ADVISORY COMMITTEE ON ANIMAL FEEDINGSTUFFS

67th Meeting of ACAF on 19 June 2015

Presentation Paper:
Food Innovation through Advanced Animal Nutrition

Jean Kennedy
Devenish Nutrition
June 2015

DEVENISH™

Beyond Nutrition

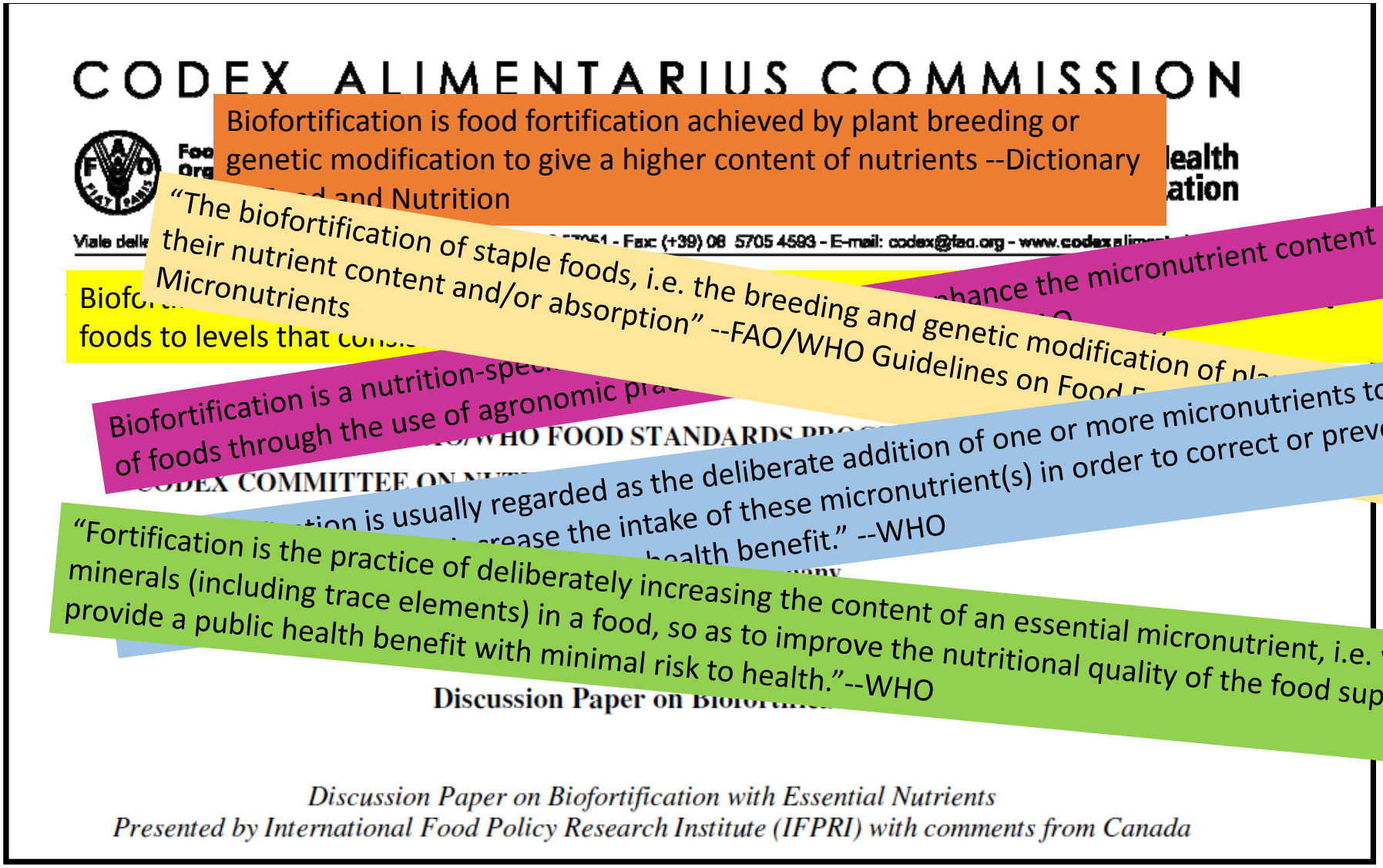
Food Innovation through Advanced Animal Nutrition

