

# Nutrition Indicators for Biodiversity

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# Outline

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- Nutrition indicator for biodiversity
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# Definition Biodiversity

**Biodiversity** covers diversity within species,  
between species and of ecosystems;  
*synonyms*: biological diversity, ecological  
diversity



# Schema of taxonomic names

Schema	Plant – example	Plant – example	Fish - example	Animal – example
Family	<i>Rosaceae</i> – Rose family	<i>Poaceae</i> – Grass family	<i>Pleuronectidae</i>	<i>Bovidae</i> <i>Caprinae</i>
Genus	<i>Prunus</i> L. – plum	<i>Triticum</i> L. – wheat	<i>Platichthys</i>	<i>Ovis</i>
Species	<i>Prunus domestica</i> L. – European plum	<i>Triticum aestivum</i> L. – common wheat	<i>Platichthys flesus</i> (Linnaeus, 1758)	<i>Ovis aries</i> – sheep
Subspecies	<i>Prunus domestica</i> L. subsp. <i>domestica</i>			(rarely used)
Variety Cultivar Breed	<i>Prunus domestica</i> L. var. <i>domestica</i> – European plum <i>Prunus domestica</i> ‘Cacak’s Beauty’	<i>Triticum aestivum</i> ‘Pioneer 2163’	<i>Platichthys flesus</i> var. <i>marmorata</i> No rdmann, 1840 - European flounder	Suffolk





# Differences in food composition

	Protein g	Fibre g	Iron mg	Vitamin C mg	Beta-Carotene mcg
<b>Rice</b>	<b>5.6 - 14.6</b>		<b>0.7 - 6.4</b>		
<b>Cassava</b>	<b>0.7-6.4</b>	<b>0.9-1.5</b>	<b>0.9-2.5</b>	<b>25-34</b>	<b>&lt;5-790</b>
<b>Potato</b>	<b>1.4-2.9</b>	<b>1-2.23</b>	<b>0.3-2.7</b>	<b>6.4-36.9</b>	<b>1-7.7</b>
<b>Sweet potato</b>	<b>1.3-2.1</b>	<b>0.7-3.9</b>	<b>0.6-14</b>	<b>2.4-35</b>	<b>100-23100</b>
<b>Taro</b>	<b>1.1-3</b>	<b>2.1-3.8</b>	<b>0.6-3.6</b>	<b>0-15</b>	<b>5-2040</b>
<b>Eggplant</b>		<b>9 - 19</b>		<b>50 - 129</b>	
<b>Mango</b>	<b>0.3 - 1.0</b>	<b>1.3-3.8</b>	<b>0.4-2.8</b>	<b>22-110</b>	<b>20 – 4320</b>
<b>GAC</b>					<b>6180 – 13720</b>
<b>Apricot</b>	<b>0.8-1.4</b>	<b>1.7-2.5</b>	<b>0.3-0.9</b>	<b>3.5-16.5</b>	<b>200-6939 (beta carotene equivalent)</b>
<b>Banana</b>			<b>0.1-1.6</b>	<b>2.5-17.5</b>	<b>&lt;1 – 8500</b>

# 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	$\beta$ -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
<i>Lacatan</i>	360	93	56	9.3
<i>Utin Iap</i>	8508	93	1318.7	219.8



# The Indicators

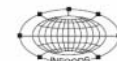
## Expert Consultation on Nutrition Indicators for Biodiversity

### 1. Food composition



## Expert Consultation on Nutrition Indicators for Biodiversity

### 2. Food consumption



# Nutrition indicators for biodiversity - objectives

- To monitor biodiversity over time by measuring the composition and consumption of food and medicinal plant and animal genetic resources
- To encourage researchers to generate and compile more food consumption and compositional data for food biodiversity
- To enable more research on food biodiversity and nutrition and health
- To raise awareness of the population, researchers and governments on food biodiversity and their impact on dietary adequacy
- To understand the impact of food biodiversity on food security

