



Need for Developing a Nutrient Database to Help Produce Quality Nutritious Foods in Africa

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Agenda



- **General Mills' Mission: Nourishing Lives**
- **Partners in Food Solutions Overview**
- **Need for Nutrient Database Development in Africa**
 - **Case in Point: The Nutrient Database Tanzania**

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The Facts

Food insecurity is a complex issue with a profoundly negative impact across many areas of human activity.

One billion people are food insecure: one in four people in sub-Saharan Africa deals with food insecurity issues every day.

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Formation of PFS



GOAL: Improve the Ability of The Processors We Assist to Produce Nutritious, Affordable Food, and Increase Demand for the Crops of the Small Holder Farmers Who Supply Them.



1,000s of
Volunteer
Experts...



CONNECTING...



...With 100s of African-
based small & medium-
sized food processors
(SME's)

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Key External Partners



Public partner helping PFS expand in Tanzania, Kenya, Zambia, Malawi, and Ethiopia



Implementing field partner providing project management and oversight



Providing financing to qualified small and medium-sized enterprises (SME)



Working together to improve CSB quality and formulation

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Public Private Partnership



NEW YORK, N.Y., Sept. 25 – Today, Secretary of State Hillary Rodham Clinton announced a public-private partnership with General Mills, PEPFAR and USAID Partner to Improve Food Processing in Africa.



Feed the Future
Initiative

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Field Partner Translator Role



- Two core principles:
 - the power of private enterprise to transform people's lives
 - the lasting value of providing a hand up rather than a handout
- Maps small to medium size enterprises (SME's) processing foods in each country and then works closely with PFS to screen and select companies for partnership.
- Connects PFS volunteers to the SME's and provides project management and oversight throughout the relationship.

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New Industry Partners



Expanding PFS's impact on the food value chain
with the joining of new corporate partners in 2011



GENERAL MILLS



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The PFS Model



Remote knowledge & wisdom transfer between
local volunteers and our partners in Africa

Senders



Remote technology,
science and business
skills...

PFS Volunteers

Translators



...through the support
of on-site food technology
and business specialists...

TechnoServe

Receivers



...are applied to
Africa-based small
food enterprises.

SMEs

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PFS Expertise Areas



- Agriculture Science and Post Harvest
- Manufacturing
- **Nutrition and Fortification**
- Packaging
- Process Development
- Product Development
- Project Engineering
- Quality and Regulatory
- Sourcing and Logistics
- Business Strategy
- Finance
- Marketing and Brand Design
- Sales
- Education and Training

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Project Peanut Butter



- Produces ready-to-use therapeutic food (RUTF)
- Treated more than 100,000 malnourished children in Malawi, Sierra Leon and soon in Mali
- 90 percent recovery rate
- More than 50 PFS volunteers involved PPB
- 18 projects regarding
 - Marketing improvements
 - Product quality
 - Formulation improvements
 - UNICEF inspections
 - Packaging
 - New plant starts in Sierra Leon and Mali



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SoyAfric



- Family-owned fortified food company that has been in operation since 1994
- Mission is to eliminate malnutrition in the Horn of Africa and Great Lakes Region
- They strive to deliver fortified foods to food aid programs and retail markets with grains procured from local farmers
- PFS Volunteers have been involved with numerous projects utilizing their expertise in nutrition and product development
- Plans are in place to create a new CSB product line



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Where We Are Going



June, 2011 → 1 Year → 5 Years

- | | | |
|-------------------------------|---|---|
| • 4 African countries | • 4 African countries | • 15 African countries |
| • 15 SME's | • 36 SME's | • 200 SME's |
| • 60,000 small holder farmers | • 95,000 small holder farmers | • 500,000 small holder farmers |
| • 360,000 family members | • 570,000 family members | • 3 million family members |
| • 1 Company – General Mills | • 3 Companies – General Mills, Cargill, DSM | • 6-10 Companies – General Mills, Cargill, DSM, TBD |
| • 300 Volunteers | • 480 Volunteers | • 1,300 Volunteers |

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Developing African Nutrient Databases Key to Moving PFS Forward



- **Estimate Nutrient Content of Product Formulations**
 - Provide products to meet nutrient needs of the population
 - Target levels of fortification
- **Provide Cost Efficient Alternative to Lab Analysis**
 - Difficulty receiving samples for analysis
 - High cost of nutrient analysis

