



WORLD FOOD DAY /WORLD FOOD WEEK  
2010

INTERNATIONAL SCIENTIFIC  
SYMPOSIUM

**BIODIVERSITY AND  
SUSTAINABLE DIETS**

UNITED AGAINST HUNGER



**Is the Mediterranean diet, world paragon,  
sustainable from field to plate?**

**Martine Padilla**

**CIHEAM-IAMM/UMR MOISA**

**Mediterranean Agronomic Institute, Montpellier,**





## The grid of Sustainable diet

	Environment	Nutrition	Economic	Socio-cultural
Agriculture	<p>Follow sustainable agricultural practices</p> <p>Enhance resilience of production systems</p> <p>Deploy and maintain diversity</p>	<p>Promote of diverse food</p> <p>Produce nutritionally dense Product</p>	<p>Deploy affordable cultivation practices</p> <p>Promote self reliance through local produce</p>	<p>Maintain traditional agriculture practices and promote local varieties</p>
Food Production	<p>Reduce impact of production, processing, commercialization</p>	<p>Preserve nutrients throughout the food chain</p>	<p>Strengthen local food systems</p> <p>Produce affordable food</p>	<p>Produce culturally acceptable food</p>
Consumption	<p>Reduce the environmental impact of feeding practices</p>	<p>Promote dietary diversity, food balance and seasonality</p>	<p>Promote access to dietary diversity</p>	<p>Safeguard food traditions and culture</p> <p>Meet local preferences &amp; taste</p>



## (1) Environment: the uniqueness of the Mediterranean area, one of 25 "hot spot" of biodiversity on the planet



- 25,000 plant species (Quezel 1985)
- 1.6% of World land but 10% of known flowering plants
- 0.7% of the world ocean, but 7% of known marine organisms and 18.4% of mammal species.
- Two of the eight Vavilov's Centres of origin and crop diversity (Harlan 1995)
- Many wild relatives of staple crops still present there (Heywood and Zohary 1995)
- High level of endemisms (50%) (Quezel 1985)
- Great environment diversity, early domestication, cultural diversity leading to great diversity in cultivated crops (Heywood 1998)

Source: S Padulosi, Parme, 2009



## A diverse landscape



**A large diversity of landscapes shaped by the practices of agriculture and livestock.**



**The landscape contributes to the well-being and environment.**

**Cereal, fruit growing, olive groves, vineyards, horticulture, gardening, on small perimeters.**



**Ranching on the land fallow or waves or the vast semi-desert lands.**



## Agriculture practices preserving the environment?



### Traditional agriculture with small scale farmers

**Mediterranean organic agriculture is growing, but covers a small percentage of agricultural land.**

**Italy = 4.5 %, Slovenia = 6.2% , Spain and Greece= between 2 and 3%, France= less than 2%, Tunisia = 1,5%, other countries= less 1% (Blue Plan, 2008)**

