

WEST AFRICAN INDIGENOUS & TRADITIONAL FOODS – FRONTLINE RESOURCES AGAINST MICRONUTRIENT DEFICIENCIES AND RISKS OF DIET RELATED CHRONIC DISEASES

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Introduction

- Available health statistics reveal West Africa's immense health problems associated with micronutrient deficiencies
- Decline in agricultural production, household food insecurity, lack of diversity in diets complicate existing malnutrition, and contribute to increased risks of obesity and diet related chronic diseases
- Foods from West Africa's traditional food systems ensure diversity in family diets
- There is now a growing consensus to employ indigenous & traditional foods of the sub-region in strategies against malnutrition and diet related chronic diseases

A Diversified Meal of Yam, Mixed Vegetables, Spice, Fish, and Palm oil



Transitioning Into Quick Fix Simplified Meals



A Truly Simplified Meal



The Value of Dietary Diversity

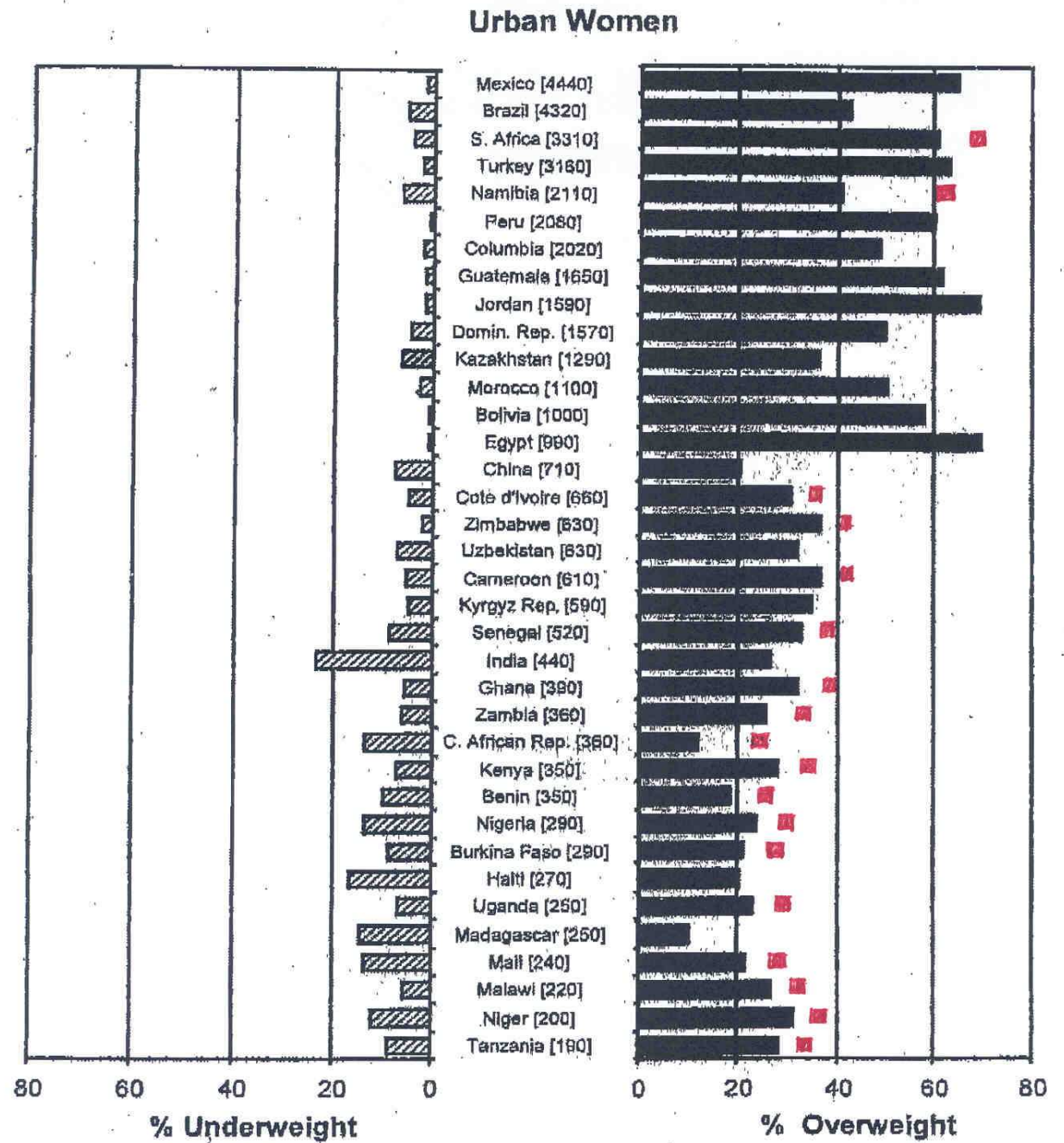
- A diverse and balanced diet provides nutrients in combinations ideal to sustain and promote health.
- Dietary energy needs can be met without diversity but micronutrient needs **cannot** be met without diversity
- “A diverse and balanced diet provides an intrinsic buffer against the uncertainties of change, and remains the preferred choice for human health” [Johns & Sthapit 2004]
- Non-nutrient phytochemicals found in legumes, fruits, vegetables, sauce condiments and spices protect health & lower risks of chronic diseases