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Challenges Developing An African Nutrient Database



- **Availability of published nutrient data**
 - For native grains (millet, sorghum, teff)
 - For grain components (whole grain, hulled grain)
 - For grains stored and cooked by local methods
- **Timeliness of nutrient data**
 - Newer analysis methods available
 - Changes in agricultural practices
- **Variability of nutrient content of foods grown locally versus foods grown in other parts of the world?**
 - Differences in climate and soil
 - Differences in agricultural practices



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Procedures for Developing An African Nutrient Database Tanzanian Case Study



- **Identify foods used in product formulations**
 - Ingredient grains
 - Legumes
 - Nuts and seeds
- **Identify nutrients of concern**
 - Energy nutrients
 - Vitamins and minerals - especially those deficient in the local diet
- **Identify sources of nutrient data**
 - Scientific literature – 7 articles specific to Tanzania
 - Tanzania Food Composition Tables
 - African food composition tables
 - Unpublished analytic data - Zambia
 - Other country food composition tables



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Refining An African Nutrient Database Tanzanian Case Study



- **Select appropriate nutrient values**
 - Food matches based on scientific name
 - Data for local foods are preferred
 - Assume nutrient content of an ingredient food from other locations will be similar.
- **Adjust nutrient values from % dry matter to appropriate moisture content**



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Refining An African Nutrient Database Tanzanian Case Study



- Calculate mean nutrient values
- Enter nutrient data into a spreadsheet
- Reference the source of each nutrient value.
 - Provides a system to prioritize values to be updated when better data becomes available.

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Foods in the Tanzania Database



- **6 Grains**
 - Maize
 - Finger Millet
 - Pearl Millet
 - Rice
 - Sorghum
 - Wheat
- **6 Groundnuts & Seeds**
 - Bambara groundnut
 - Cashew
 - Peanut
 - Squash seeds
 - Sesame seeds
 - Sunflower seeds
- **11 Legumes**
 - Broadbeans
 - Chickpeas
 - Cowpeas
 - Hyacinth beans
 - Kidney beans
 - Lentils
 - Mung beans
 - Pigeon peas
 - Soybeans
 - Winged beans
 - Yellow beans

All foods in the database are raw.

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Nutrients in the Tanzania Database



- 28 nutrients
 - Calories and energy nutrients
 - Dietary fiber
 - 8 minerals
 - 12 vitamins
 - 1 amino acid
 - Complete values for most nutrients except iodine and biotin, where little data are available.

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Typical Approach: Example for Pearl (Bulrush) Millet



Differentiate type and form of millets:

- Differentiate Pearl Millet (*Pennisetum glaucum*) and Finger Millet (*Eleusine coracana*)
 - Both are grasses, but of different species and nutrient content.
- Identify Whole Grain and Decorticated forms
 - The traditional method is to grind the grain with its hull into flour. However, some local suppliers bring decorticated millet to be ground. Both forms must be included in the database.

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Typical Approach: Example for Pearl (Bulrush) Millet



Select data source:

- **Tanzania Food Composition Tables, November 2008**
 - Updated values from the USDA National Nutrient Database to the most current version release
- **Scientific Literature**
 - 2 research articles on nutrient content of pearl millet grown in Tanzania (1993 & 2006)
 - 7 research articles on nutrient content before and after decortication of pearl millet grain (1994 – 2007)

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Future Database Needs



- **Tanzania Nutrient Database**
 - Add nutrient values for grains at different stages of processing (e.g. whole grain, refined, soaked, sprouted, fermented...)
 - Add nutrient values for “cooked” grains and legumes
 - Update nutrient data with values specific to locally grown commodities
- **Compile similar nutrient databases**
 - Kenya
 - Malawai
 - Zambia

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Key Points



- Need nutrient databases for African foods and ingredients
- Address challenges associated with sourcing and selection of data
- Share your research expertise and new skills in this area with us

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- Build awareness of this unique global project initiated by General Mills and now joined by others

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Its Not Magic



Tanzania Proverb
*“Little by little, a little
becomes a lot.”*



Thank You

www.PartnersinFoodSolutions.org

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