## IS HEALTHY EATING, HEALTHY FOR THE ENVIRONMENT? Water Footprint Pyramid

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BARILLA CENTER FOR

## FOOD AND NUTRITION

DECIDED TO RE-PROPOSE THE TRADITIONAL FOOD PYRAMID MODEL, WHICH WAS ELABORATED AND UPDATED TO INTEGRATE THE LATEST FINDINGS ON NUTRITION RESEARCH, COMBINED WITH THE IMPACT OF FOOD ON THE ENVIRONMENT.



#### THE ENVIRONMENTAL VALUES WERE OVERLAPPED IN DECREASING ORDER TO OBTAIN AN UPSIDE-DOWN ENVIRONMENTAL PYRAMID THAT RE-PRO-POSED THE SAME SUCCESION OF FOOD. SUCH ELABORATION WAS CALLED THE "DOUBLE PYRAMID".

## ALL DATA ABOUT ENVIRONMENTAL IMPACTS OF FOOD USED IN DOUBLE PYRAMID CONSTRUCTION ARE PUBLIC.

#### IN 2011 BCFN PUBLISHED THE SECOND EDITION OF THE DOUBLE PYRAMID.



NUTRIONAL PYRAMID

ENVIRONMENTAL PYRAMID

### ECOLOGICAL FOOTPRINT.



IN ORDER TO PROVIDE A CLEAR, COMPLETE AND EFFECTIVE COMUNICATION TOOL, ONLY THE ECOLOGICAL FOOTPRINT HAS BEEN USED AS REFERENCE INDEX FOR CREATING THE ENVIRONMENTAL PYRAMID.

MAN HAS LONG BEEN AWARE THAT CORRECT NUTRITION IS ESSENTIAL TO HEALTH. DEVELOPMENT AND MODERNIZATION HAVE MADE AVAILABLE TO AN INCREASING NUMBER OF PEOPLE A VARIED AND ABUNDANT SUPPLY OF FOODS. WITHOUT A PROPER CULTURAL FOUNDATION OR CLEAR NUTRITIONAL GUIDELINES THAT CAN BE APPLIED AND EASILY FOLLOWED ON A DAILY BASIS, INDIVIDUALS RISK FOLLOWING UNBALANCED – IF NOT ACTUALLY INCORRECT – EATING HABITS.

FOR THE FIRST TIME IN 2010 AND THEN IN 2011 WITH AN UP-DATED EDITION, THE BARILLA CENTER FOR FOOD & NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA NUTRITION OFFERED THE WELL-KNOWN FOOD PYRAMID IN A DOUBLE VERSION, POSITIONING FOODS NOT ONLY FOLLOWING THE CRITERIA

FROM THE "DOUBLE PYRAMID" IT CAN BE SEEN THAT THOSE FOODS WITH HIGHER RECOMMENDED CONSUMPTION LEVELS, ARE ALSO THOSE WITH LOWER ENVIRONMENTAL IMPACT. CONTRARILY, THOSE FOODS WITH LOWER RECOMMENDED CONSUMPTION LEVELS, ARE ALSO THOSE WITH LOWER ALSO THOSE FOODS WITH HIGHER RECOMMENDED CONSUMPTION LEVELS, ARE ALSO THOSE WITH LOWER RECOMMENDED CONSUMPTION LEVELS, ARE ALSO THOSE WITH HIGHER ENVIRONMENTAL IMPACT. IN OTHER WORDS, IN A UNIFIED MODEL, IT IS CLEAR THE CONNECTION BETWEEN TWO DIFFERENT BUT HIGHLY-RELEVANT GOALS: HEALTH AND ENVIRONMENTAL PROTECTION.