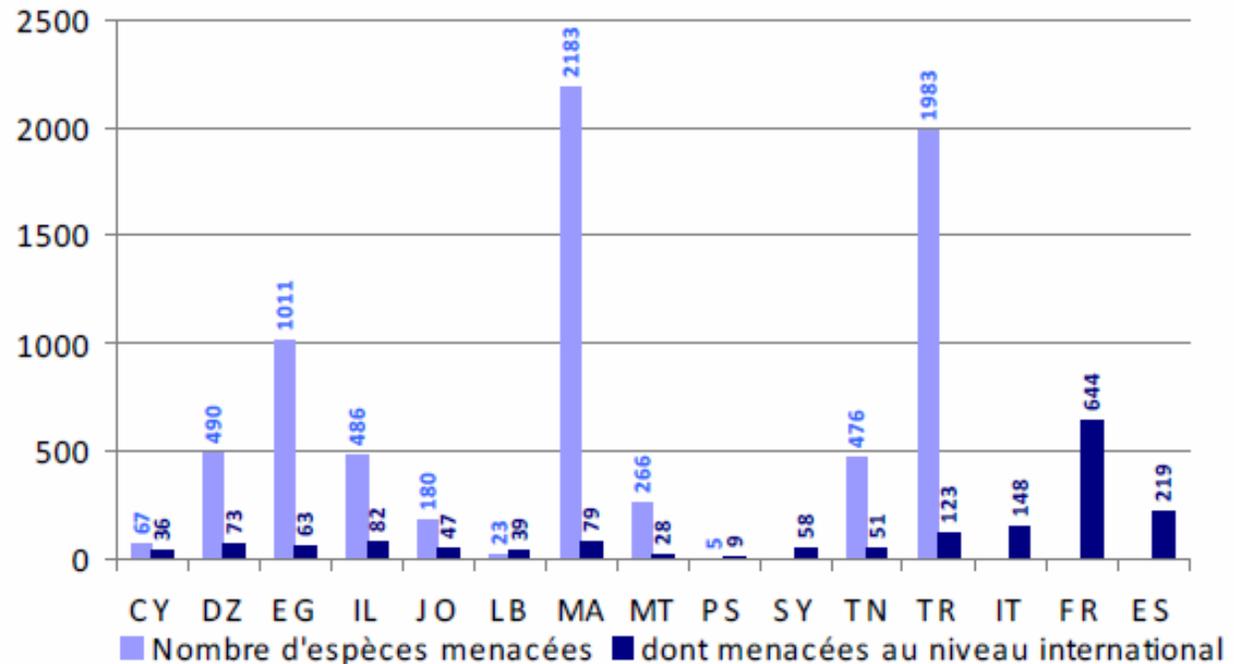




## Today, risks on Environment

Biodiversity is threatened because Pollution, Overexploitation, Natural disasters, Invasive Alien Species, Tourism, Intensive agriculture. The change in eating habits combined with the pursuit of profitable varieties, led to the abandonment of local varieties and cultural degradation of specific products

### State of biodiversity in the Mediterranean



Eurostat, 2008



## Risks on Environment



More and more greenhouses...

Region of Almería = 40,000 ha of vegetables, and Huelva = 7,500 hectares of strawberry. A majority of the workforce is composed of illegal immigrants.

A globalization of the Food market (absurd transport costs), an organization of the food chain in function of economic considerations, without taking into account the environmental impact.

30% of greenhouse gas emissions are linked to the food in France (Jancovici J.M., 2006)



## Use of water



Mediterranean population is particularly affected by water scarcity: it represents 60% of population of water-scarce countries in the world with less than 1000 m<sup>3</sup>/inhabitant/year (Blue Plan, 2008)

Water demand has doubled during the second half of 20th century to reach 280 billion m<sup>3</sup> per year for all riparian countries : 64% is for agriculture (82% in South countries), 13% for tourism (PNUE/PAM, 2004)

Moreover, the complexity of the food chain increases the use of virtual water.



## A push of the supermarket

5-10% in the South Food Market; 75% in North Food Market



According to expert estimates, the agro-industrial service model, characterized by mass consumption of industrialized products driven by hyper and supermarket, may locate in any region where the average revenue per capita is above \$ 5,000 per head

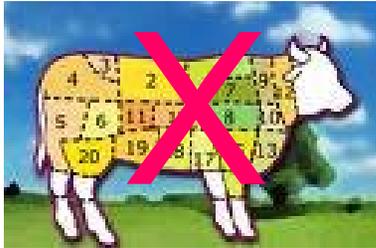
**Morocco** (32 Auchan /Marjane; Metro, Label'Vie; Casino/Asmak Assalam (Chaabi group)

**Tunisia** (1 Carrefour, 44 super Champion et Bonprix; 1 Géant Casino, 39 Monoprix et Touta; 44 super Magasin Général)

**Algérie** (1 Carrefour; Blanky/Promy; Cevital)



## (2) Nutrition Sustainability: Few animal products in the diet



Model	Final calories	Animal calories	%CA
Western	3500	1400	40
Mediterranean	3400	900	26
Poor countries	2000	80	4

