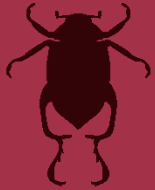# Food Basket

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Contents

- Definition and context

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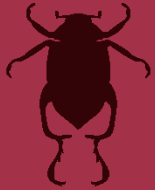
- Discussion on Ethiopian food basket

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Food basket or diet: definition and context

Definition

'Combination of food items consumed by someone in a certain time period'

Why do we need the food basket

With the food basket, residue level and reference values we can perform risk assessments

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WHO-GEMS diets

WHO = World Health Organisation

GEMS = Global Environment Monitoring System

In different parts of the world people consume different food items, dependent on habits, agricultural circumstances, availability of sea/lakes, etc.

WHO composed 13 diets for different regions in the world: 'WHO-GEMS cluster diets'.

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Characteristics WHO GEMS

- Based on agricultural and trade data
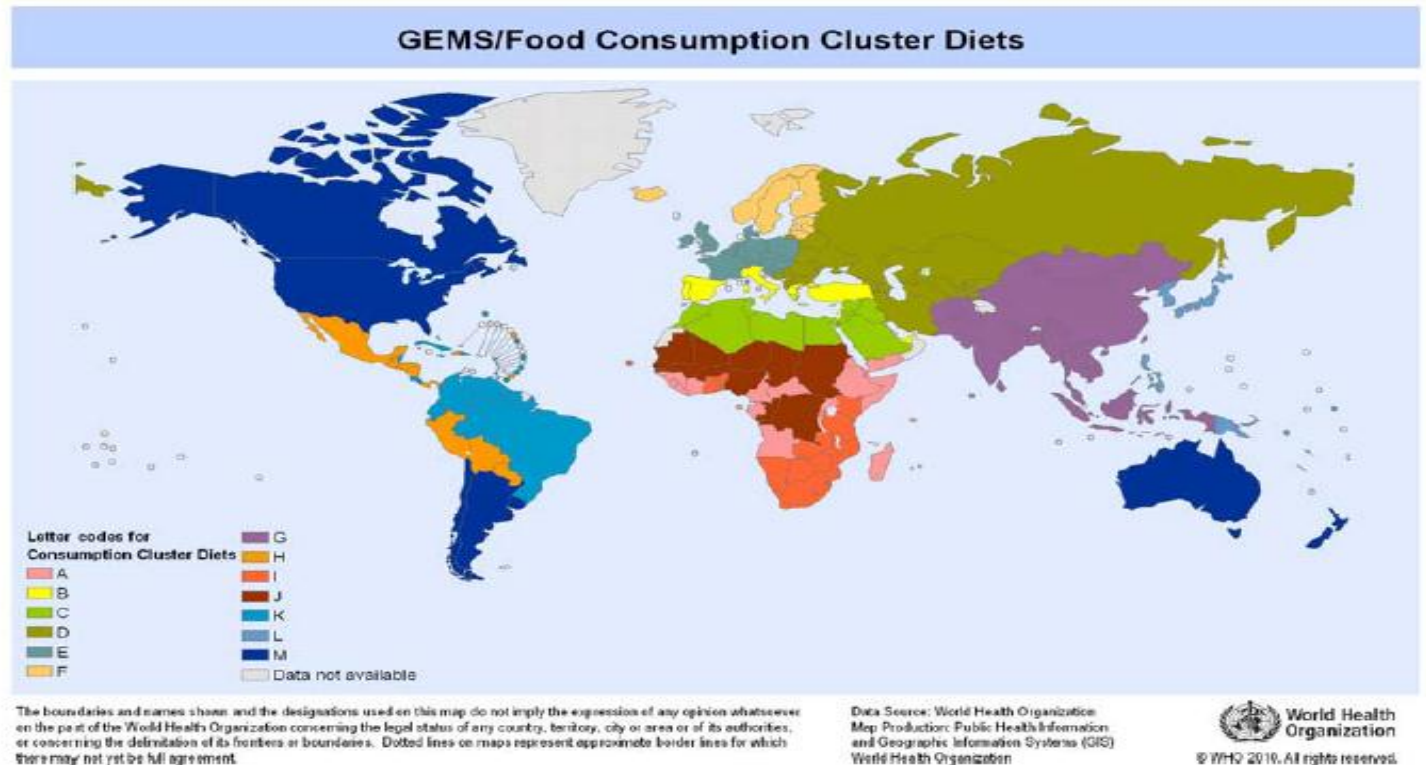- Minor uses might not be taken into account

Disadvantage:
- In general data overestimated since it is a compilation of data which also contain other factors like animal feed consumption
- No statistical information or distribution so all individuals are the same (no distinguishing between different consumer groups)

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13 WHO-GEMS diets:
Ethiopia = A
(or C or J or H)?

