

20th Annual IAOM Middle East & Africa District Conference,
October 2009 Antalya Turkey



New Recommendations for Wheat and Maize Flour Fortification

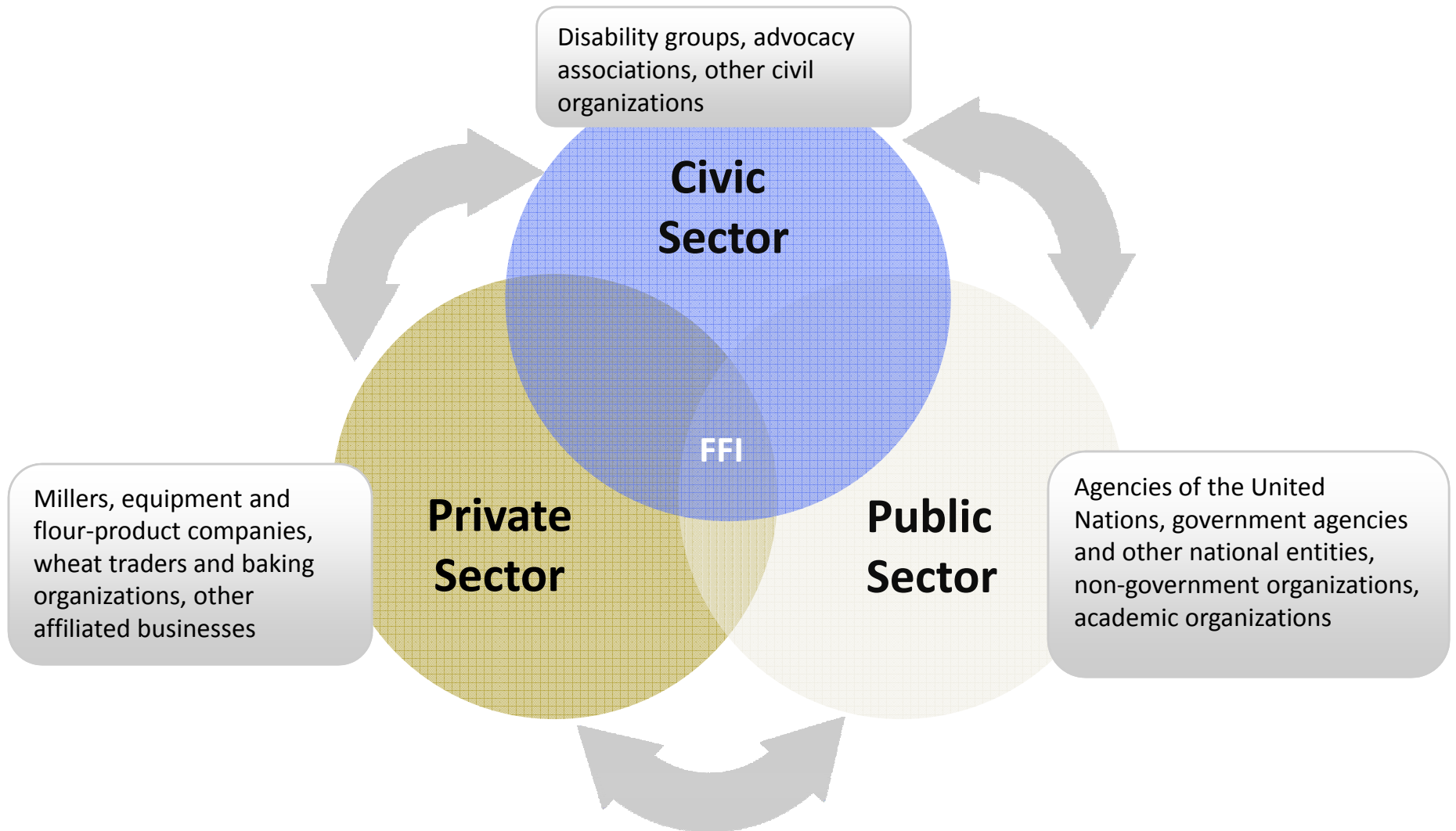
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Training & Technical Support Group



Flour Fortification Initiative
A Public-Private-Civic Investment in Each Nation

26th October 2009

The role of FFI: To Stimulate Network Interaction



Updated information:

Burden from Micronutrient Deficiencies

Global disability-adjusted life-years (DALY) among children younger than 5 attributed to micronutrient deficiencies

Deficiency	Disease burden (1000 DALYs)	% of DALYs in children < 5yr
Vitamin A	22,668	5.3
Zinc	16,342	3.8
Iron	2,156	0.5
Iodine	2,614	0.6

Black et al, Lancet 2008. (Data for 2004)

Global Impact

- Impairs millions of growing minds and lowers national IQ
- Causes damage to immune systems and deaths of more than a million children a year
- Causes 200,000 serious birth defects annually.
- Contributes to the death of approximately 60,000 young women a year during pregnancy and childbirth.

Micronutrient Initiative and UNICEF

2008 Copenhagen Consensus

Nutrition interventions are now 5 of the top 10 most cost effective means to address global challenges.

Rank	Solution	Challenge
1	Micronutrient supplements for children (Vitamin A and zinc)	Malnutrition
2	The Doha development agenda	Trade
3	Micronutrient fortification (iron and salt iodization)	Malnutrition
4	Expanded children's immunization	Diseases
5	Biofortification	Malnutrition
6	Deworming and school nutrition programs	Malnutrition and education
7	Lowering the price of schooling	Education
8	Increase and improve girls' schooling	Women
9	Community-based nutrition promotion	Malnutrition
10	Provide support for women's reproductive role	Women

Impact on Nutrition Security

Food Prices Go Up; Nutritional Value Goes Down



Consumers often give up more expensive proteins, followed by fruits and vegetables

Eventually the diet becomes heavy in carbohydrates, resulting in empty calories and higher levels of vitamin and mineral deficiency.

This is particularly difficult in vulnerable populations that already have high rates of malnutrition. High food prices only augment existing health problems, and eventually will impact economic security.

Escalating Food Prices – Opportunity To Engage Governments

Milling Wheat Prices and CPI for Bread and Cereals



Source: Reuters EcoWin

TIME TO ENGAGE

People and governments are focused on food prices and food security. That attention makes this a good time to discuss the benefits and bargain of flour fortification.