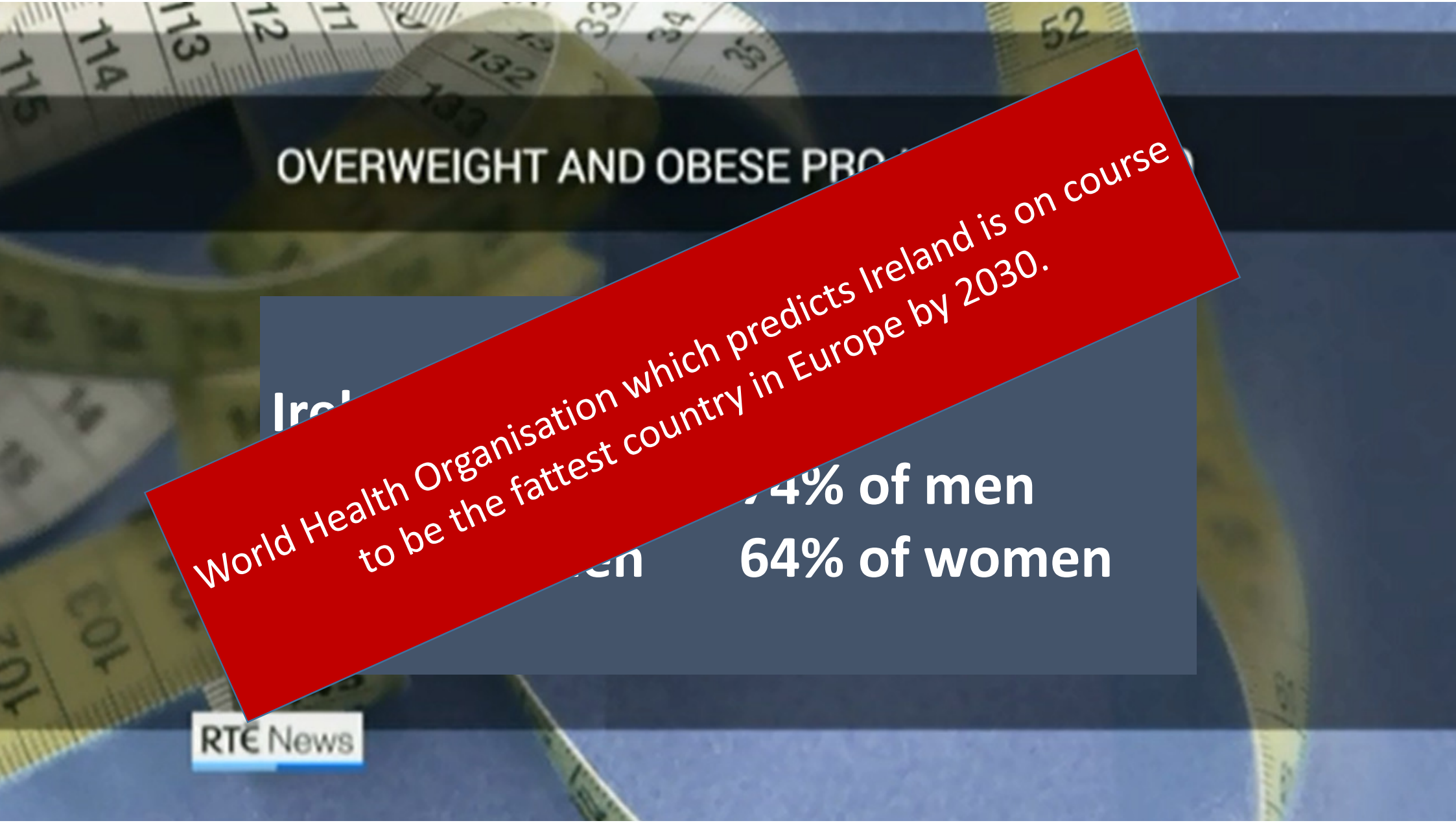
Jean Kennedy, PhD

Food Innovation Manager

ACAF Forward Work Programme

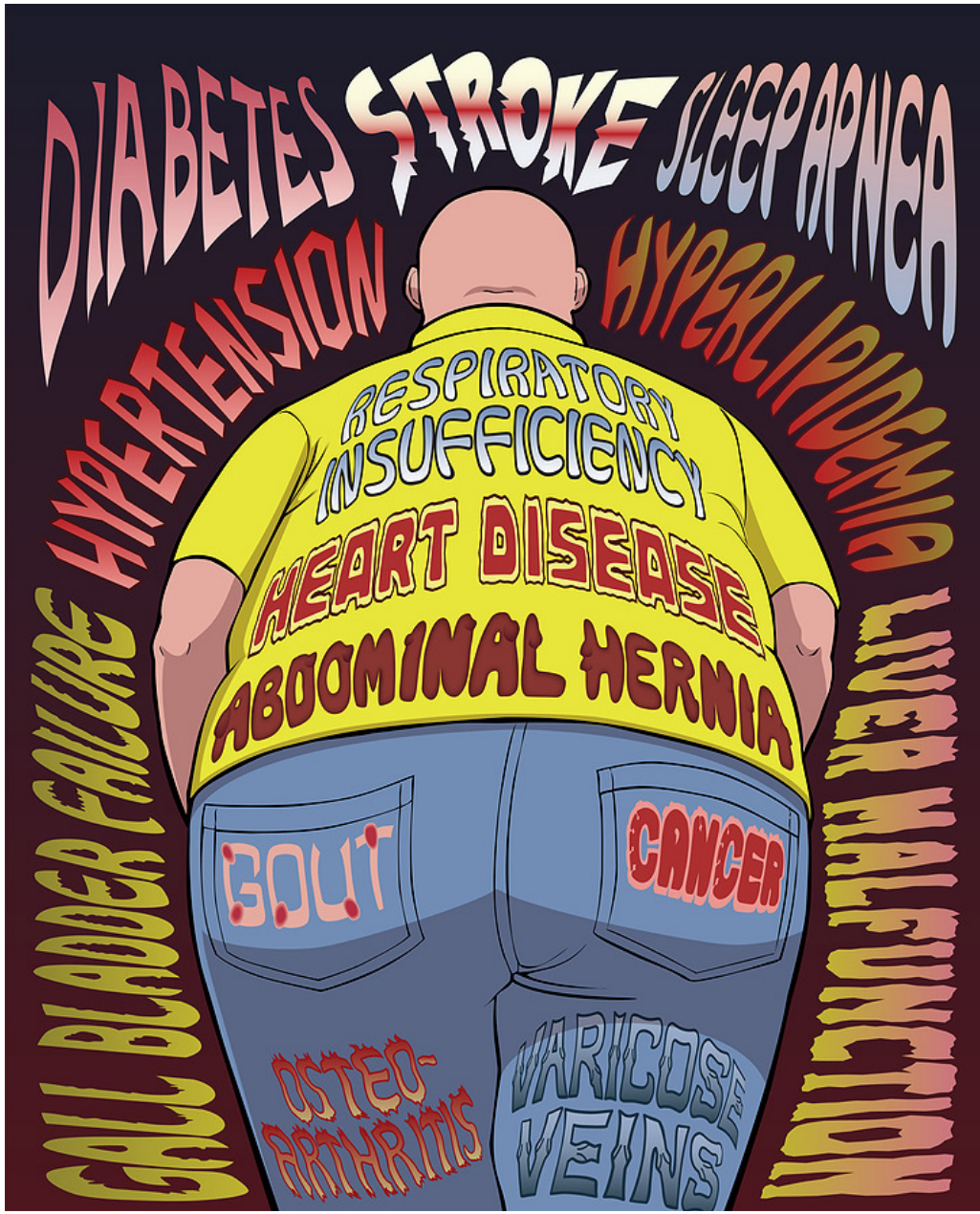
Topic	Progress	Expected Output
The manipulation of animal diets to enhance the nutritional value of food (milk, meat, eggs, fish). Examples include: - enhancing the selenium content of livestock produce; - enriching foods with polyunsaturated fatty acids (PUFAs) including long chain n-3 PUFA; - developing foods with reduced concentrations of saturated fatty acids;	The Committee first considered this issue in 2004-2005. A horizon scanning workshop organised by the GACS took place on 24 June 2009 and was attended by a number of ACAF Members. ACAF was requested to take forward the ideas discussed. At ACAF's September 2009 meeting a Member of the Committee agreed to carry out a literature review of research being carried out in this area. The report of the review was circulated to Members on 27 November 2009 and the key areas of research summarised. At its September 2012 meeting, Members were informed of developments on iodine and vitamin D. A Member of the Committee agreed to provide details of these developments to Members, which was circulated on 11 October 2012. To be aware of developments and provide comments on potential issues for feed/food safety.	To be aware of developments and provide comments on potential issues for feed/food safety.


