

## FAO/INFOODS Advances in Food Composition and Database Management System

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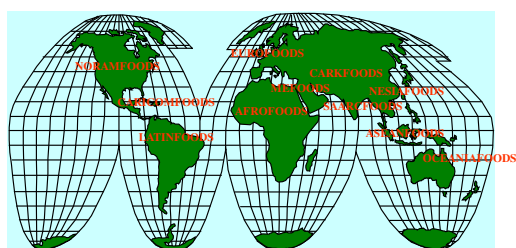


## Outline

- INFOODS
- Achievements of FAO/INFOODS
- Food composition database management system (FCDBMS): Compilation Tool
- Future plans
- Conclusions

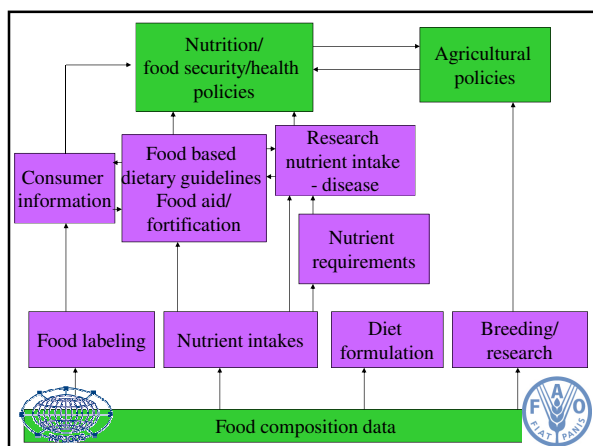


## 18 INFOODS Regional and Subregional Data Centres



## INFOODS

- Established in 1984
- Under UNU and FAO. Is also IUNS Task Force
- Coordination since 1999 in FAO
- **Objective:** to stimulate and coordinate efforts to improve the quality and availability of food analysis data worldwide



## INFOODS achievements

- **Standards and guidelines**
- **Capacity development**
- **Publications and Declarations**
- **Databases and tables**
- **Laboratory Quality Assurance**
- **Biodiversity**
- **International Food Data Conferences (IFDC)**
- **Tool development: FCDBMS**



## Standards and guidelines

- **Component identifiers** also called tagnames: Since 1989 over 800 tagnames published
- **Food nomenclature** (Truswell et al., 1991)
- **Interchange of food composition data** (Klensin 1992; FAO, 2004)
- **Guidelines on compilation** of food composition data (Rand et al., 1991)
- New **energy conversion factors** (FAO, 2003)
- **INFOODS Food matching guidelines** (2011)



## Capacity development

- Involved in/ co-organized **over 20 international training courses**
- Organized **10 training courses**
- Published *distance learning* tool **Food composition Study Guide** in *English, French and Spanish* together with *12 PowerPoint presentations* summarizing the main points of the modules



## Food Composition Study Guide developed by FAO/INFOODS

### Objectives

- To reach a **wider audience cost-effectively**, which otherwise would never be served
- To assist learners to **fill their specific knowledge gaps** and assess their knowledge acquisition
- To assist learners to **perform better** when generating, managing or using food composition data
- To assist **teachers** to prepare lessons and test students

### Target Population

- self-learners, FoodComp courses, universities: compilers and users and also analysts; teachers and students



## Publications and Declarations

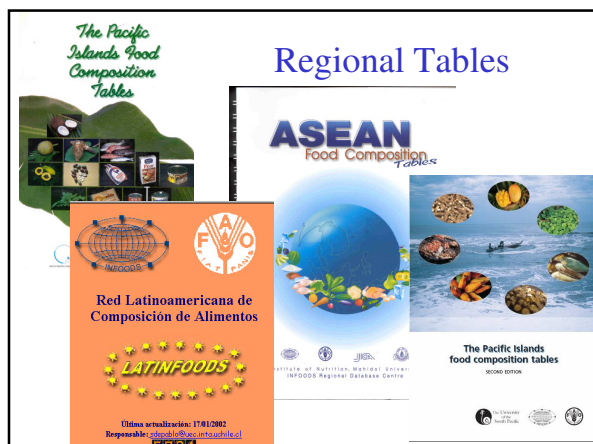
- **Food Composition Data: A User's Perspective** (Rand et al., 1987)
- **Food Composition Data – production, management and use** (Greenfield & Southgate) In English (2003), Spanish (2006), French (2007) and Korean (2008)
- **Journal of Food Composition and Analysis** (JFCA) was the official INFOODS journal from 1987 to 2010
- **Indigenous Peoples' food systems: the many dimensions of culture, diversity and environment for nutrition and health.** (Kuhnlein et al., 2009)
- Over 20 **scientific articles**
- **AFROFOODS declaration** (2010)
- **Bangkok Declaration** (2009) from the 8th International Food Data Conference



## Databases and tables


- **co-published 8 FCTs:** ASEANFOODS (2000), LATINFOODS (2000), Pacific Islands (2004), Lesotho (2006), Brazil (2008), Armenia (2011), Composition of selected foods in West Africa (2010), West African Food Composition Table (in later 2011)
- **Food Composition Database on Biodiversity:** first edition in 2010 with *solely analytical data* on 2400 foods, in July 2011 with 3600 foods
- ➔ **Future plans:** To publish FCDB with analytical data






### Laboratory Quality Assurance

- Several proficiency testing (PT) were organized, especially in ASEANFOODS countries. More PTs are planned in SAARCFOODS countries
- Strengthening laboratory capacity in food composition (including accreditation) in the South Pacific in 2002-2004 through FAO