Example of WHO GEMS

CODE	GEMS	NOTES	A	B	C	D
	CEREALS					
GC 640	BARLEY	(1)	40,6	16,8	93,9	13,2
	* POT BARLEY		29,0	0,0	11,9	4,0
	* BARLEY, PEARLED		0,0	0,4	27,9	0,4
	* BARLEY FLOUR AND GRITS		0,0	0,3	10,8	0,3
GC 641	BUCKWHEAT	(2)	0,0	0,1	0,0	1,7
	* FLOUR OF BUCKWHEAT		0,0	0,0	0,0	1,3
	* BRAN OF BUCKWHEAT		0,0	0,0	0,0	0,0
GC 645	MAIZE	(3)	82,7	148,4	135,9	31,8
CF 1255	MAIZE FLOUR		68,9	15,4	51,3	16,6
	* GERM MAIZE	(4)	0,2	8,9	5,0	1,2
GC 654	WHEAT	(12)	88,4	396,3	426,5	390,
CF 1210	WHEAT GERM		0,0	1,3	0,0	1,3
* CF 1211bu	* WHEAT BULGUR WHOLEMEAL		5,5	10,2	0,7	0,2
CF 1211	WHEAT FLOUR		63,4	296,3	327,5	300,
* CF 1211ma	* WHEAT MACARONI		0,8	1,1	0,8	1,8
* CF 1211pa	* WHEAT PASTRY		0,4	1,1	0,7	2,6
CP 1211	WHITE BREAD		0,0	0,1	0,0	0,1
CP 1212	WHOLEMEAL BREAD		0,0	0,1	0,0	0,1
	* OATS, ROLLED		0,7	0,3	0,1	2,2

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Diet based on Food Consumption survey

- 1000-2000 Individual consumers with their characteristics (age, habitual situation, gender, ….)
- 2 days overview of all consumed food items
- different seasons

Advantages:
- Distribution of consumption data: food basket can be divided into different consumer subgroups and in chronic and acute data
- Processing data

Disadvantage
- Time consuming research
- Data from processed consumption product (bread, pizza, jam) which should be converted to raw agricultural products

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Example of diet based on food consumption data (1): Dutch diet

EN name	pr	processing	por tion	Gen pop (1-97 yrs) Average bw (kg): Cons days (incl 0)					
								65,8	
								12500	
				NL-diet (g/kg bw /day)	NL-diet (g/pers /day)	EP %proc	Ntot	NEDI (µg/kg bw /day)	%ADI
grapefruit	1	raw	EP	0,019	1,3	30%	137	ND	ND
grapefruit	5	canned	PP	0,000	0,0	0%	86	ND	ND
grapefruit	9	juice	PP	0,042	2,8	65%	376	ND	ND
grapefruit	12	oil	PP	0,000	0,0	0%	0	ND	ND
grapefruit	98	sec processing	PP	0,003	0,2	5%	1225	ND	ND
oranges	1	raw	EP	0,216	14,2	21%	1219	ND	ND
oranges	9	juice	PP	0,772	50,8	77%	3495	ND	ND
oranges	11	jam (incl jelly/marmalade	PP	0,003	0,2	0%	2185	ND	ND
oranges	12	oil	PP	0,000	0,0	0%	0	ND	ND
oranges	53	canned babyfood	PP	0,001	0,1	0%	7	ND	ND
oranges	98	sec processing	PP	0,017	1,1	2%	2513	ND	ND
lemons	1	raw	EP	0,001	0,1	7%	25	ND	ND
lemons	9	juice	PP	0,009	0,6	43%	439	ND	ND
lemons	11	jam (incl jelly/marmalade	PP	0,000	0,0	0%	0	ND	ND
lemons	12	oil	PP	0,000	0,0	0%	0	ND	ND
lemons	53	canned babyfood	PP	0,000	0,0	0%	0	ND	ND
lemons	98	sec processing	PP	0,011	0,7	50%	3293	ND	ND
limes	1	raw	EP	0,000	0,0	0%	3	ND	ND

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Example of diet based on food consumption data (2):
Pesticide Risk Assessment model (PRIMo) of EU contains app. 20 different diets with chronic and acute data

FLUDIOXONIL

Status of the active substance:	**Included**	Code no.	
LOQ (mg/kg bw):	0,01	proposed LOQ:	

Toxicological end points

ADI (mg/kg bw/day):	0,37	ARfD (mg/kg bw):	n.n.
Source of ADI:	EFSA	Source of ARfD:	EFSA
Year of evaluation:	2007	Year of evaluation:	2007