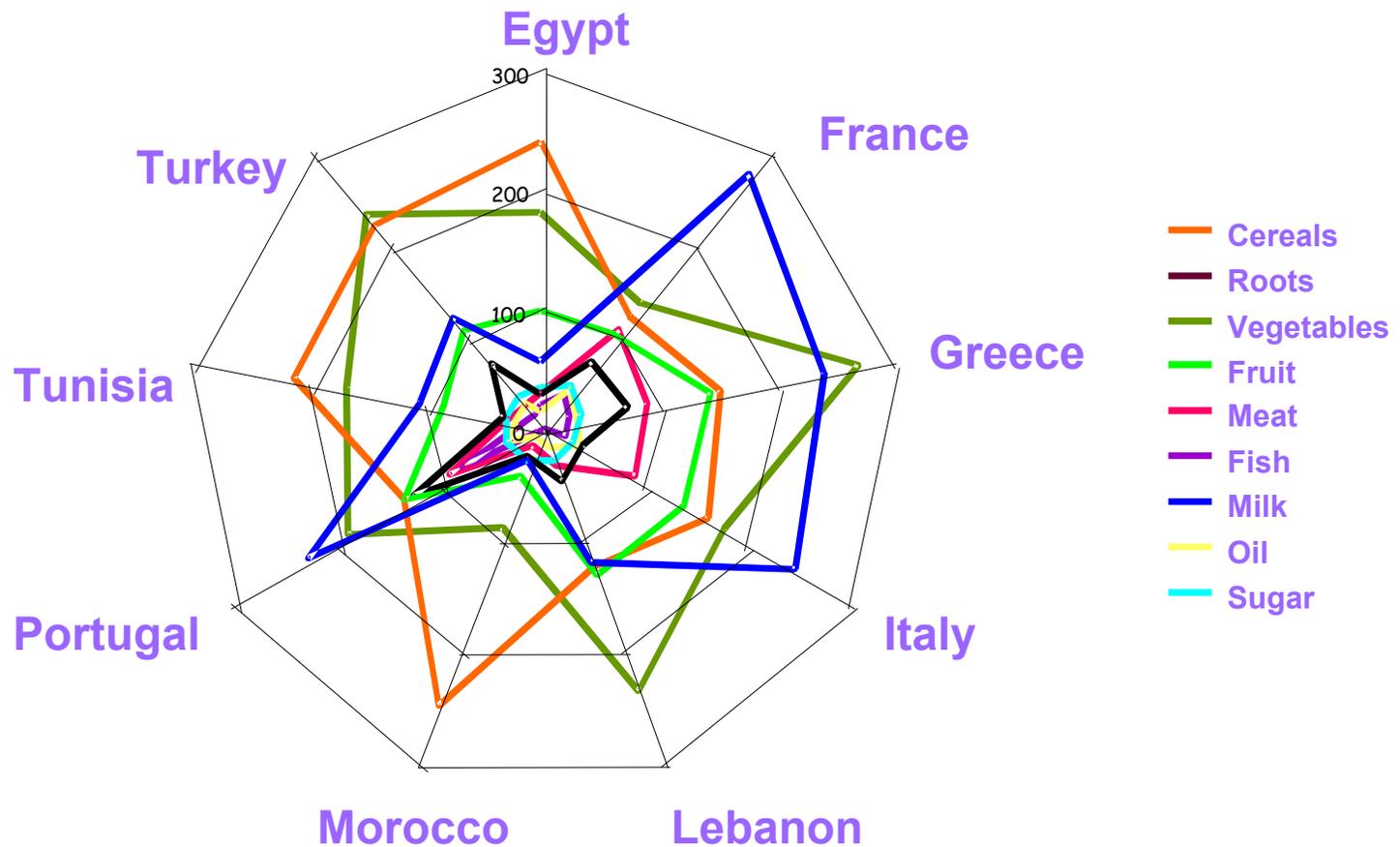
Type of Food	Area required
Vegetarian Food	500 m2
Dominant vegetarian Food	700 m2
Western diet	4000 m2
Mainly meat diet	7000 m2

### Ecological Footprint



# The Mediterranean variety is major Help to meet diverse nutritional needs

## Food Consumption in kg/p/year (2005)



Source : M Padilla, rapport annuel CIHEAM, 2003



## Specific dietary practices

**Special flavors:** acid, sweet and sour, salty-sweet, bitter, pungent

**Structured meals taken in conviviality**

Tapas: Spain, Italy: tramessi, Tunisia: kemia, Lebanon: meze Turkey: mézélík.