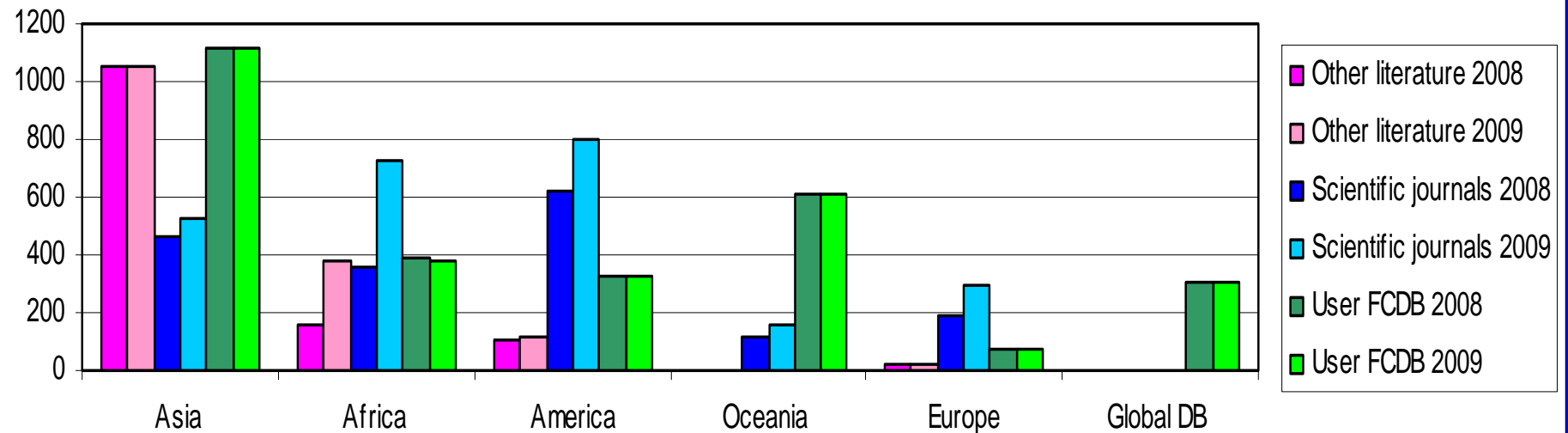
# Nutrition indicators for biodiversity

## 1. Food composition (2007)

It counts the number of foods

- at variety/ cultivar/ breed level for common foods
- species level for wild/ indigenous/ underutilized foods
- with at least one value for component
- found in published and unpublished literature
- Baseline collected in 2008 and for 2009

### Increase in foods counting for Biodiversity Indicator on food composition 2008 vs.2009



Coverage: over 50 countries and 300 publications

# FAO/INFOODS database on biodiversity

- compiled with FAO/INFOODS Compilation Tool
- data from published and unpublished sources on varieties, cultivars, breeds and wild and underutilized foods
- now with data on potato, milk, fruits and vegetables
- in future also on fish, cereals etc and more data

At [http://www.fao.org/infoods/biodiversity/index\\_en.stm](http://www.fao.org/infoods/biodiversity/index_en.stm)