Simplified Diets and Dietary Habits Increase Risks of Poor Health Conditions such as:

- Obesity
- Diabetes
- Cardiovascular diseases
- Osteoporosis
- Some cancers
- Neurodegenerative disorders
- Dental Caries

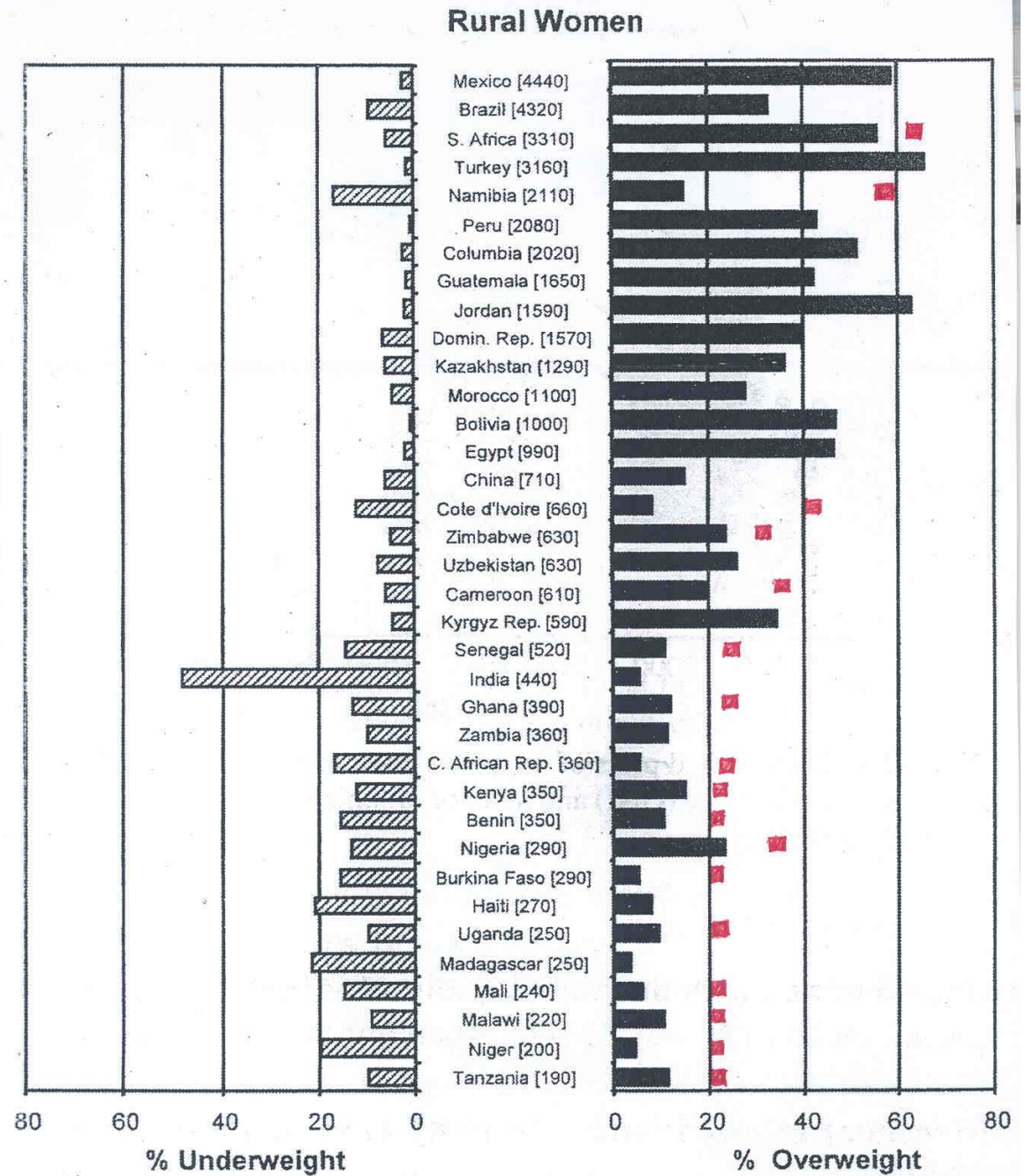
Rise in obesity in urban women

From Mendez *et al*, Am J
Clin Nutr 2005; 81:714-721



Rise in obesity in rural women

From Mendez *et al*, Am J
Clin Nutr 2005; 81:714-721



Why the Interest in Indigenous & Traditional Foods

- They are locally available, well adapted to local production environments
- Economically, they are relatively more accessible to local populations
- They are culturally more appropriate and acceptable
- They are rich dietary sources of micronutrients and health protecting anti-oxidants
- They will greatly compliment and increase the efficacy of other strategies against infant, child and adult malnutrition, and diet related chronic diseases