**A respect for seasonality**



## Wide variety of cooking techniques

### Millennium Experience in Products Processing

### Techniques of preparation

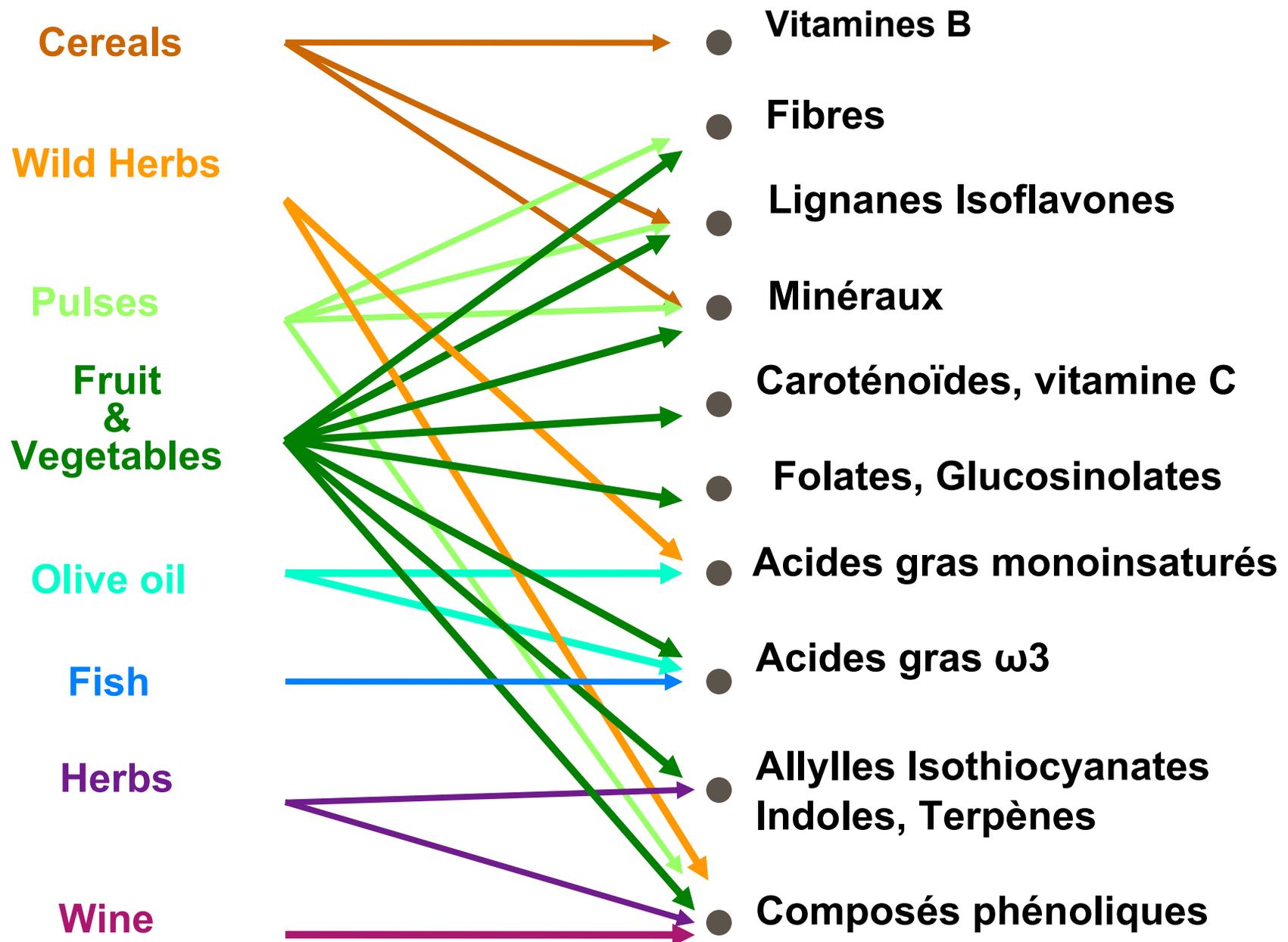
flavored, breaded, chopped, into batter, stuffed pastry, salads

### Techniques of preservation

sun drying, salting, fermentation, vinegar, oil, candied (mune)