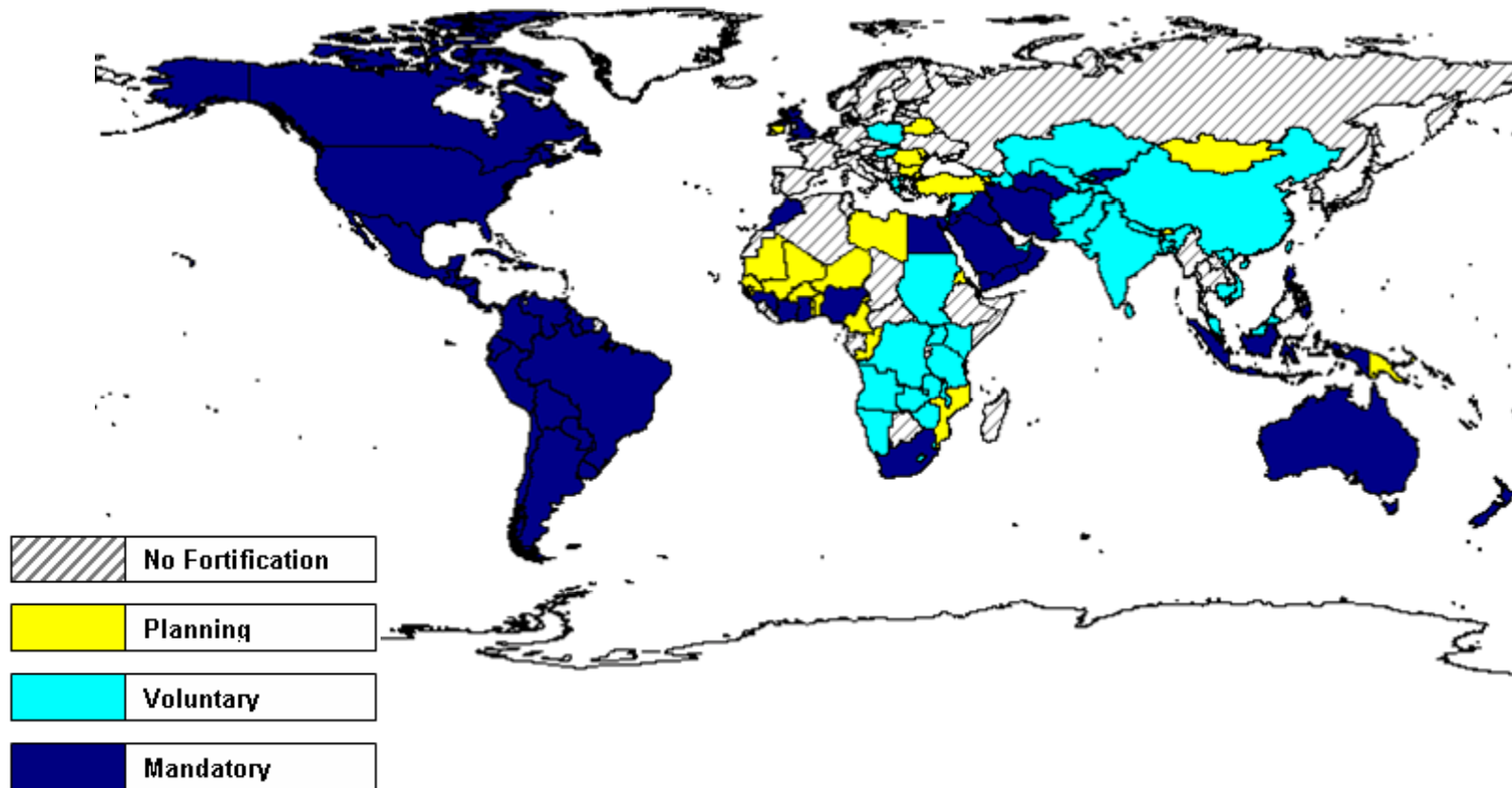
GET THE MESSAGE RIGHT

- Since wheat is becoming more expensive, why not make sure it delivers both macro and micro nutrients
- The cost of vitamins and minerals is minimal compared to rising cost of wheat