ROOTS, TUBERS AND STARCHY FRUITS – SUPPLIERS OF DIETARY ENERGY, BETA CAROTENE, ANTIOXIDANTS, FOLIC ACID (Early season yams), MAGNESIUM (Coco-yams)

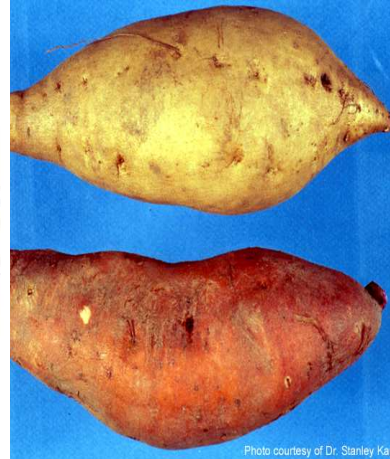


Photo courtesy of Dr. Stanley Kays

INDIGENOUS CEREALS - PROVIDES ENERGY, PROTEINS,
MINERALS & VITAMINS (Micronutrients), ANTI-OXIDANTS;
LOW GLYCEMIC INDEX (Fonio, Millet)



Indigenous Cereals Contribute Micronutrients to Daily Diets

Mineral Concentrations of Some Indigenous African Cereals
Raw and Processed (mg/ 100gr dry product)

Foods	Copper	Iron	Zinc	Calcium	Magnesium
Whole Sorghum	0.31	3.46	2.10	17.02	141.20
Sorghum Flour	0.28	4.65	2.46	13.66	76.80
Araw (Processed Sorghum)	0.26	4.04	2.08	19.39	66.79
Whole Millet	0.42	2.71	2.10	22.09	112.06
Millet Couscous	0.60	3.42	2.75	24.75	114.05
Sankhal (Processed Millet)	0.25	3.02	2.30	14.16	70.73
Hungry Rice (Acha)	0.42	3.30	2.11	18.65	90.00
Dehulled Acha	0.37	2.60	1.82	12.70	62.34