### Cooking Techniques

Boil, simmer, roast, broil, fry, steam



**Healthy foods**

Source: M. Gerber



## Respect of human nature



**Adaptation to natural conditions in respect of the seasons**

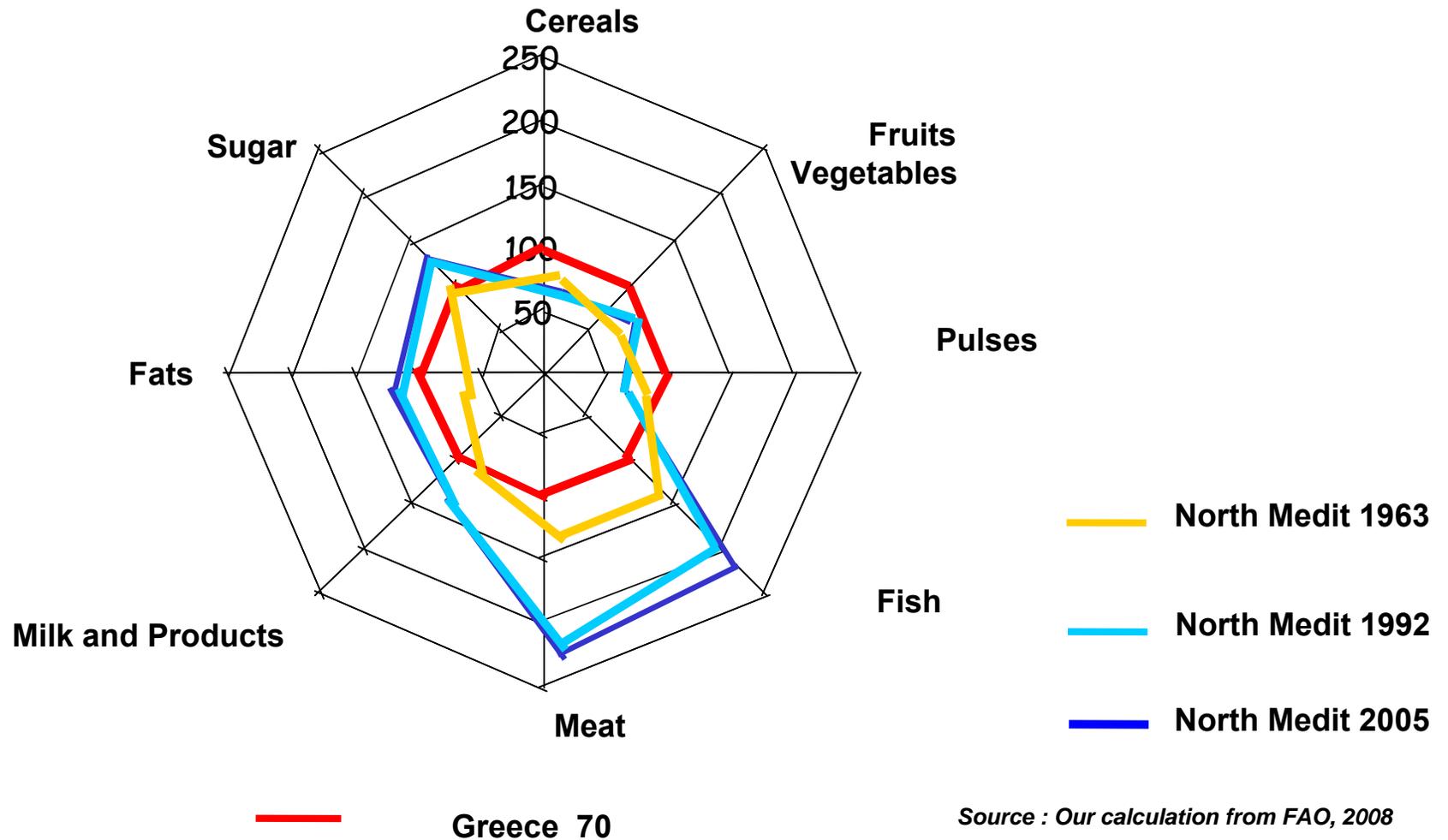
**Hippocratic influence food and eating behaviors: hot, cold, wet or dry properties.**

**Necessary balance between different kinds of products according to the seasons, the state of nature and the health of individuals.**



