

IS HEALTHY EATING, HEALTHY FOR THE ENVIRONMENT?

Water Footprint Pyramid

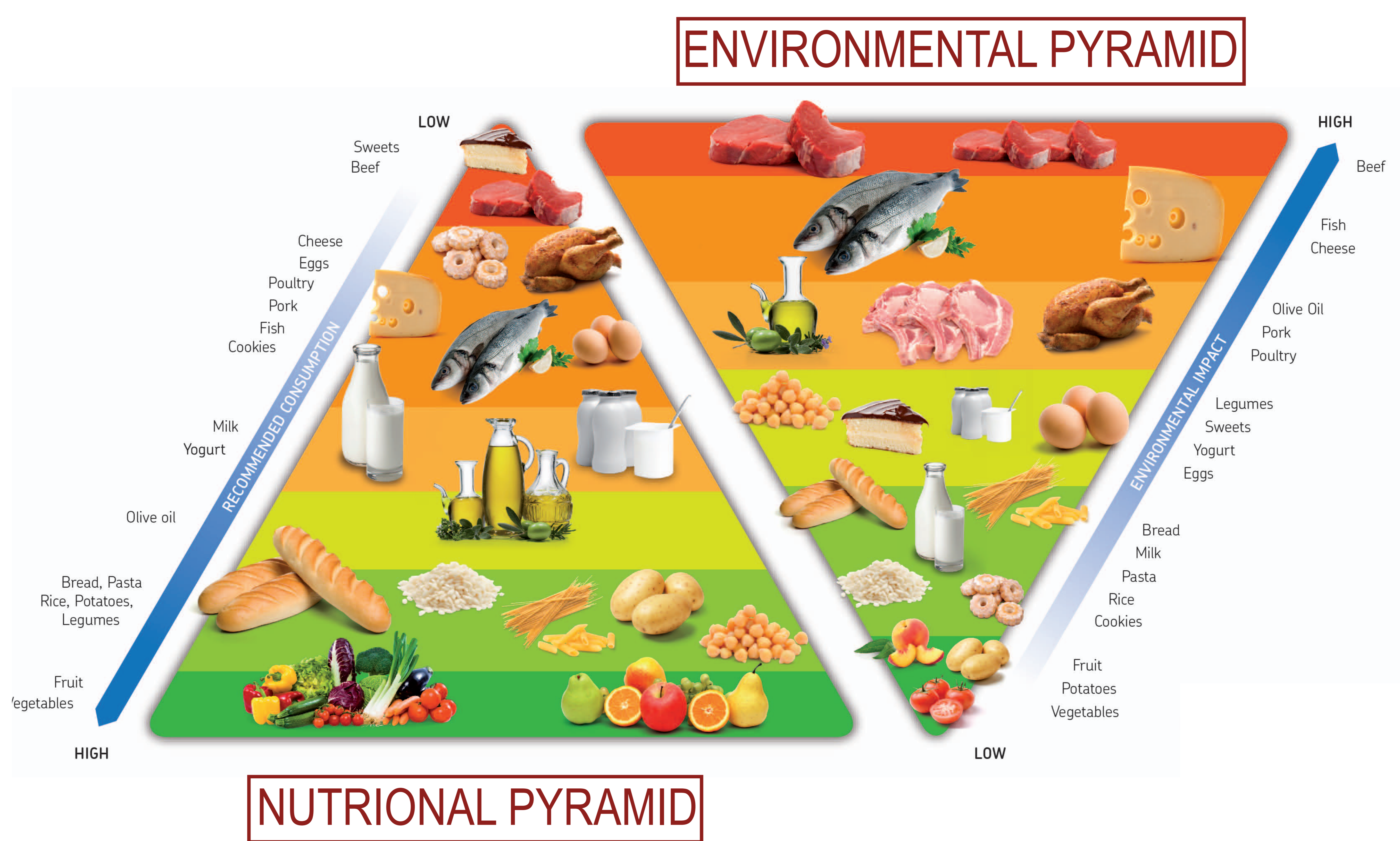
| Luca Ruini | Carlo Alberto Pratesi | Massimo Marino | Sonia Pignatelli |
| Barilla G.R Fratelli SPA | Roma Tre University | Life Cycle Engineering |



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& NUTRITION

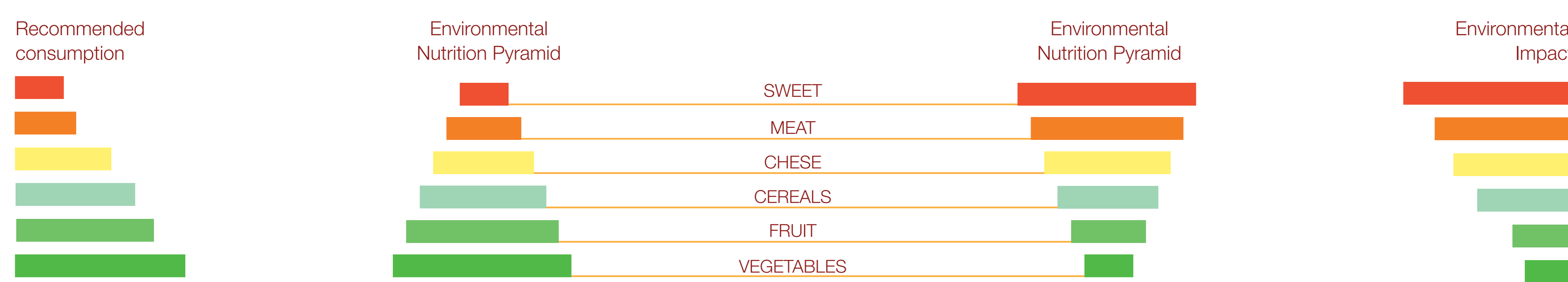
BARILLA CENTER FOR FOOD AND NUTRITION

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-PROPOSED THE SAME SUCCESSION OF FOOD. SUCH ELABORATION WAS CALLED THE “DOUBLE PYRAMID”.

