FOOD FORTIFICATION OVERVIEW
GLOBAL AND REGIONAL

Presented by Ronald Afidra
10 May 2014
Food Fortification Initiative (FFI)

- Based on experience with salt iodization in 1990s
- Focused on public-private-civic partnerships
- In 2003 was named the Flour Fortification Initiative
- Renamed Food Fortification Initiative in 2014 to include rice
Our Vision:

Smarter, stronger, healthier people worldwide by improving vitamin and mineral nutrition.
Food Fortification Initiative (FFI)

Advocate for and support fortification of industrially milled cereal grains by collaborating with multi-sector partners
# FFI’s Role

Support national partnerships with:

<table>
<thead>
<tr>
<th>1. Advocacy Efforts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Technical assistance for:</td>
</tr>
<tr>
<td>• Planning</td>
</tr>
<tr>
<td>• Implementing</td>
</tr>
<tr>
<td>• Monitoring</td>
</tr>
</tbody>
</table>

3. Track and share global progress at www.FFInetwork.org
FFI Stimulates Network Interaction

Disability groups, advocacy associations, other civic organizations

Private Sector
- Millers, equipment and flour-product companies, wheat traders and baking organizations, other affiliated businesses

Civic Sector

Public Sector
- Agencies of the United Nations, government agencies and other national entities, non-government organizations, academic organizations
Multi-faceted Approach

- Micronutrient Powders
- Wheat & Maize
- Rice
- Supplements
- Condiments
- Oil
- Dietary Diversity
Global Consensus
What is Grain Fortification?

• Fortification adds vitamins and minerals during the milling process so that foods made with fortified grain products are more nutritious.

Vitamins and minerals are combined in a powdery premix to add to flour during fortification. Photo from Mühlenchemie.
Wheat and maize lose nutrients in the milling process, usually at levels indicated in the gray box.
**Nutrient Composition of Rice**

**Influencing Factors:**
- Variety
- Agriculture practices
  - Milling
- Storage
  - Processing
- Washing
- Cooking

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Content</th>
<th>Highest</th>
<th>Lowest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td></td>
<td>6.350</td>
<td>0.700</td>
</tr>
<tr>
<td>Zinc</td>
<td></td>
<td>5.890</td>
<td>0.790</td>
</tr>
<tr>
<td>Calcium</td>
<td></td>
<td>65</td>
<td>1</td>
</tr>
<tr>
<td>Thiamine</td>
<td></td>
<td>1.740</td>
<td>0.117</td>
</tr>
<tr>
<td>Riboflavin</td>
<td></td>
<td>0.448</td>
<td>0.011</td>
</tr>
<tr>
<td>Niacin</td>
<td></td>
<td>0.220</td>
<td>1.970</td>
</tr>
</tbody>
</table>

Nutrient impact assessment of rice in major rice-consuming countries

http://www.fao.org/docrep/005/y6159t/y6159t04.htm
## Wheat Flour Fortification Progress

<table>
<thead>
<tr>
<th></th>
<th>2004&lt;sup&gt;1&lt;/sup&gt;</th>
<th>2007&lt;sup&gt;1&lt;/sup&gt;</th>
<th>2015&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries with mandates to fortify wheat flour with at least iron or folic acid</td>
<td>33</td>
<td>57</td>
<td>82</td>
</tr>
<tr>
<td>Percent of wheat flour fortified in industrialized mills worldwide</td>
<td>18</td>
<td>27</td>
<td>32</td>
</tr>
</tbody>
</table>

The combined population of countries requiring wheat flour fortification is 2.2 billion.

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2. Flour Fortification Initiative database, April 2014.
Grain fortification legislation

82 countries require fortification of wheat flour, maize flour, and/or rice

To request data, e-mail info@ffinetwork.org
Wheat Availability and Fortification Legislation

| 75 or more grams available per person per day | Mandatory fortification legislation * 82 countries |
|___________________________________________|________________________________________________|
| Less than 75 grams available per person per day | No availability or legislation data |

* Legislation has effect of mandating grain fortification with at least iron or folic acid; does not reflect how much grain is available.
Grain availability data from the Food and Agriculture Organization (2009).
Legislation status from the Flour Fortification Initiative (www.FFInetwork.org) April 2014
Maize Availability and Fortification Legislation

<table>
<thead>
<tr>
<th>75 or more grams available per person per day</th>
<th>Mandatory fortification legislation * 12 countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 75 grams available per person per day</td>
<td>No availability or legislation data</td>
</tr>
</tbody>
</table>

* Legislation has effect of mandating grain fortification with at least iron or folic acid; does not reflect how much grain is available.
Grain availability data from the Food and Agriculture Organization (2009).
Legislation status from the Flour Fortification Initiative (www.FFInetwork.org) April 2014
Rice Availability and Fortification Legislation

- 75 or more grams available per person per day
- Less than 75 grams available per person per day
- Mandatory fortification legislation *
- 5 countries
- No availability or legislation data