# Today, in Northern Mediterranean countries: the drift towards a model industrial design

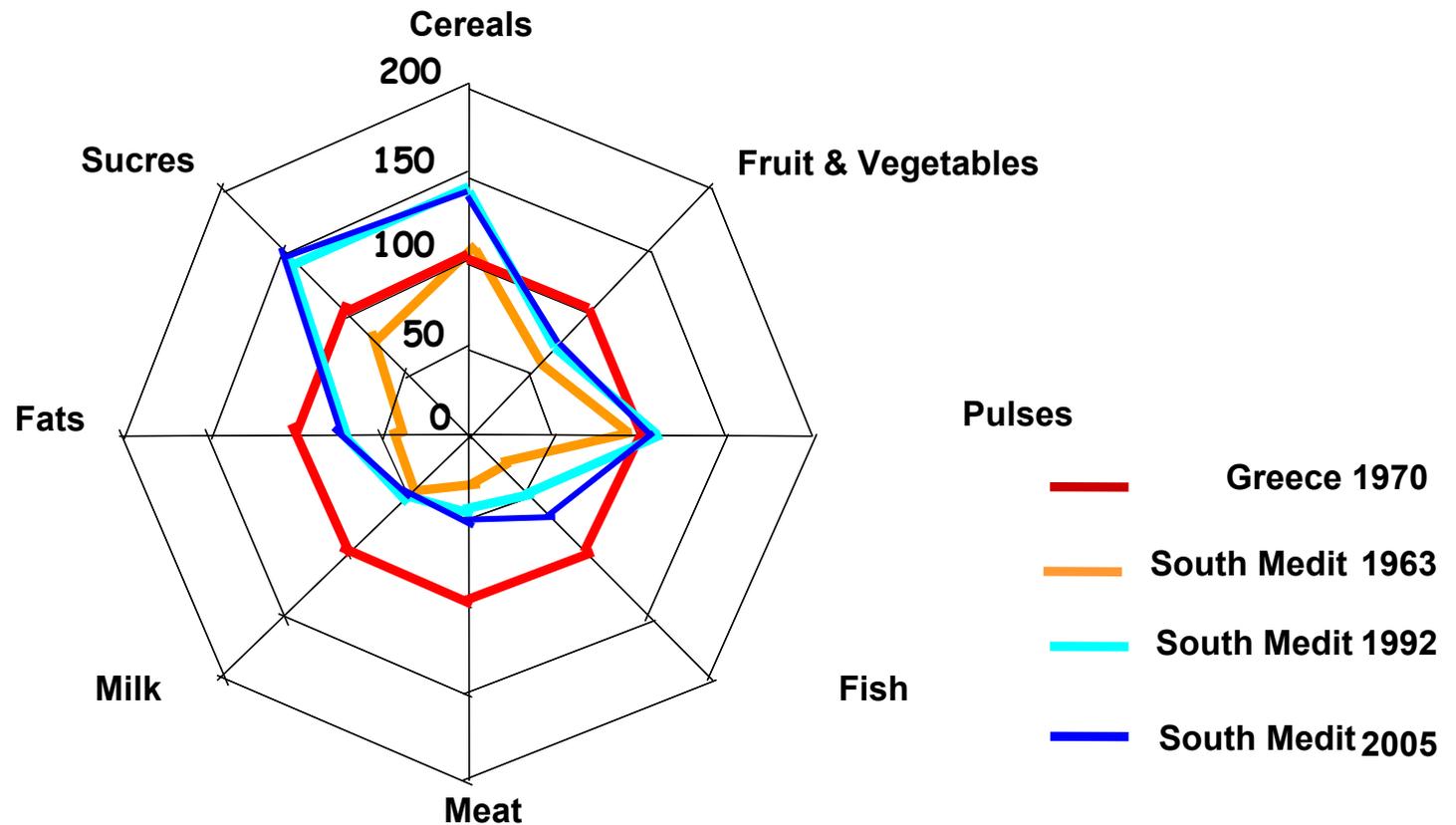
Changes related to availability /cap /day in the Northern Mediterranean countries  
1963 - 2005





# Eastern European countries and South countries: An unbalanced diet that gets worse

Changes related to availability /cap/day in the Southern Mediterranean countries (1963 – 2005)