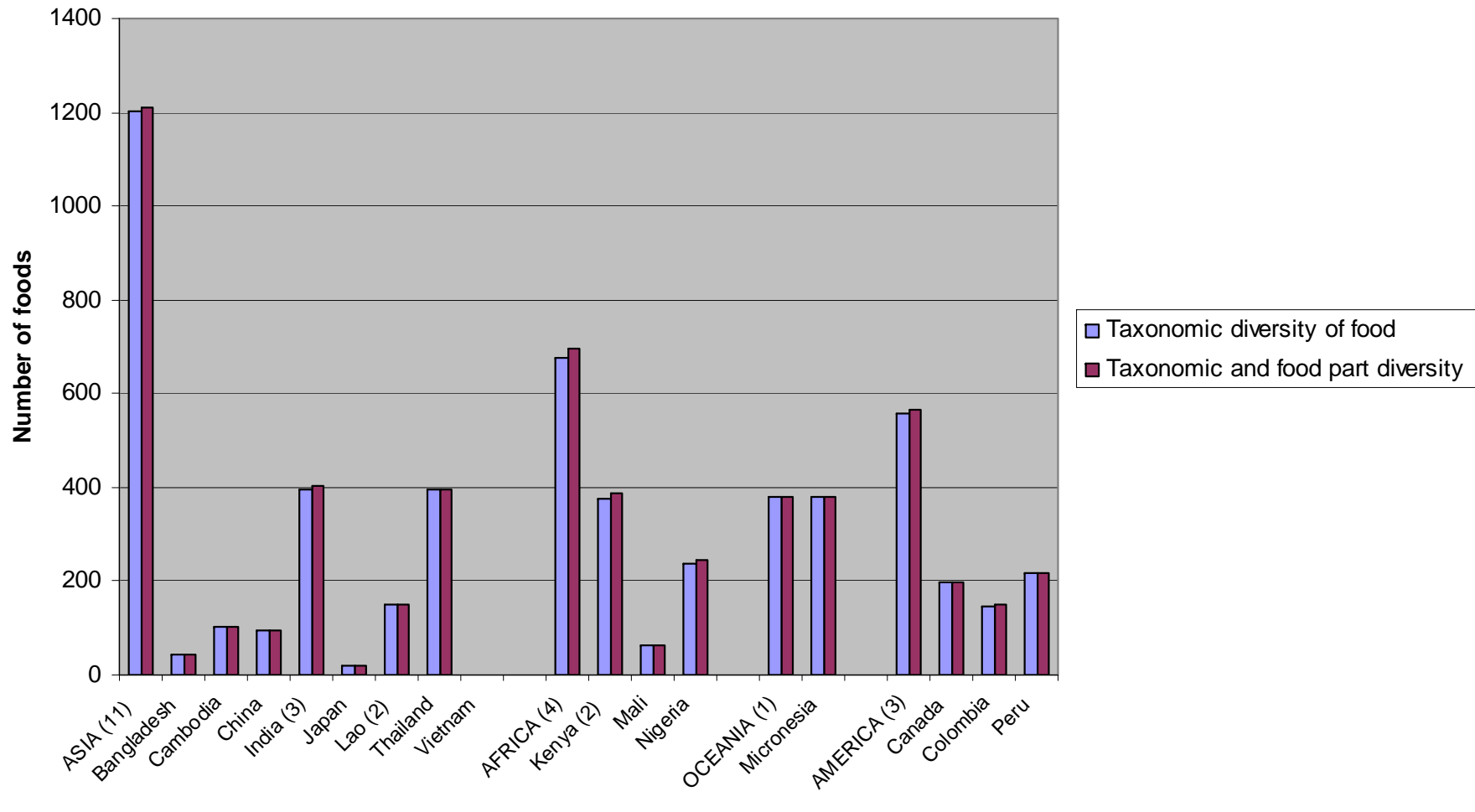
# Nutrition indicator for biodiversity

## 2. Food consumption (2009)

- count:
  - total number of foods consumed counting for biodiversity. Definition of foods is similar as for food composition
  - number of surveys with at least one reported food counting for biodiversity
- which will be reported with additional information on
  - Study (scope, date, number and description of subjects, geographical/ethnic coverage, instrument used; reference, total number of studies examined)
  - Food (number of foods reported, food list)



## Nutrition indicator for biodiversity - 2. food consumption 2009



2817 (2852) foods reported worldwide counting for biodiversity, most in Asia

# Biodiversity & Nutrition – implications

## **For food composition database compilers:**

- Sample and generate nutrient data for wild foods and individual cultivars, also by ecosystem
- Compile these data comprehensively, systematically and centrally, and disseminate widely

## **For food consumption surveys**

- Include biodiversity questions and/or prompts in food consumption surveys
- Report food consumption also by ecosystem and/or ethnic group
- Communicate to food composition database compilers the need for compositional data for these specific foods

## **For nutrition research/education**

- Investigate traditional foods and varieties and their impact on food and nutrition security
- Promote the most nutritious foods

## **For agriculture policies and programmes**

- Nutrient content needs to be among criteria in promoting food biodiversity

# Conclusions

**Food composition data are fundamental for nutrition, health and agriculture and need more recognition and funding**

**Biodiversity can make the difference between nutritional adequacy and inadequacy and professionals and consumers need to know more about it**

**Sustainable diets are essential to feed future generations**

- Basis to improve nutrition, health and food security based on FOODS
- Contribute to preparedness to effects of climate change

# More information ...

## **INFOODS** webpage

- on biodiversity  
[http://www.fao.org/infoods/biodiversity/index\\_en.stm](http://www.fao.org/infoods/biodiversity/index_en.stm)
- in Food Composition Study Tool module 12 on biodiversity  
[http://www.fao.org/infoods/publications\\_en.stm](http://www.fao.org/infoods/publications_en.stm)
- publication of a food composition database on food biodiversity

## **Bioversity International** webpage on biodiversity and nutrition

<http://www.bioversityinternational.org/Themes/Nutrition/index.asp>

# Mainstreaming Biodiversity

- **include biodiversity in our work**
  - **talk about biodiversity widely (conferences, meetings...)**
  - **get more professionals and consumers convinced about the importance of food biodiversity**
- ➔ contribute to conserving and valuing our food biodiversity for our children and grandchildren**