Flour Fortification Progress

March 2009

Fortifying with at least iron and/or folic acid



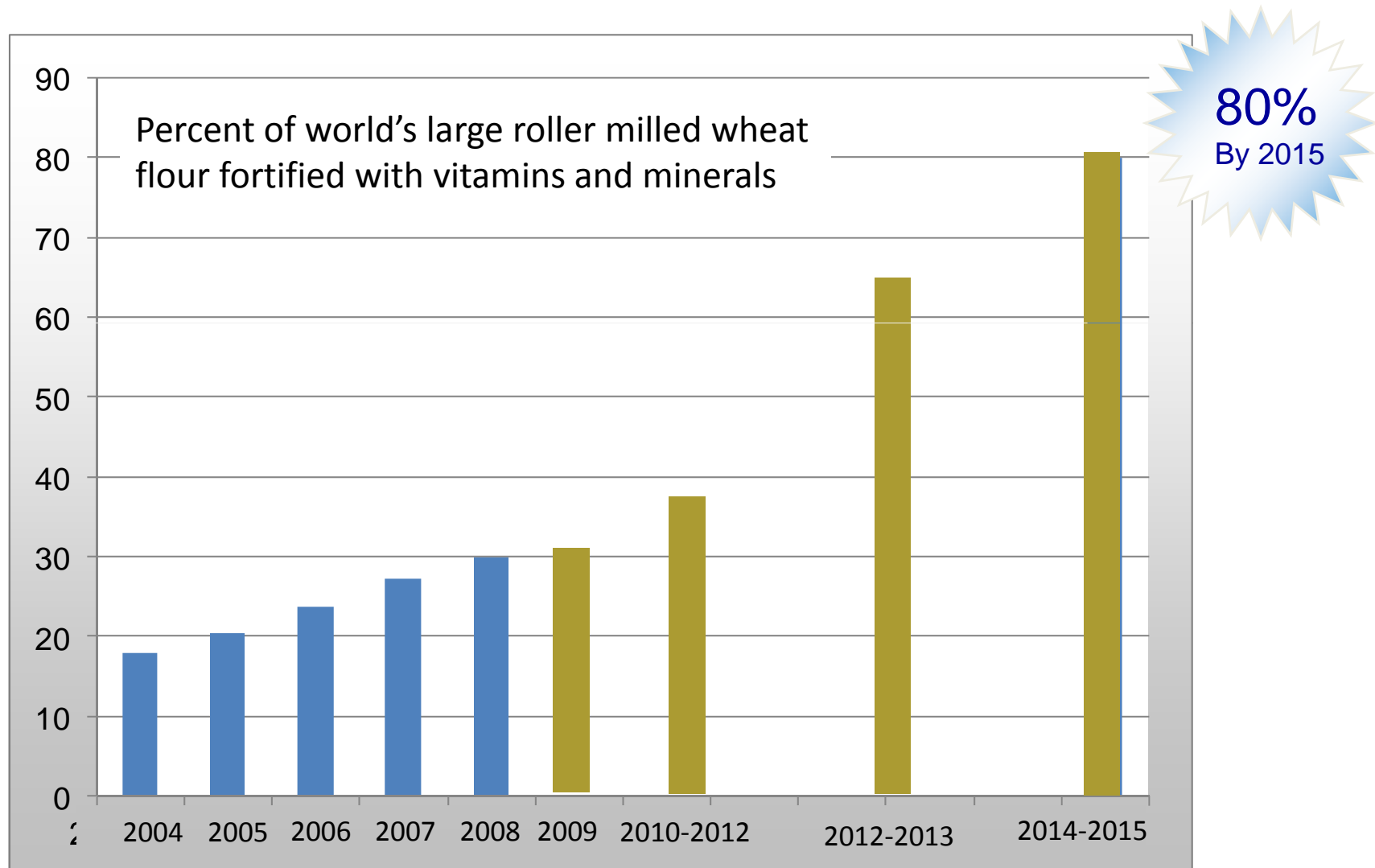
Flour Fortification Progress

Since 2004:

- ✓ Nearly 2 billion people now have potential access to fortified flour - 858 million more than in 2004.
- ✓ Growth in fortified flour from roller mills increased from 18% to 30%
- ✓ The number of countries with documented national regulations for mandatory wheat flour fortification increased from 33 to 57.



FFI Mission: Fortified Flour in Every Country



Blue – Actual numbers

Gold - estimates

2 Commonly asked Questions

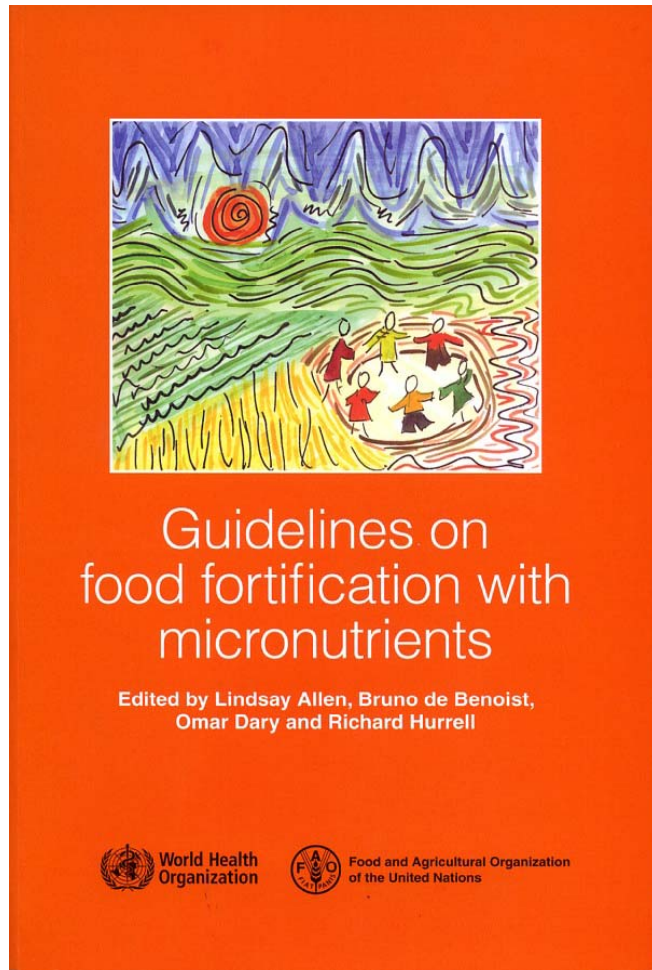
- What to add?
- How much to add?
- There have been 2 international scientific workshops and 1 WHO/FAO publication to provide guidance and answers to these 2 questions based on most current nutrition and science knowledge.
 - Cuernavaca, Mexico, 2004 on Iron and Folic Acid
 - WHO/FAO Guidelines on Food Fortification with Micronutrients, 2006
 - Stone Mountain, Atlanta, USA 2008 on 5 micronutrients