# HOW MUCH WATER DO WE EAT? Water Footprint Pyramid "BARILLA CENTER FOR FOOD AND NUTRITION"

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## **BARILLA CENTER FOR** FOOD AND NUTRITION

#### HAS PUBLISHED TWO WATER FOOTPRINT PYRAMIDS MEASURING THE AMOUNT OF WATER REQUIRED TO PRODUCE FOOD AND BEVERAGES.



**POPULATION INCREASE, CLIMATE CHANGE, UNREGULATED USE AND WASTE** HAVE LED US TO ASK OURSELVES IF WE WILL HAVE SUFFICIENT FRESHWATER IN THE FUTURE FOR EATING, DRINKING, FARMING AND MANUFACTURING.

## **ADOPTING MEDITERRANEAN** DIET IS HEALTHY FOR YOU AND GOOD FOR THE ENVIRONMENT

CHOOSING THE DAILY VEGETARIAN MENU ALLOWS YOU TO REDUCE OF 1/3 THE WATER FOOTPRINT RELATED TO THE FOOD YOU EAT, ALTHOUGH BOTH MENU ARE BALANCED FROM A NUTRITIONAL POINT OF VIEW.

**BARILLA CENTER FOR FOOD AND NUTRITION ALSO SUGGESTED** BEHAVIOURS AIMED AT A SUSTAINABLE WATER CONSUMPTION

> ALSO FROM NUTRITIONAL POINT OF VIEW, SINCE EATING HABITS AFFECTED EVERYONE'S WATER FOOTPRINT.







#### **IN A MEAT-RICH DIET**, EACH INDIVIDUAL CONSUMES **DAILY 4,000-5,000 LITRES OF** WATER.



ON THE OTHER HAND, DAILY WATER CONSUMPTION IN A "VEGETARIAN" DIET IS "JUST" 1,500-2,600 LITRES.

THE BARILLA CENTER FOR FOOD & NUTRITION (BCFN) COLLECTED ALL AVAILABLE AND PUBLIC WATER FOO TAKEN INTO ACCOUNT IN THE CLASSIC NUTRITIONAL PYRAMID; THESE VALUE WERE OVERLAPPED IN DESCENDING ORDER TO OBTAIN AN UPSIDE-DOWN PYRAMID THAT RE-PROPOSES THE SAME SUCCESSION OF FOODS PRESENTED IN THE FOOD PYRAMID. SUCH ELABORATION HAS BEEN CALLED "WATER FOOTPRINT OF THE FOOD PYRAMID". BCFN ALSO COLLECTED WATER FOOTPRINT AVAILABLE DATA ABOUT BEVERAGES AND THE RELATIVE PYRAMID HAS BEEN CONSTRUCTED. THE EVIDENCE OF TRUE INTEREST THAT EMERGES FROM THESE THEME IS TO DEMONSTRATE THAT FOLLOWING THE MEDITERRANEAN DIET PUT FORWARD BY THE TRADITIONAL FOOD-NUTRITION PYRAMID NOT ONLY LEADS TO AN IMPROVEMENT IN QUALITY OF LIFE BUT ALSO YIELDS A DECISIVELY LOWER IMPACT, EXPRESSED AS WATER FOOTPRINT, ON THE ENVIRONMENT.

# **SUSTAINABILITY ASSESSMENT** FOR DURUM WHEAT CULTIVATION

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SINCE IT HAS BEEN DEMONSTRATED THAT THE AGRICULTURAL PHASE IS THE ONE THAT MOST CONTRIBUTES TO THE ENVIRONMENTAL IMPACT OF PASTA, BARILLA HAS UNDERTAKEN A STUDY AIMED TO IMPROVE THE SUSTAINABILITY OF DURUM

#### WHEAT CULTIVATION.

#### **THE INDICATORS:**

**CARBON FOOTPRINT:** REPRESENTS THE TOTAL AMOUNT OF GHG (GREENHOUSE GASES) EMITTED IN THE LIFE CYCLE

**GROSS REVENUE:** REPRESENTS THE DIF-FERENCE BETWEEN THE GMP (GROSS MARKETABLE PRODUCTION) AND THE COST OF PRODUCTION OF THE CROPS.

NITROGENUSE EFFICIENCY (NUE): REPRE-SENTS THE AMOUNT OF GRAIN PRODUCED PER UNIT OF NITROGEN DISTRIBUTED ON THE CROP OF DURUM WHEAT.