CODEX ALIMENTARIUS COMMISSION
Biofortification is food fortification achieved by plant breeding or genetic modification to give a higher content of nutrients --Dictionary
and Nutrition
"The biofortification of staple foods, i.e. the breeding and genetic modification of
their nutrient content and/or absorption" --FAO/WHO Guidelines on Food
Micronutrients
Biofortification is a nutrition-spec
of foods through the use of agronomic pra
hance the micronutrient content
foods to levels that
WHO FOOD STANDARDS
CODEX COMMITTEE ON
tion is usually regarded as the deliberate addition of one or more micronutrients to
crease the intake of these micronutrient(s) in order to correct or prevent a
health benefit." --WHO
"Fortification is the practice of deliberately increasing the content of an essential micronutrient, i.e. vitamins and minerals (including trace elements) in a food, so as to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health."--WHO
Discussion Paper on Biofort
Discussion Paper on Biofortification with Essential Nutrients
Presented by International Food Policy Research Institute (IFPRI) with comments from Canada

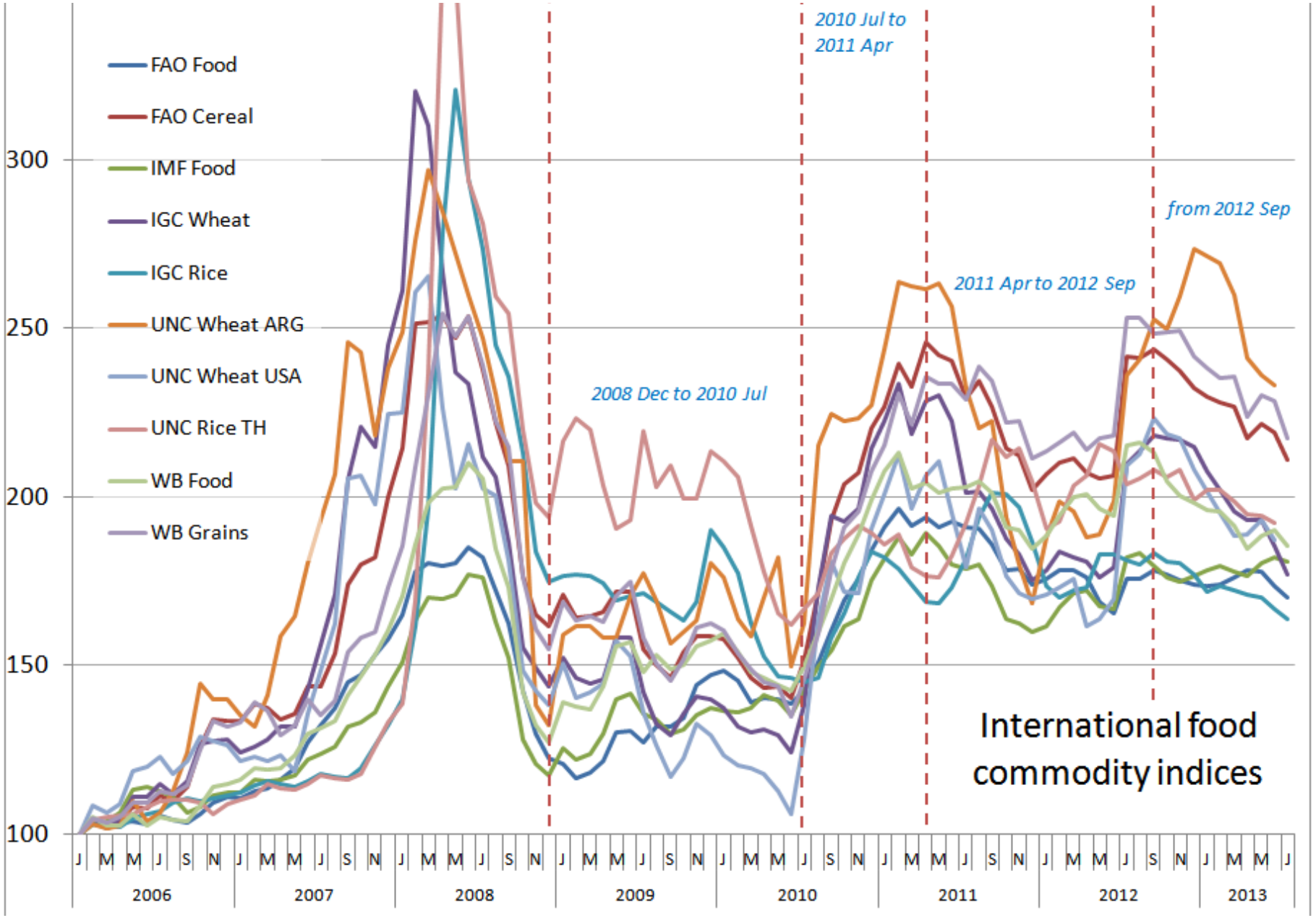


World Health Organisation which predicts Ireland is on course to be the fattest country in Europe by 2030.

The increased availability of low-cost, high calorie, nutrient-poor foods over the past four decades is a key component to the rise in obesity worldwide*



* Via, Michael. "The malnutrition of obesity: micronutrient deficiencies that promote diabetes." ISRN endocrinology 2012


FAO Food
FAO Cereal
IMF Food
IGC Wheat
IGC Rice
UNC Wheat ARG
UNC Wheat USA
UNC Rice TH
WB Food
WB Grains
2010 Jul to 2011 Apr
from 2012 Sep
2011 Apr to 2012 Sep
2008 Dec to 2010 Jul
International food commodity indices
300
250
200
150
100
J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J
2006
2007
2008
2009
2010
2011
2012
2013