WHO FAO Guidelines on Food Fortification with Micronutrients

- Resource for governments and agencies implementing or considering food fortification
- Source of information for scientists, nutritionists, technologists and the food industry.
- General principles for effective fortification programs

WHO/FAO Guidelines Book and CD

- 2006 WHO/FAO “Guidelines on Food Fortification With Micronutrients”



Atlanta Workshop 2008

- Focused on 5 micronutrients
 - Vitamins: A, B12, Folic Acid
 - Minerals: Iron, Zinc
- 6 scientific working groups:
 - One for each micronutrient
 - One on consumption data
- Groups composed of representatives from academia, international agencies, milling industry, vitamin, mineral and premix suppliers

Wheat and maize flour fortification

- Is a preventive food-based approach to improve micronutrient status of populations over time
- Can be integrated with other interventions in the efforts to reduce vitamin and mineral deficiencies
- Should be considered when industrially produced flour is regularly consumed by large population groups
- Most effective if mandated at the national level

Nutrients to add: decisions

- Nutritional needs and deficiencies of the population;
- Usual consumption profile of “fortifiable” flour
- Sensory and physical effects of the fortificant nutrients on flour and flour products
- Fortification of other food vehicles
- Consumption of vitamin and mineral supplements
- Costs

Flour Fortification Programmes

- Should include appropriate Quality Assurance and Quality Control (QA/QC) systems at mills
- Regulatory and public health monitoring of the nutrient content of fortified foods
- Assessment of the nutritional/health impacts of the fortification strategies.

2008 Workshop Recommendations

Nutrient	Type of flour (extraction)	Fortificant	Level of nutrient to be added (parts per million) By per capita wheat flour intake (g/day)			
			<75 g/day	75-149 g/day	150-300 g/day	>300 g/day
Iron	Low	NaFeEDTA Sulfate/Fumarate Electrolytic	40 60 NR	40 60 NR	20 30 60	15 20 40
	High	NaFeEDTA	40	40	20	15
Zinc	Low	Zinc Oxide	95	55	40	30
	High	Zinc Oxide	100	100	80	70
Folic Acid	Low or High	Folic Acid	5.0	2.6	1.3	1.0
Vitamin B12	Low or High	Cyancobalamin	0.04	0.02	0.01	0.008
Vitamin A	Low or High	Vitamin A palmitate	5.9	3.0	1.5	1.0

Atlanta Workshop Recommendations: WHO Consensus Statement issued

- Following a review of the scientific papers, the findings and recommendations of the Atlanta workshop, the Micronutrient Unit of the World Health Organization issued a consensus statement on the recommendations of the Atlanta workshop in 2009.

Statement Development Process

- Statement prepared by the core group led by
 - WHO's Department of Nutrition for Health and Development in close collaboration with FAO, the nutrition section of UNICEF, GAIN, MI and FFI
 - The core group evaluated the commissioned scientific reviews prepared by expert working groups
 - Approved by WHO Guideline Review Committee in interim period year 2008
 - These recommendations remain valid until December 2010
 - WHO headquarters in Geneva will initiate a review following formal *WHO Handbook for Guideline Development* procedures in 2010

Recommendations on Wheat and Maize Flour Fortification Meeting Report: Interim Consensus Statement

<http://www.who.int/nutrition/>

Available in UN languages

English

Russian

Chinese

Suggested citation

WHO, FAO, UNICEF, GAIN, MI, & FFI. Recommendations on wheat and maize flour fortification. Meeting Report: Interim Consensus Statement. Geneva, World Health Organization, 2009
(http://www.who.int/nutrition/publications/micronutrients/wheat_maize_fort.pdf, accessed [date]).