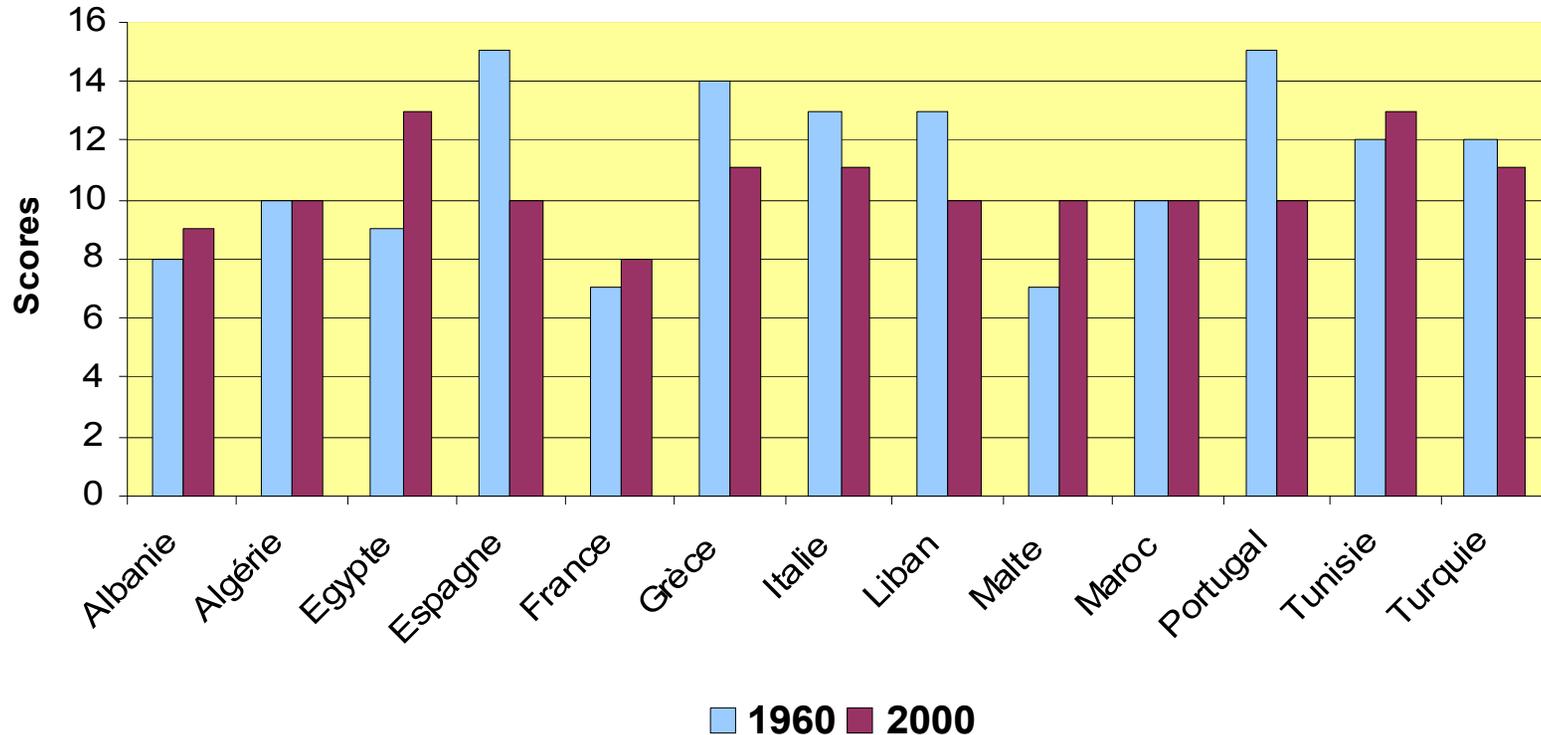


Source : Nos calculs sur base FAO



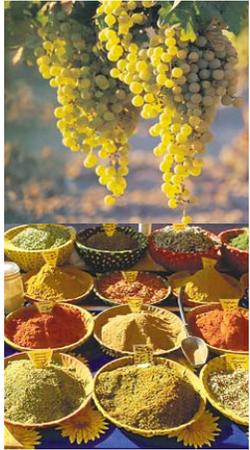
## A Food Quality Index (FQI) in regression

Based on the recommendations of the National Research Council, the American Health Association, and the latest proposals of the joint committee of FAO / WHO (2003)





## Major Concerns

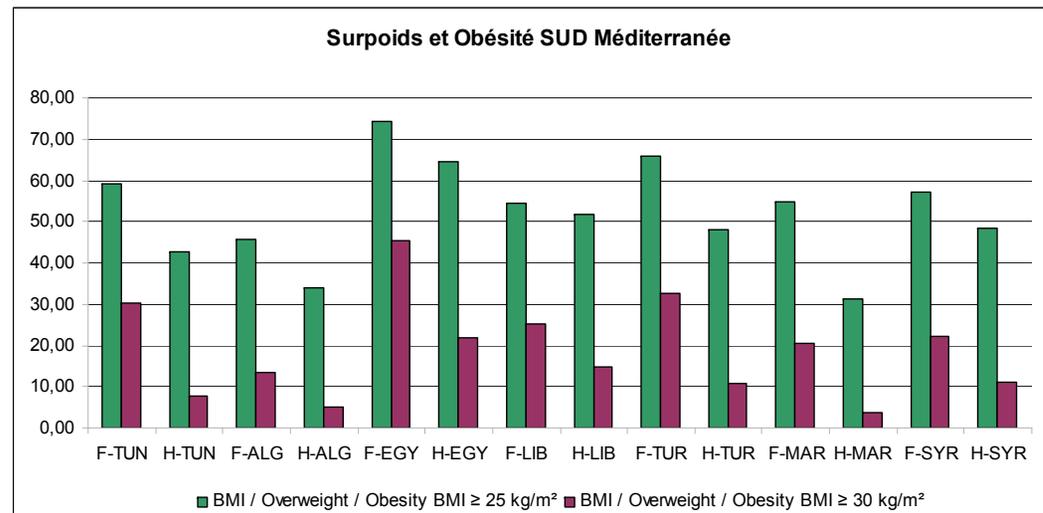
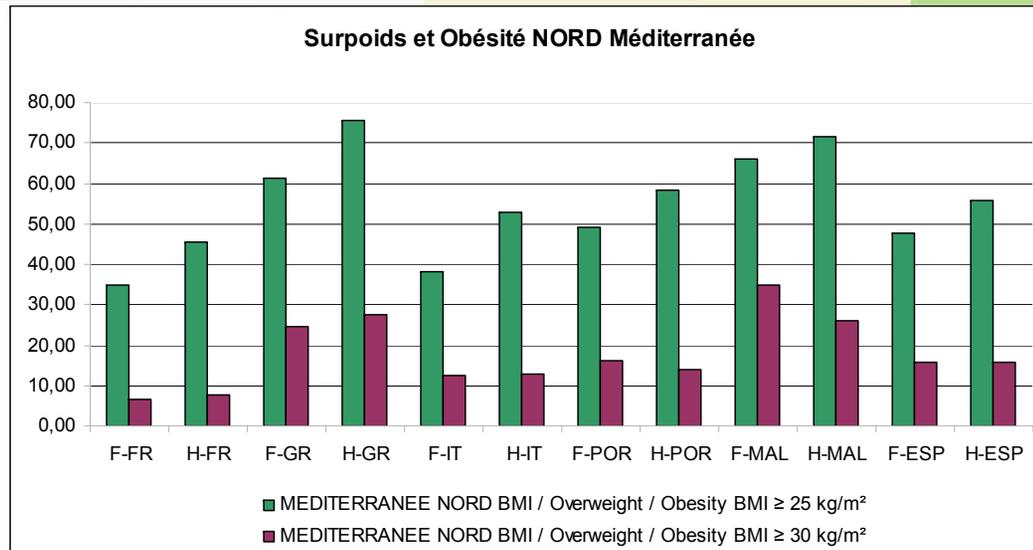


