What Happened to Flour?

Food Fortification Initiative
Enhancing Grains for Healthier Lives
Salt Example
FFI History

- First public forum in 2002
- Named the Flour Fortification Initiative in 2003
- Renamed the Food Fortification Initiative in 2014

A policy planning forum in 2002 was the official launch of FFI.
2003 IAOM Resolution

A resolution in support of the Flour Fortification Initiative

The International Association of Operative Millers

• believing in a spirit of fellowship, cooperation and proficiency,
• expressing concern for the health and well being all humanity and of consumers of cereal grain based food in particular,
• having an appreciation for the advancements being made in the area of nutritional science,
• having recognized the link between micronutrient deficiencies, disease, learning ability and work productivity of nations,
• noting that food fortification is gaining increased acceptance throughout the world,
• concluding that flour fortification is one of many ways to apply good science to eliminate micronutrient deficiencies,
• recognizing that the International Association of Operative Millers is uniquely situated to take action on the health and nutrition of the human race.
### Wheat Flour Fortification Progress

<table>
<thead>
<tr>
<th></th>
<th>2004(^1)</th>
<th>2007(^1)</th>
<th>2014(^2)</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>80</td>
</tr>
<tr>
<td>Percent of wheat flour fortified in industrialized mills worldwide</td>
<td>18</td>
<td>27</td>
<td>31</td>
</tr>
</tbody>
</table>

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


\(^2\) Food Fortification Initiative database, June 2014
# FFI’s Role

<table>
<thead>
<tr>
<th>Support national partnerships with:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advocacy efforts</td>
</tr>
<tr>
<td>2. Technical assistance for:</td>
</tr>
<tr>
<td>• Planning</td>
</tr>
<tr>
<td>• Implementing</td>
</tr>
<tr>
<td>• Monitoring</td>
</tr>
<tr>
<td>3. Track and share global progress at <a href="http://www.FFlnetwork.org">www.FFlnetwork.org</a></td>
</tr>
</tbody>
</table>
Wheat Flour Millers' Toolkit

While representatives of the public, private, and civic sectors all have important roles in fortification, millers carry out the program's requirements daily. Millers secure materials, equip facilities with proper machinery, and maintain equipment. Millers usually cover the costs of these capital investments, and very often they pay the on-going expense of purchasing the vitamins and minerals to add to grains. The millers' costs are frequently passed along to consumers in the form of higher prices, but with wheat flour, the additional cost to consumers is as little as 0.01 per five kilograms of flour.

Quality control is the responsibility of both millers and external food safety authorities, such as government representatives. See "Monitoring for Quality and Impact" for guidance on quality control.

A Flour Millers' Toolkit offers basic information for flour fortification. Highlights are below. Links to the complete Toolkit as Power Point slides are in the box at right.

Technical Topics:
- Fortifying flour with vitamins and minerals will not improve flour made with poor quality wheat. If low quality wheat is used, consumers could blame the inferior flour on the fortification and reject all fortified products.
- The most common way to fortify flour is using a micro feeder. This adds premix to flour at predetermined rates in the process of flour production.

http://www.ffinetwork.org/implement/toolkit.html
Children in Moldova greet Ambassador Moser and Prime Minister Leanca with bread and salt at a school in Tintareni.

U.S. Embassy Moldova photo. Flickr. 12 September 2014
What Happened to Flour?

Grains produced globally for human consumption in 2011:\(^1\)

<table>
<thead>
<tr>
<th>Million tons of wheat</th>
<th>Million tons of rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>450</td>
<td>371</td>
</tr>
</tbody>
</table>

\(^1\) Food Balance Sheet World Total for 2011, the most recent year with data. Food and Agriculture Organization of the United Nations [http://faostat3.fao.org/faostat-gateway/go/to/browse/FB/CC/E](http://faostat3.fao.org/faostat-gateway/go/to/browse/FB/CC/E)
Potential for Rice Fortification

• 59 countries with average of more than 75 grams of rice per person per day\(^1\)
  – (Highest is Bangladesh with 475 grams average)\(^1\)

• Total population of 59 countries:

4.1 Billion

\(^1\) Food Balance Sheet World Total for 2011, the most recent year with data. Food and Agriculture Organization of the United Nations
http://faostat3.fao.org/faostat-gateway/go/to/browse/FB/CC/E
Population figures from the United Nations Population Division
Children in Banaue, Philippines, mill rice at home.

