Biofortification and School Feeding

Lynn Brown

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Biofortification

Biofortification is a process of **increasing the density** of vitamins and minerals in a crop through **conventional plant breeding** or **agronomic practices**, so that the biofortified crops, when consumed regularly, will generate measurable improvement in vitamin and mineral nutritional status.

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HarvestPlus Crops: Nutritional and Farmer Benefits

Iron Beans
Nutritional Benefits: Provides up to 80% of daily iron needs.
Farmer Benefits: High yielding, virus resistant, heat and drought tolerant.

Vitamin A Maize
Nutritional Benefits: Provides up to 50% of daily vitamin A needs.
Farmer Benefits: High yielding, disease and virus resistant, drought tolerant.

Zinc Maize
Nutritional Benefits: Provides up to 70% of daily zinc needs.
Farmer Benefits: High-yielding, virus resistant.

Iron Pearl Millet
Nutritional Benefits: Provides up to 80% of daily iron needs.
Farmer Benefits: High yielding, mildew resistant, drought tolerant.

Zinc Wheat
Nutritional Benefits: Provides up to 50% of daily zinc needs.
Farmer Benefits: High yielding, disease resistant.

Vitamin A Cassava
Nutritional Benefits: Provides up to 100% of daily vitamin A needs.
Farmer Benefits: High yielding, virus resistant.

Vitamin A Sweet Potato
Nutritional Benefits: Provides up to 100% of daily vitamin A needs.
Farmer Benefits: High yielding, virus resistant, drought tolerant.

Zinc Rice
Nutritional Benefits: Provides up to 40% of daily zinc needs.
Farmer Benefits: High yielding, disease and pest resistant.

Impacts on school children

- Vitamin A maize **improves vitamin A status and night vision** of 4 to 8-year-old rural children in Zambia
- Vitamin A sweet potato **improves vitamin A deficiency status** in Uganda and **reduces the likelihood and duration of diarrhea** in children in Mozambique
- Iron pearl millet **improves iron status** and **physical and cognitive performance** of school-going adolescents in India
- Schoolchildren in Colombia **liked biofortified beans** in terms of color, smell, taste, and size, shedding light on biofortification's potential to be scaled up as integrated into school-feeding programs
- Similarly, in Kenya, primary school children **preferred vitamin A cassava over non-biofortified counterpart** because of its soft texture, attractive color, and sweet taste

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Use in school meals – a Ugandan school gardens example

School gardens: iron beans and OSP Planted, children helping to tend, and eating the produce in school meals

- Nutrition education provided in classrooms
- Children as change agents – take vines to their households
- Local procurement – schools purchase from local smallholder farmers, increasing local production, farmer incomes, reducing transportation costs, increasing pupil retention
- Policy development – government expanded school feeding nationwide, and potential incorporation in the national school feeding guidelines

Use in school meals – more examples

Nigeria:

- States (Oyo, Osun, Anambra, Cross River) integrating biofortified foods in **school feeding programs**

Zimbabwe:

- A follow on from African Day of School Feeding (2018) when biofortification was supported
- Pilot in **612 schools** have been reached with Vitamin A maize and iron beans

India:

- Iron Pearl Millet included into **Integrated Child Development Services**' school feeding program

Honduras:

- School meals including biofortified crops like iron beans

Implications of COVID-19

- COVID-19 hit hard – morbidity, health care, job losses, falling incomes, disrupted food supply chains
- Nutritionally enriched crops through biofortification are resilient in food systems – they are not perishable like fruits and vegetables
- For school feeding are produced locally, relying on short supply chains, more resilient to global supply shocks
- Protect micronutrient consumption when budgets fall for school feeding

THANK YOU!