Race to the Bottom…

NEWS

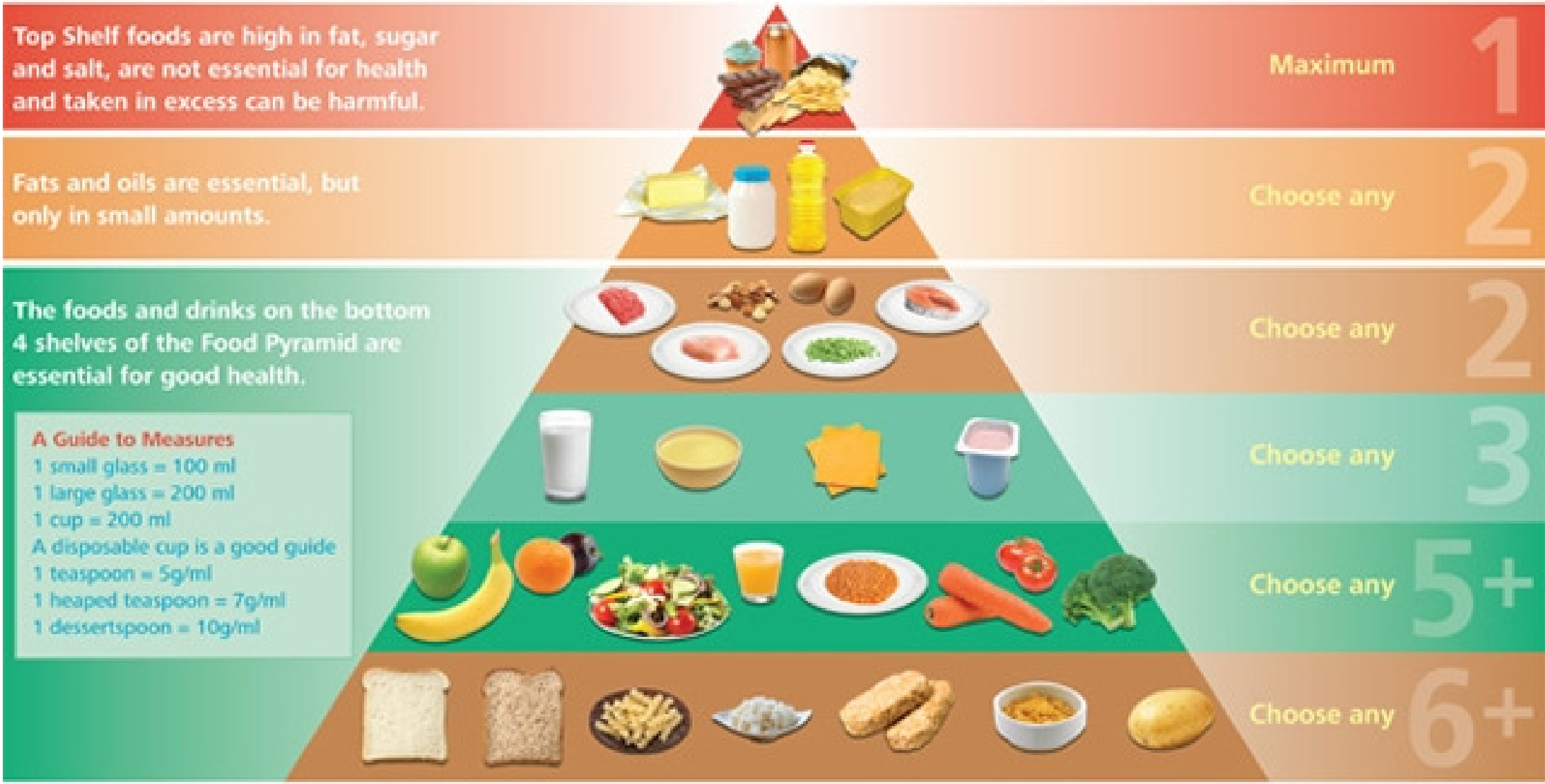
Home | UK | World | Business | Politics | Tech | Science | Health | Education | Entertai

N. Ireland | N. Ireland Politics

'Cod fraud' uncovered by BBC NI food sample tests

By Julian O'Neill
BBC Northern Ireland business correspondent

18 April 2013 | Northern Ireland


Top Shelf foods are high in fat, sugar and salt, are not essential for health and taken in excess can be harmful.
Maximum
1
Fats and oils are essential, but only in small amounts.
Choose any
2
The foods and drinks on the bottom 4 shelves of the Food Pyramid are essential for good health.
Choose any
2
A Guide to Measures
1 small glass = 100 ml
1 large glass = 200 ml
1 cup = 200 ml
A disposable cup is a good guide
1 teaspoon = 5g/ml
1 heaped teaspoon = 7g/ml
1 dessertspoon = 10g/ml
Choose any
3
Choose any
5+
Choose any
6+

Accordi

Eg. No. 1: Chi

- High Protein
- High Unsatu
- Low sodium/s
- High in Niaci
- Source of Se
- Source of Pa
- Source of Ph
- Source of Zi

Acid

ANNEX

Nutrition claims and conditions applying to them

LOW ENERGY

A claim that a food is low in energy, and any claim likely to have the same meaning for the consumer, may only be made where the product does not contain more than 40 kcal (170 kJ)/100 g for solids or more than 20 kcal (80 kJ)/100 ml for liquids. For table-top sweeteners the limit of 4 kcal (17 kJ)/portion, with equivalent sweetening properties to 6 g of sucrose (approximately 1 teaspoon of sucrose), applies.

ENERGY-REDUCED

A claim that a food is energy-reduced, and any claim likely to have the same meaning for the consumer, may only be made where the energy value is reduced by at least 30 %, with an indication of the characteristic(s) which make(s) the food reduced in its total energy value.