GRAIN LEGUMES – MAJOR SUPPLIERS OF PROTEINS, ENERGY, MINERALS & VITAMINS (Micronutrients), AND ANTI-OXIDANTS





Indigenous Legumes also Enhance Dietary Diversity

**MINERAL CONCENTRATION OF SOME INDIGENOUS AFRICAN PULSES
(mg/100g Dry Product)**

Sample	Copper	Iron	Zinc	Calcium	Magnesium
Cowpea (maroon eyed)	0.69	4.10	3.31	95.25	141.89
Cowpea (black eyed)	0.70	4.68	2.23	78.73	183.32
Rice Bean	0.75	5.77	2.60	130.51	146.55
Brown Bean	0.59	3.50	2.84	95.25	120.07
Bambara G/Nut (Red Variety)	0.60	2.14	2.33	49.02	155.92
Bambara G/Nut (White Variety)	0.49	2.10	2.01	26.24	148.10

OIL SEEDS, NUTS & FRUITS – SOURCES OF FOOD OIL, DIETARY ENERGY, PROTEIN, PRO- VITAMIN A CAROTENOIDS



SAUCE THICKENERS, FOOD CONDIMENTS AND SPICES –
SUPPLIERS OF PROTEINS, MINERALS (Iron, Zinc,
Calcium, Magnesium), ENERGY, ANTI-OXIDANTS,
ASCORBIC ACID



SPICES — RICH SOURCES OF MINERALS, ANTI- OXIDANTS, INSULIN MEDIATING PHYTOCHEMICALS



Indigenous Sauce Condiments & Spices Provide Diversity & Nutrients

MINERAL CONTENT OF SOME INDIGENOUS AFRICAN SAUCE CONDIMENTS (mg/100g Dry Product)

Foods	Copper	Iron	Zinc	Calcium	Magnesium
Badkudi	1.01	4.21	2.06	485.38	314.84
Sili (<i>Sesamum alatum</i>)	1.63	3.67	5.18	875.58	248.33
Zabne	0.81	3.90	5.16	267.32	178.56
Kapok (<i>Ceiba guineensis</i>)	0.84	6.41	1.77	1028.15	588.85
Egusi (<i>Cucumeropsis edulis</i>)	1.77	5.51	4.11	87.68	390.7

Frison, E *et al*/ Food & Nutrition Bulletin 27 (2) 2006



INDIGENOUS FRUITS – RICH SOURCES OF
ASCORBIC ACID, ESSENTIAL FATTY ACIDS &
PROTEIN (Safou & Baobab), MINERALS (Calcium, Iron,
Magnesium),



INDIGENOUS FRUITS – DIETARY SOURCES OF ASCORBIC ACID, PROTEIN, CALCIUM, HYPOGLYCEMIC COMPOUNDS (Detar, Marula)



A Comparative View of Nutrient Profiles of Some Introduced and Indigenous Fruits of West Africa

Fruit	Energy (kcal)	Protein (%)	Carbohydrate (%)	Calcium (mg/100g)	Iron (mg/100g)	B/carotene mcg/100g	Ascorbic Acid mg/100g
Sweet Orange (<i>Citrus sinensis</i>)	45	0.6	10.5	28.0	-	75.0	46.0
Papaya (<i>Carica papaya</i>)	32	-	8.3	21.0	0.6	950.0	52.0
Banana (<i>Musa sapientum</i>)	88	1.5	20.6	9.0	1.4	120.0	9.0
Baobab (<i>Adansonia digitata</i>)	320	3.2	76.2	295.0	9.3	N/A*	337.0
Marula (<i>Sclerocarya birrea</i>)	N/A*	4.8	12.0	36.0	1.1	N/A*	403.0
Jujube (<i>Ziziphus mauritiana</i>)	97	1.9	25.2	712.5	6.3	N/A*	58.0

Sources: Osman MA. Plant Foods for Human Nutrition, 2004, 59: 29-33.