* Legislation has effect of mandating grain fortification with at least iron or folic acid; does not reflect how much grain is available.
Grain availability data from the Food and Agriculture Organization (2009).
Legislation status from the Flour Fortification Initiative (www.FFInetwork.org) April 2014
Reasons for Mandatory Legislation

- Equalizes costs for millers
- Sets appropriate standards including:
  - Best iron compound
  - Levels of other vitamins and minerals
- Can be more easily monitored
- Provides more equitable access to foods made with fortified flour

Osmonbek Artykbaev, left, former Parliamentarian in the Kyrgyz Republic, helped the country pass legislation to require flour fortification.
Grain Fortification Challenges

Grains produced globally for human consumption in 2009:¹

<table>
<thead>
<tr>
<th>Million tons of wheat</th>
<th>Million tons of rice</th>
<th>Million tons of maize</th>
</tr>
</thead>
<tbody>
<tr>
<td>439</td>
<td>354</td>
<td>113</td>
</tr>
</tbody>
</table>

Our Challenges:

- Fortifying more wheat flour
- Developing best practices for rice fortification
- Fortifying maize flour

¹ Food Balance Sheet World Total for 2009, the most recent year with data. Food and Agriculture Organization of the United Nations
Africa Regional Updates
2014 status of wheat-flour fortification

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
<th>Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Over 75% of industrially milled wheat flour is fortified. Iron and folic acid</td>
<td>336,497,000</td>
</tr>
<tr>
<td></td>
<td>are included as appropriate for targeted population. FFI’s main role is</td>
<td></td>
</tr>
<tr>
<td></td>
<td>monitoring.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Confident country will meet criteria for a purple country within one year.</td>
<td>202,972,000</td>
</tr>
<tr>
<td></td>
<td>Targeted support as needed.</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Organized efforts to increase fortification and/or update standards to</td>
<td>368,638,000</td>
</tr>
<tr>
<td></td>
<td>appropriate levels within country. Without support to fill gaps, moving</td>
<td></td>
</tr>
<tr>
<td></td>
<td>to 75% unlikely.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>No wheat flour fortification activity in the country. Major support</td>
<td>52,612,000</td>
</tr>
<tr>
<td></td>
<td>necessary to reach purple classification</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Fortification of industrially milled wheat flour is likely to have very</td>
<td>38,327,000</td>
</tr>
<tr>
<td></td>
<td>limited health impact; or no data on country</td>
<td></td>
</tr>
</tbody>
</table>

Totals: 999,046,000

Population figures from UN Population Division, 2009 data.
*British Indian Ocean Territory population data not available
2014 status of maize-flour fortification

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
<th>Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Over 75% of industrially milled maize flour is fortified. Iron and folic acid are included as appropriate for targeted population. FFI's main role is monitoring.</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Confident country will meet criteria for a purple country within one year. Targeted support as needed.</td>
<td>80,826,000</td>
</tr>
<tr>
<td>20</td>
<td>Organized efforts to increase fortification and/or update standards to appropriate levels within country. Without support to fill gaps, moving to 75% unlikely.</td>
<td>410,879,000</td>
</tr>
<tr>
<td>4</td>
<td>No industrial maize fortification activity in the country. Major support necessary to reach purple classification</td>
<td>37,140,000</td>
</tr>
<tr>
<td>32</td>
<td>Fortification of industrially milled maize flour is likely to have very limited health impact; or no data on country</td>
<td>470,201,000</td>
</tr>
</tbody>
</table>

Totals: 999,046,000

Population figures from UN Population Division, 2009 data
*British Indian Ocean Territory population data not available

Source: FFI
Total Population

- Over 75% of industrially milled rice is fortified. Iron and folic acid are included as appropriate for targeted population. FFI’s main role is monitoring. (0)
- Confident country will meet criteria for a purple country within one year. Targeted support as needed. (0)
- Organized efforts to increase fortification and/or update standards to appropriate levels within country. Without support to fill gaps, moving to 75% unlikely. (1174,560,000)
- No rice fortification activity in the country. Major support necessary to reach purple classification (38,974,000)
- Fortification of industrially milled rice is likely to have very limited health impact; or no data on country. (785,512,000)

Totals: 999,046,000

Population figures from UN Population Division, 2009 data
*British Indian Ocean Territory population data not available
Global Best Practices

To plan a flour fortification program, consider:

- Local culture and cereal consumption
- Nutritional needs
- Industry analysis
- Creation of a multi-sector national fortification alliance
- Legislation
- Monitoring
In Summary

The Problem:
One-third of the world’s population suffers from vitamin and mineral deficiencies. In many countries, both lower and higher income populations are affected.
– World Bank 2006

Part of the Solution:
Within countries, FFI stimulates interaction among partners so that together we can achieve results that none of us could achieve independently.

www.FFInetwork.org
For More Information

www.FFInetwork.org
www.Facebook.com/FFInetwork
https://twitter.com/FFINetwork

Join the Food Fortification Initiative group on LinkedIn

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