Photo by Robert Staudhammer. Flickr. 5 November 2010
Smarter

Fortifying with iron makes children smarter because:

- Iron deficiency impairs a child’s physical and intellectual development


Cambodia photo by Ramon Stoppelenburg on Flickr.
Severe* Anemia in Pre-School Children in Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent anemia in pre-school children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maldives</td>
<td>82</td>
</tr>
<tr>
<td>Bhutan</td>
<td>81</td>
</tr>
<tr>
<td>India</td>
<td>69</td>
</tr>
<tr>
<td>Cambodia</td>
<td>63</td>
</tr>
<tr>
<td>Pakistan</td>
<td>51</td>
</tr>
<tr>
<td>Lao People's Democratic Republic</td>
<td>48</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>47</td>
</tr>
<tr>
<td>Nepal</td>
<td>46</td>
</tr>
<tr>
<td>Indonesia</td>
<td>45</td>
</tr>
</tbody>
</table>

*The World Health Organization classifies anemia prevalence higher than 40% as “severe.”

Data from WHO Worldwide Prevalence of Anemia, 1993-2005
Stronger

Preventing anemia by fortifying flour makes people stronger because:

• Anemia results in 17% lower productivity in heavy manual labor\(^1\)

• 5% lower productivity in other manual labor\(^1\)

\(^1\) The Economics of Food Fortification (2006) by Sue Horton

Photo of garment workers in Bangladesh by Jankle on Flickr
### Severe* Anemia in Non-Pregnant Women in Asia

*The World Health Organization classifies anemia prevalence higher than 40% as “severe.”

Data from WHO Worldwide Prevalence of Anemia, 1993-2005

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent anemia in non-pregnant women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>57</td>
</tr>
<tr>
<td>Bhutan</td>
<td>55</td>
</tr>
<tr>
<td>India</td>
<td>55</td>
</tr>
<tr>
<td>Maldives</td>
<td>50</td>
</tr>
<tr>
<td>Lao People's Democratic Republic</td>
<td>46</td>
</tr>
<tr>
<td>Myanmar</td>
<td>45</td>
</tr>
<tr>
<td>Philippines</td>
<td>42</td>
</tr>
</tbody>
</table>
Healthier

• Fortifying with folic acid makes people healthier because most neural tube birth defects can be prevented if the mother has enough folic acid at the right time.¹

² U.S. Centers for Disease Control and Prevention: http://www.cdc.gov/ncbddd/folicacid/faqs.html
Photos from Google Images

Spina bifida is malformation of the baby’s spine. It causes permanent disability.

Anencephaly is malformation of the baby’s brain. It is always fatal.
Countries in Asia with 47 to 13 Neural Tube Defects (NTDs) per 10,000 Births

- Afghanistan
- Bangladesh
- Bhutan
- Brunei Darussalam
- Cambodia
- China
- Democratic People’s Republic of Korea
- India
- Lao People’s Democratic Republic

Countries which fortify wheat flour with folic acid report NTD prevalence of <10 per 10,000 births

- Maldives
- Mongolia
- Nepal
- Pakistan
- Philippines
- Republic of Korea
- Singapore
- Sri Lanka
- Viet Nam
46% Reduction In Birth Defects

Eight studies from Argentina, Canada, Chile, South Africa, and the United States:

- **31% to 78% reduced risk** of neural tube defects after fortifying flour with folic acid

- **Overall reduction of 46%**
Philippines Flour
Philippine Rice
What Happened to Flour in the US?

• Fortification led to near elimination of:
  – Beriberi
  – Pellagra
  – Folic acid deficiency anemia

• Fortifying grains with folic acid prevents 1,000 neural tube birth defects a year

Conclusion

• Change in FFI name reflects expansion to rice fortification
• FFI will continue to support wheat flour fortification
• Fortifying commonly consumed grains leads to a smarter, stronger, and healthier population
For More Information

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

Join the Food Fortification Initiative group on LinkedIn

E-mail info@ffinetwork.org