Jaenicke & Thiong'o Acta Horticulturae, 2000, 531: 245-249.

Ighodalo et al. Plant Foods for Human Nutrition, 1991, 41: 151-154

N/A* Values not available

INDIGENOUS FRUIT AND LEAF VEGETABLES – SUPPLIERS OF ASCORBIC ACID, MICRONUTRIENTS (Minerals & Vitamins), ANTI-OXIDANTS



Indigenous Vegetables do also Supply Beta Carotene to Local Diets

Potential Contribution of Green Leafy Vegetables to Daily Requirements of Vitamin A

Green Leaves	In vitro accessible all-trans- β -carotene per portion ¹ (μ g)		Contribution to daily Vitamin A requirement (%) ²	
	Without Oil	With Oil	Without Oil	With Oil
Amaranth (<i>Amaranthus sp</i>)	360	701	45	88
Cow pea (<i>Vigna unguiculata</i>)	419	1792	52	224
Sweet Potato (<i>Ipomoea batatas</i>)	166	867	21	108
Pumpkin (<i>Curcubita sp</i>)	429	1607	54	201

Adapted from: Mulokozi et al (2004) Plant Foods for Human Nutrition 59 : 1-9.

DRIED INDIGENOUS LEAFY VEGETABLES – RICH SOURCES OF MINERALS (Calcium, Iron, Magnesium), ANTI-OXIDANTS, ANTI-DIARRHEAL COMPOUNDS (Ziziphus mauritana)



DRIED INDIGENOUS LEAFY VEGETABLES SUPPLY SIGNIFICANT AMOUNTS OF MINERALS TO DAILY DIETS

Mineral Concentrations of Some Dried Indigenous Leafy Vegetables
(mg/100g)

Leafy Vegetable	Calcium	Iron	Zinc	Magnesium
<i>Adansonia digitata</i> (Boabab)	147.0	9.8	0.17	42.3
<i>Hibiscus sabdariffa</i> (Bissap)	124.0	11.9	0.73	78.7
<i>Amaranthus viridis</i> (Spinach)	164.0	8.8	0.80	126
<i>Ceratotheca</i> <i>sesamoides</i> (Zarma –local name)	84.5	12.4	0.28	35.7
<i>Moringa oleifera</i> (Moringa)	144.0	3.7	0.23	38.5

Sources: Sena, DJ *et al* Plant Foods for Human Nutrition 52 1998.