**DON RISK:** EXPRESSES THE RISK OF CON-TAMINATION OF GRAIN BY DEOXYNIVALE-NOL (DON), A DANGEROUS MYCOTOXIN THAT IS DEVELOPED BY A GROUP OF PATH-OGENIC FUNGI (FUSARIUM SPP.) THAT AT-TACK DURUM WHEAT.

	LOMBARD	Y-VENETO REG	IONS	>
CORN*	Corn	Durum wheat	Corn	Corn
INDUSTRI AL	Soy	Durum wheat	Rapeseed	Corn
	EMIL	IA-ROMAGNA		
CERE AL*	Corn	Durum wheat	Sorghum	Wheat
INDUSTRI AL	Soy	Durum wheat	Corn	Wheat المحمد
HORTICULTURE	Tomato	Durum wheat	Corn	Wheat }
	CEN	NTR AL ITALY		and and a second
CERE AL*	Durum wheat	Durum wheat	Sorghum	Durum wheat
PROTEINS	Peas	Durum wheat	Peas	Durum wheat
FODDER	Alfalfa	Alfalfa	Alfalfa	Durum wheat
INDUSTRI AL	Sunflower	Durum wheat	Rapeseed	Durum wheat
	SOUTHERN	N ITALY AND SI	ICILY	
CERE AL MONOCULTURE*	Durum wheat	Durum wheat	Durum wheat	Durum wheat
FODDER	Forage	Durum wheat	Forage	Durum wheat
PROTEIC	Chick peas	Durum wheat	Chickpeas	Durum wheat
INDUSTRI AL	Tomato	Durum wheat	Durum wheat	Durum wheat
*Standard crop rotation norma	lly adopted in each ar	rea.		

Source: Sustainability of Cropping Systems with durum wheatin "Grano Duro News," 2011.

AGRONOMIC AND ECONIMIC STUDIES WERE INTEGRATED IN THE CALCULATION, CONDUCTED WITH THE LIFE CYCLE ASSESSMENT

#### METHODOLOGY, OF CARBON, WATER AND ECOLOGICAL FOOTPRINTS.



<sup>\*\*</sup>The difference between the average values measured for crop rotations and the values recorded in the cereal systems



Central Italy Emilia-Romagna Lombardy-Veneto regions Southern Italy and Sicily \*Standard rotation of crops normally adopted in each area. \*\*The difference between the average values measured for crop rotations and the values recorded in the cereal systems.



<sup>\*\*</sup>The difference between the average values measured for crop rotations and the values recorded in the cereal systems



<sup>\*</sup>Standard rotation of crops normally adopted in each area

Source: Sustainability of Cropping Systems with durum wheatin "Grano Duro News," 2011.

THE STUDY DEMONSTRATED THAT FARMERS COULD SIGNIFICANTLY REDUCE **CARBON EMISSION** AND OTHER ENVIRONMENTAL IMPACTS RELATED TO THE **CULTIVATION** WITHOUT COMPROMISING QUALITY AND INCOME.

IT'S NECESSARY FOR THEM TO CHOOSE CROP ROTATIONS ADEQUATE TO THE REGION, TO USE FERTILIZERS IN RELATION TO THE NEEDS OF ROTATION, TO BE TIMELY IN THE WEEDS AND PESTS MANAGEMENT.

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THE QUALITATIVE RESULTS WERE TAKEN INTO CONSIDERATION FOR THE PREPARATION OF A HANDBOOK WITH GUIDELINES FOR THE FARMERS TO IMPROVE SUSTAINABILITY OF DURUM WHEAT PRODUCTION. THESE INDICATIONS WILL BE FURTHER TESTED THROUGH MORE EXTEN-SIVE IN-FIELD EXPERIMENTATIONS. THE PROJECT IS BEING EXTENDED TO OTHER COUNTRIES AND TO SOFT WHEAT AND RYE PRODUCTION.



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