World Health
Organization

Recommendations on Wheat and Maize Flour Fortification Meeting Report: Interim Consensus Statement

PURPOSE

This statement is based on scientific reviews prepared for a Flour Fortification Initiative (FFI) technical workshop held in Stone Mountain, GA, USA in 2008 where various organizations actively engaged in the prevention and control of vitamin and mineral deficiencies and various other relevant stakeholders met and discussed specific practical recommendations to guide flour fortification efforts being implemented in various countries by the public, private and civic sectors. This joint statement reflects the position of the World Health Organization (WHO), Food and Agriculture Organization of the United Nations (FAO), The United Nations Children's Fund (UNICEF), Global Alliance for Improved Nutrition (GAIN), The Micronutrient Initiative (MI) and FFI. It is intended for a wide audience including food industry, scientists and governments involved in the design and implementation of flour fortification programs as public health interventions.

BACKGROUND

WHO and FAO published in 2006 the *Guidelines on Food Fortification with Micronutrients* (WHO/FAO, 2006). These general guidelines, written from a nutrition and public health perspective are a resource for governments and agencies implementing or considering food fortification and a source of information for scientists, technologists and the food industry. Some basic principles for effective fortification programs along with fortificants' physical characteristics, selection and use with specific food vehicles are described. Fortification of widely distributed and consumed foods has the potential to improve the nutritional status of a large proportion of the population, and neither requires changes in dietary patterns nor individual decision for compliance. Technological issues to food fortification need to be fully resolved especially with regards to appropriate levels of nutrients, stability of fortificant, nutrient interactions, physical properties and acceptability by consumers (WHO/FAO, 2006). Worldwide, more than 600 million metric tons of wheat and maize flours are milled annually by commercial roller mills and consumed as staples, breads, pasta, and other flour products by people in many countries. Fortification of industrially processed wheat and maize flour, when appropriately implemented, is an effective, simple, and inexpensive strategy for supplying vitamins and minerals to the diets of large segments of the world's population. It is estimated that the proportion of industrial-scale wheat flour being fortified is 97% in the Americas, 37% in Africa, 44% in Eastern Mediterranean, 27% in South-East Asia, 0% in Europe, and 4% in the Western Pacific regions in 2007 (FFI, 2008).

THE FFI SECOND TECHNICAL WORKSHOP ON WHEAT FLOUR FORTIFICATION

Nearly 100 leading nutrition, pharmaceutical and cereal scientists and milling experts from the public and private sectors from around the world met on March 24 to April 3, 2008 in Stone Mountain, GA, USA to provide advice for countries considering national wheat and/or maize flour fortification. This Second Technical Workshop on Wheat Flour Fortification: Practical Recommendations for National Application was a follow up to a FFI, the US Centers for Disease Control and Prevention (CDC) and the Mexican Institute of Public Health, first technical workshop entitled "Wheat Flour Fortification: Current Knowledge and Practical Applications," held in Coahuila, Mexico in December 2004 (FFI, 2004). The purpose of this second workshop was to provide guidance on national fortification of wheat and maize flours, milled in industrial roller mills (i.e. > 20 metric tons/day milling capacity), with iron, zinc, folic acid, vitamin B₆ and vitamin A and to develop guidelines on formulations of premix based on common ranges of flour consumption. A secondary aim was to agree on the best practices guidelines for premix manufacturers and millers. Expert work groups prepared technical documents reviewing published efficacy and effectiveness studies as well as the form and levels of fortificants currently being added to flour in different countries. The full reviews will be published in a supplement of *Food and Nutrition Bulletin* in 2009 and the summary recommendations of this meeting can be found in <http://www.gph.usny.edu/whetflour/atlas08/> (FFI, 2008).

RECOMMENDATIONS FOR WHEAT AND MAIZE FLOUR FORTIFICATION

Wheat and maize flour fortification is a preventive food-based approach to improve micronutrient status of populations over time that can be integrated with other interventions in the efforts to reduce vitamin and mineral deficiencies when identified as public health problems. However, fortification of other appropriate food vehicles with the same and/or other nutrients should also be considered when feasible. Wheat and maize flour fortification should be considered when industrially produced flour is regularly consumed by large population groups in a country. Wheat and maize flour fortification programmes could be expected to be most effective in achieving a public health impact if mandated at the national level and can help achieve international public health goals. Decisions about which nutrients to add and the appropriate amounts to add to fortified flour should be based on a series of factors including the nutritional needs and deficiencies of the population; the usual consumption profile of "fortifiable" flour (i.e. the total estimated amount of flour milled by

For additional information, visit:

www.sph.emory.edu/wheatflour/atlanta08/

www.sph.emory.edu/wheatflour



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