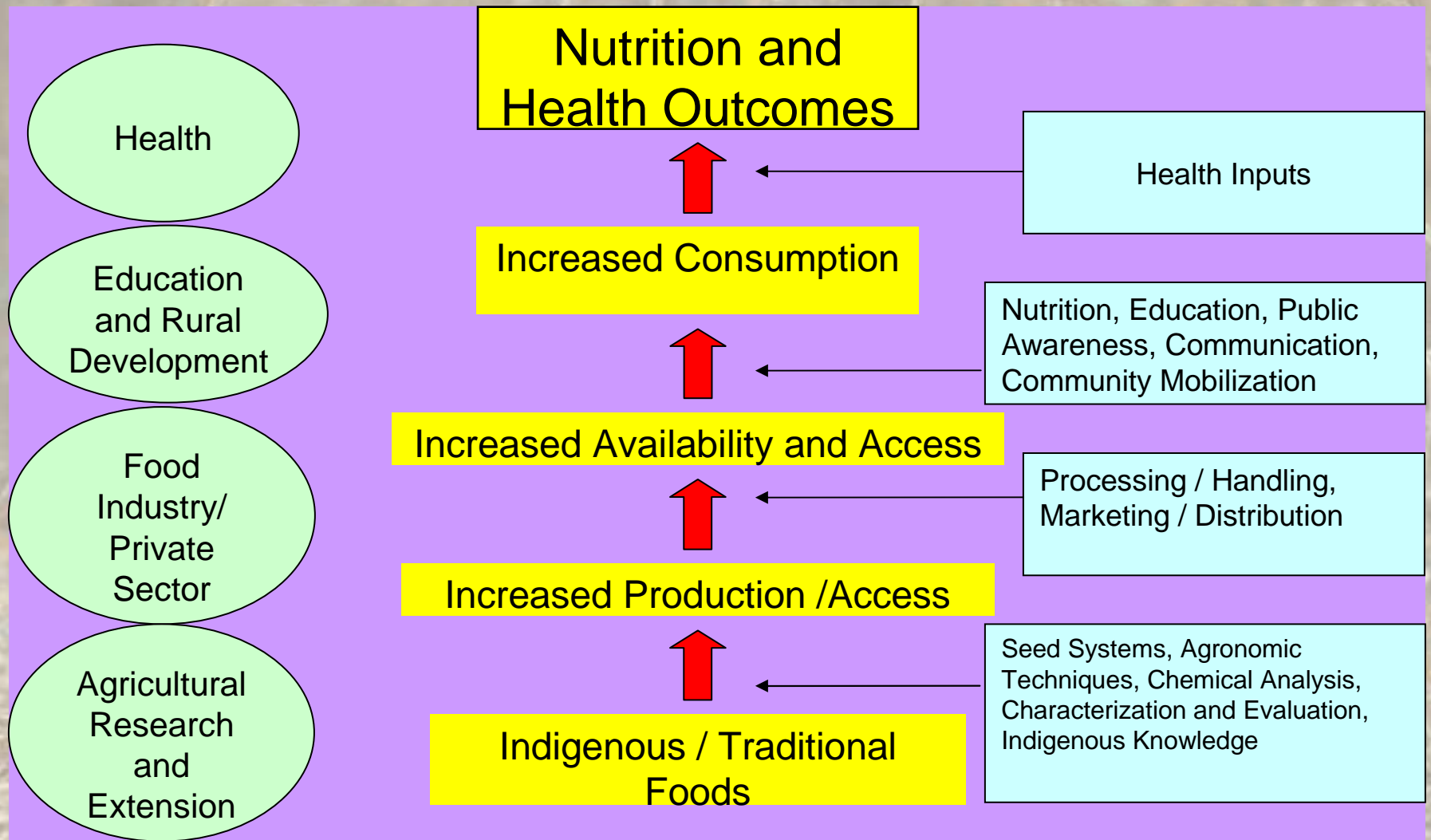
Smith, GC *et al* Intern. J. Food Science & Nutrition 47 1996.

FAO/WHO EXPERT CONSULTATION RECOMMENDED DIETARY INTAKES OF VITAMINS AND MINERALS (mg/day)

Age Group	Iron (Bioavailability of 5%)	Zinc (Low bioavailability)	Calcium American/Canadian/ European Data
Children (1-10)	12.0 – 17.8	8.4 – 11.3	500 - 700
Males (11-Adults)	27 - 37		
Females (11-Adults)	28-58		
Adolescents (10-18)		15.5 – 19.2	1300
Adult Females (19 – Menopause)		9.8	1000
Adult Males (19 – 65+)		14.0	1200
Lactating (↓7 – 12 months)	30.0	19.0 – 14.4	1000

Source : Human Vitamin and Mineral Requirements. Report of a Joint FAO/WHO Expert Consultation, Bangkok Thailand. Rome 2002.

The Cross-Cutting Nature of Interventions for Food and Nutrition Security



Consommez des Produits Locaux

With all the diversity of indigenous food resources I have presented, I believe I can convincingly say “nous devons consommer des produits locaux.”