ENERGY-FREE

A claim that a food is energy-free, and any claim likely to have the same meaning for the consumer, may only be made where the product does not contain more than 4 kcal (17 kJ)/100 ml. For table-top sweeteners the limit of 0,4 kcal (1,7 kJ)/portion, with equivalent sweetening properties to 6 g of sucrose (approximately 1 teaspoon of sucrose), applies.

LOW FAT

A claim that a food is low in fat, and any claim likely to have the same meaning for the consumer, may only be made where the product contains no more than 3 g of fat per 100 g for solids or 1,5 g of fat per 100 ml for liquids (1,8 g of fat per 100 ml for semi-skimmed milk).

FAT-FREE

Regulation (EC) No 1169/2011

- Article 7

Food information shall not be misleading, particularly by suggesting that the food possesses special characteristics when in fact all similar foods possess such characteristics, in particular by specifically emphasising the presence or absence of certain ingredients and/or nutrients

Designer Foods

Designer foods and their benefits: A review. J Food Sci Technol (2013) 50(1):1–16

1 Summary of designer foods and their health benefits

Micro/Macro nutrient	Designer foods	Health benefits
Omega 3 fatty acid	Omega 3 fatty acid enriched egg, oil and milk	Management of Cardiovascular disease, hypertension, autoimmune, allergic, neurological disorders, maternal health (Hargis and Van Elswyk 1993), osteoarthritis (Roush et al. 2010) and rheumatoid arthritis (Kjeldsen-Kragh et al. 1992)
Conjugated linoleic acid (CLA)	CLA enriched egg and milk	Antiadipogenic, anti-carcinogenic, anti-atherogenic and anti-inflammatory (Magdalena et al. 2008)
Selenium (Se)	Se enriched egg, broccoli and milk	Prevents cardiac muscle degeneration, muscular dystrophy (Beale et al. 1990), reduce the risk and prevalence of prostate and colon cancer and antioxidant activity (Navarro-Alarcon and Cabrera-Vique 2008)
Glucoraphanin	Glucoraphanin enriched broccoli sprouts	Reduce the risk of cancer (Latté et al. 2011)
Probiotics	Probiotic yoghurt	Produces pro-inflammatory cytokines (Meyer et al. 2007), eliminates enterotoxigenic *Bacteroides fragilis*, *H. Pylori*, prevents gastrointestinal (Odamaki et al. 2012) and lower respiratory tract infections (Jayakanthan et al. 2011), improves defecation frequency and abdominal pain due to constipation in pediatric patients (Guerra et al. 2011), improves antioxidant status in type 2 diabetic patients (Ejtahed et al. 2011)
Vitamin D and calcium	Vitamin D and calcium fortified milk	Lowers PTH levels, reduce bone turnover, prevents the occurrence of overweight and obesity among postmenopausal women (Bonjour et al. 2009; Kruger et al. 2010)
Micronutrients	Micronutrient fortified milk, salt fortified with iodine, iron and vitamin A	Improves anemic status and reduces anemia in children and pregnant women (De-Regil et al. 2011; Sunawang et al. 2009)
Docosahexaenoic acid (DHA)	DHA enriched milk	Reduces the level of blood lipids, improves composition of red blood cell membranes (Atalah et al. 2009) and intelligence in infants when consumed by pregnant and lactating mother (Gale et al. 2010)
Monacolin, Gamma amino butyric acid (GABA)	MFR (Expand)	Anti-diabetic and anti-cholesterol property (Rajasekaran and kalaivani 2009; 2011), promotes bone formation and immunomodulation (Tseng et al. 2012)
Phytosterols	Phytosterols enriched oil	Reduces total cholesterol, very low density lipoproteins and RLP cholesterol (Lugasi 2009)
Folic acid	Folic acid fortified grains	Reduces the risk of neural tube defects in newborns (Hertrampf et al. 2003)

Omega 3

Selenium

Folic Acid

Feed

Iodine

Vitamin D

CLA

Vitamin E

DEVENISH™
Beyond Nutrition

Better Human Health through Agri-Food Business

One Supply Chain

DEVENISH™
Beyond Nutrition