Prepare workbook for refined calculations

Undo refined calculations

Chronic risk assessment - refined calculations

TMDI (range) in % of ADI
minimum - maximum
1   16

No of diets exceeding ADI: ---

Highest calculated TMDI values in % of ADI	MS Diet	Highest contributor to MS diet (in % of ADI)	Commodity / group of commodities	2nd contributor to MS diet (in % of ADI)	Commodity / group of commodities	3rd contributor to MS diet (in % of ADI)	Commodity / group of commodities	pTMRLs at LOQ (in % of ADI)
15,8	DE child	6,8	Apples	5,5	Oranges	0,6	Mandarins	0,1
11,6	NL child	4,5	Oranges	3,6	Apples	1,1	Mandarins	0,1
10,5	IE adult	3,6	Sweet potatoes	1,5	Oranges	1,0	Grapefruit	0,0
6,9	FR toddler	2,9	Oranges	1,5	Apples	0,7	Carrots	0,0
5,3	ES child	3,1	Oranges	0,6	Apples	0,4	Lettuce	0,1
5,1	WHO Cluster diet B	1,2	Oranges	0,6	Apples	0,5	Mandarins	0,0
5,0	UK Toddler	2,8	Oranges	1,0	Apples	0,4	Mandarins	0,1
4,8	FR infant	1,4	Apples	1,3	Oranges	0,8	Carrots	0,1
4,3	NL general	2,1	Oranges	0,7	Apples	0,3	Mandarins	0,0
4,0	SE general population 90th percentile	1,1	Oranges	0,6	Mandarins	0,6	Apples	0,0
4,0	ES adult	1,9	Oranges	0,5	Lettuce	0,4	Apples	0,0
3,7	UK Infant	1,9	Oranges	0,9	Apples	0,4	Carrots	0,0
3,2	DK child	1,3	Apples	0,4	Carrots	0,4	Pears	0,0
2,9	PT General population	0,9	Oranges	0,6	Apples	0,4	Peaches	0,0
2,9	WHO Cluster diet F	1,2	Oranges	0,4	Apples	0,3	Mandarins	0,0
2,8	IT kids/toddler	0,7	Oranges	0,5	Apples	0,3	Peaches	0,0
2,8	WHO cluster diet E	0,6	Oranges	0,5	Apples	0,2	Mandarins	0,0
2,7	WHO regional European diet	0,7	Oranges	0,4	Apples	0,3	Lettuce	0,0
2,6	IT adult	0,5	Oranges	0,5	Apples	0,4	Peaches	0,0
2,4	UK vegetarian	1,2	Oranges	0,3	Apples	0,2	Grapefruit	0,0
2,2	FR all population	0,4	Oranges	0,4	Wine grapes	0,2	Mandarins	0,0
2,2	FI adult	1,4	Oranges	0,2	Apples	0,2	Mandarins	0,0
2,0	PL general population	1,2	Apples	0,2	Pears	0,1	Carrots	0,0
1,8	WHO cluster diet D	0,4	Apples	0,3	Oranges	0,2	Limes	0,0
1,7	UK Adult	0,8	Oranges	0,2	Apples	0,1	Lettuce	0,0
1,6	LT adult	1,1	Apples	0,1	Oranges	0,1	Pears	0,0
1,4	DK adult	0,4	Apples	0,2	Oranges	0,1	Carrots	0,0

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Conclusion:
The estimated Theoretical Maximum Daily Intakes (TMDI), based on pTMRLs are below the ADI.
A long-term intake of residues of FLUDIOXONIL is unlikely to present a public health concern.

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Diet based on 'local general knowledge'

Experts on food from Ethiopia know more or less what are nutritional habits from their population(s)

They might set up one or more special Ethiopian food baskets by general knowledge ('top 10' ten of important food items)
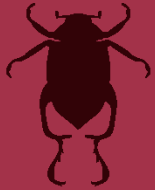
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Remarks

For all alternatives:
- data will be outdated after several years since food consumption patterns change
- Composition of population changes due to migration
- Data have to be treated for composing a model which is always an simplification (e.g. choice of body weight, number of consumer sub groups, etc.)

Uncertainties in risk assessment
- Food basket data and subgroup selection
- Overall safety factor of ~100 will compensate for most of the uncertainties
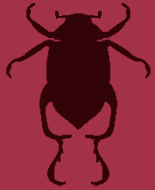
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Drinking water (1)

Water intake in the **Netherlands** will take place:

- From deep ground water (generally pure)
- from big rivers. Due of dilution of the pesticide on it's way from the agricultural field to the river, pesticide levels are quite low.

  water: 1-10µg/L   crop: 10-1000 µg/L

What situation applies to Ethiopia?

If water intake will take place near agricultural field, pesticides might be a bigger problem.

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Drinking water (2)

If pesticide levels are of concern, a risk assessment can be performed by including drinking water in de food basket.

'*Dietary data*'

- Mean consumption is 2 liters/day (adults)?
- Mean consumption is 2 liters/day (children ages 1-6)?
- High consumption is 6 liters/day?

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Workshop participants: Discussion & choice of diet

1. Examine the WHO-GEMS diets

2. Can one or more existing WHO-GEMS diets be used?

3. Is any further work needed for establishing one or more Ethiopian diets?

4. Risk assessment for drinking water necessary?

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