- Aggravation of saturated fats (meat, dairy and industrial foods) in Albania, Spain, France, Greece, Italy, Malta, Portugal
- Very sharp increase of sugars (sodas, cookies, desserts, ...): France, Italy, Spain, Portugal, Greece, Malta, Tunisia, Lebanon, Albania
- Reduced consumption of starches: bread, potatoes, ...
- Micronutrient deficiencies





## Obesity and overweight, eating behaviors mirror



Source: WHO, 2009



### (3) Social and Economy Sustainability

#### Strengthen local food systems



Historically, in Europe, the Mediterranean countries have the largest number of initiatives of Gis.

Locally, connection to the land, reputation, history and quality of the product.



Nearly 80% of Gis in European Union are from Mediterranean countries. France represents itself 20% followed by Italy, Portugal, Greece and Spain.

In South countries, this process is beginning



## **A strong attachment to traditions and culture**



**Food is an integral aspect of human culture**

**Culinary tradition passed from mother to daughter**

**Festive occasions: celebrations, religious rituals, ....**

**Strong ambivalence practices between acculturation and transmission of a cultural identity**

**A historical product, traditional, typical, rooted in a society surrounded by know-how, becomes a heritage product. The actors are mobilizing to protect and build a cultural product.**

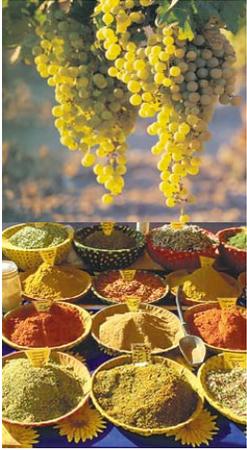


## The grid of Sustainable diet

	Environment	Nutrition	Economic	Socio-cultural
Agriculture	<p>Follow sustainable agricultural practices</p> <p>Enhance resilience of production systems</p> <p>Deploy and maintain diversity</p>	<p>Promote of diverse food</p> <p>Produce nutritionally dense Product</p>	<p>Deploy affordable cultivation practices</p> <p>Promote self reliance through local produce</p>	<p>Maintain traditional agriculture practices and promote local varieties</p>
Food Production	<p>Reduce impact of production, processing, commercialization</p>	<p>Preserve nutrients throughout the food chain</p>	<p>Strengthen local food systems</p> <p>Produce affordable food</p>	<p>Produce culturally acceptable food</p>
Consumption	<p>Reduce the environmental impact of feeding practices</p>	<p>Promote dietary diversity, food balance and seasonality</p>	<p>Promote access to dietary diversity</p>	<p>Safeguard food traditions and culture</p> <p>Meet local preferences &amp; taste</p>



## CONCLUSION



**The Mediterranean diet was proven as good for health; it has nutritional virtues, diversity, seasonality, freshness, culture, skills ....**

**The South Mediterranean countries should avoid to reproduce a Western pattern whose we perceive the limits today.**

**Our goal is not to cultivate the past, but to become aware of abuses of food systems in the Mediterranean. Traditional knowledge and experience are wiped out in the name of modernity. Don't we have to learn our past to ensure a sustainable modernity?**