### Food Biodiversity

- **Two Nutritional Indicators for Biodiversity** in English, French and Spanish:
  1. **on food composition** (FAO, 2008) → yearly reporting (in 2010 over 3600 foods reported in FCDB, scientific literature etc)
  2. **on food consumption** (2010 and 2011) → reporting every second year (in 2010 over 3000 food reported in food consumption surveys on food biodiversity)
- **Food Composition Database on Biodiversity:** first edition in 2010 with 2400 foods, in July 2011 with 3600 foods




### Differences in food composition due to different varieties

	Protein g	Fibre g	Iron mg	Vitamin C mg	Beta-Carotenes mcg
Rice	5.6 - 14.6		0.7 - 6.4		
Cassava	0.7-6.4	0.9-1.5	0.9-2.5	25-34	<5-790
Potato	1.4-2.9	1-2.23	0.3-2.7	6.4-36.9	1-7.7
Sweet potato	1.3-2.1	0.7-3.9	0.6-1.4	2.4-35	100-23100
Taro	1.1-3	2.1-3.8	0.6-3.6	0-15	5-2040
Eggplant		9 - 19		50 - 129	
Mango	0.3 - 1.0	1.3-3.8	0.4-2.8	22-110	20 - 4320
GAC					6180 - 13720
Apricot	0.8-1.4	1.7-2.5	0.3-0.9	3.5-16.5	200-6939 (beta carotene equivalent)
Banana			0.1-1.6	2.5-17.5	<1 - 8500

### Impact of food biodiversity on dietary adequacy

Protein content	Protein content (g/100 g)	Cassava intake in Congo g/d/p	Part of the RDI for protein covered by cassava intake, in %
Average	3.24	286	20.6
Minimum	0.95	286	6.0
Maximum	6.42	286	40.8

Banana	β-carotene content in mcg/100 g	Banana intake in Philippines in g/d/p	Vitamin A intake through banana in mcg RE/d/p	RDI for vitamin A covered by banana intake, in %
USDA	26	93	4	0.7
Lacatan	360	93	56	9.3
Utin lap	8508	93	1318.7	219.8

## International Food Data Conferences (IFDC)

- 1st IFDC: Quality and Accessibility of Food-Related Data. Sydney, Australia, 1993
- 2nd IFDC: Food Composition Research - The Broader Context. Lahti, Finland, 1995
- 3rd IFDC: Back to Basics. Rome, Italy, 1999
- 4th IFDC: Bratislava, Slovakia, 2001
- 5th IFDC: Washington DC, USA, 2003
- 6th IFDC: Food Composition Data and the Nutrition Dilemma. Pretoria, South Africa, 2005
- 7th IFDC: Food Composition and Biodiversity. São Paulo, Brazil, 2007
- 8th IFDC: Quality food composition data - key for health and trade. Bangkok, Thailand, 2009
- 9th IFDC: Food Composition and Sustainable Diets. Norwich, UK, 14-17 September 2011



## Tool development: FCDBMS

- FCDBMS is needed to compile a FCDB
  - FCDBMS exist:
    - for national/regional programmes
    - commercial products for different uses (e.g. labelling)
    - for certain projects
  - No FCDBMS exists for international use as yet
  - BUT especially developing countries do not have the financial means to develop their own FCDBMS software
- ➔ Compilation tool was developed by FAO/INFOODS to fill this gap



## Compilation tool - objectives

- to give compilers a product to compile and manage their food composition database according to international standards
- to be simple in use while allowing comprehensive documentation
- to provide a flexible tool so that users can adapt it to their needs
- to be used with Food Composition Study Guide to practice calculation, documentation and compilation



## Compilation tool - structure

- 125 nutrients (macro and micronutrients, AA, FA)
- based on INFOODS interchange (2003) elements (for value documentation, method, bibliography, sampling)
- uses INFOODS tagnames (component names)
- uses Greenfield and Southgate (2003) terminology (archival, reference and user database)
- includes nutrient retention factors from McCance and Widdowson's (6<sup>th</sup> edition), Bognar (2002) and Bergstrom (1994) – can be replaced by any other factors
- 3 recipe calculation systems (recipe, ingredient and mixed method)



## Future Plans of INFOODS

- **Prepare new guidelines**
  - conversion of nutrient data
  - selecting appropriate food composition sources
  - on analytical methods
  - set of nutrient retention factors per region
- **Publish new regional food composition tables**
- **Compile databases**
  - on food biodiversity **with analytical values** (continue)
  - any foods **with analytical values**
  - density
  - on laboratories indicating which nutrients they analyze together with methods and quality assurance
- **Analyze foods worldwide**
- **Capacity development**
- **Improve INFOODS' communication strategy**



## Conclusions (1)

### Compilation Tool

- ➔ meets an immediate need
- is a simple, cheap, flexible and useful tool for global use according to international standards allowing compilation with full documentation
- is intended for compilers without FCDBMS and learners of Study Guide
- BUT use of spreadsheets are more prone to errors as compared to relational databases and users must know Excel
- ➔ **Future development:** transfer to SQL or Access relational databases and disseminate it through FAO/INFOODS free of charge



## Conclusions (2)

### Food composition programmes need

- Motivated people trained in food composition
- Standard procedures and tools in line with international guidelines
- Integrated in international network
- Steering committee between users, stakeholders and compilers
- Government support
- Funding for data generation, compilation and dissemination



## Conclusions (3)

- INFOODS has provided standards and tools for each country to compile a FCDB and to get the necessary knowledge on food composition
- INFOODS has proven to be an excellent network to improve the quality and availability of food composition data but communicates poorly
- INFOODS could do even better if more funds would become available
- Other donor support needs to be explored as traditional supporters provided less funds over time (e.g. UNU, FAO, INF)



## For more information

INFOODS website

Subscribe to INFOODS mailing list

Thank you for your attention



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