and pearl millet

- High pro-vitamin A crops ✅
  - Multiple efficacy trials completed for sweetpotato, maize, and cassava

- High zinc crops
  - Bioavailability studies positive, efficacy trials in the field
Empowering women farmers
75% of the poor

25%
Cost-effective: central one time investment
Biofortification - One Piece of the Puzzle

Supplementation

Commercial Fortification

Dietary Diversity

Agricultural Interventions
Will Biofortification Work?

• Can breeding be successful, can nutrient levels be increased to high enough levels in high-yielding backgrounds?
• Will the extra nutrients be absorbed at sufficient levels that micronutrient status will be improved?
• Will farmers adopt and will consumers buy/eat in sufficient quantities?
• Can biofortification be mainstreamed?
Second Global Conference on Biofortification

• Kigali, Rwanda: March 30 - April 2, 2014
• 300+ leaders from more than 40 countries
• Purpose:
  – How to Bring Biofortification to Scale: Translating evidence into wide-scale adoption and reach
  – Discussion of gaps and challenges, opportunities and solutions, and developing a plan of action
Questions?

For additional information, please reach us by contacting:

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p.willingham@cgiar.org
202-627-4122
Policymakers share their views

Video
Rwanda High Iron Bean Music Video
World Premier & Launch of
Four Nollywood Movies on Biofortification

- The Yellow Cassava - A Zeb Ejiro Film
- Dada Oni Paki - A Fidelis Diker Film
- Ebiyebi - A Chico Ejiro Film
- Sakani - An Obi Osotule Film

Special Guest:
- Dr. Akinwunmi Adesina (Hon. Minister of Agriculture & Rural Development)
- Prof. Onyebuchi Chukwu (Hon. Minister of Health)
- Dr. Howard Boius (Director, Harvestplus)

Keynote Speaker:
- Dr. Wolfgang Pfeiffer (Dep. Director Operations, Harvest Plus HQ)

Date: Wednesday 24th Sept., 2014
Venue: Silverbird Cinemas, Abuja.
Time: 11am

VITAMIN A CASSAVA MOVIES BY NOLLYWOOD TO PROMOTE BETTER NUTRITION IN NIGERIA
Endorsements for the Kigali Declaration