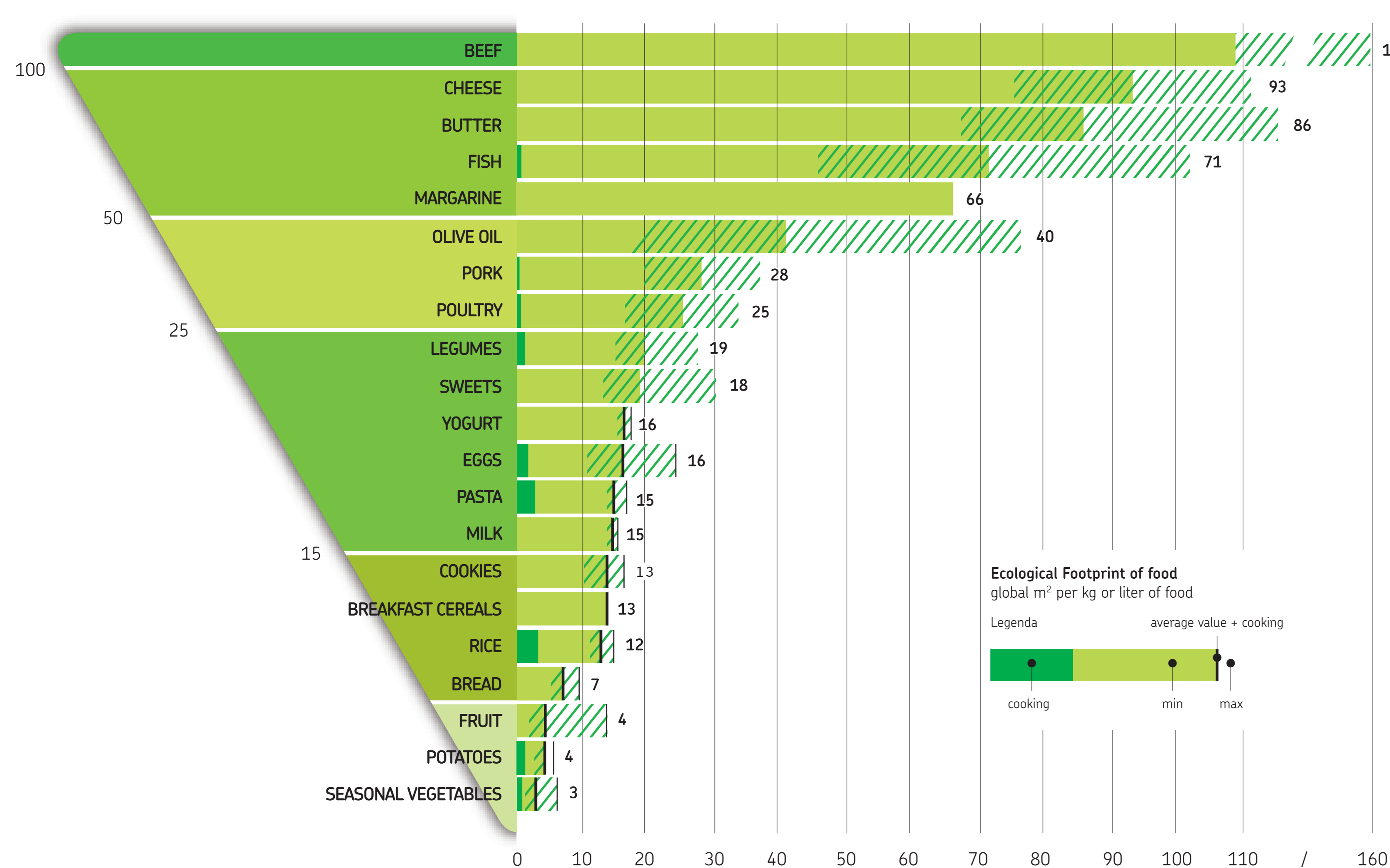
ALL DATA ABOUT ENVIRONMENTAL IMPACTS OF FOOD USED IN DOUBLE PYRAMID CONSTRUCTION ARE PUBLIC. IN 2011 BCFN PUBLISHED THE SECOND EDITION OF THE DOUBLE PYRAMID.



NUTRITIONAL PYRAMID

ENVIRONMENTAL PYRAMID

ECOLOGICAL FOOTPRINT



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

HOW MUCH WATER DO WE EAT?

Water Footprint Pyramid "BARILLA CENTER FOR FOOD AND NUTRITION"

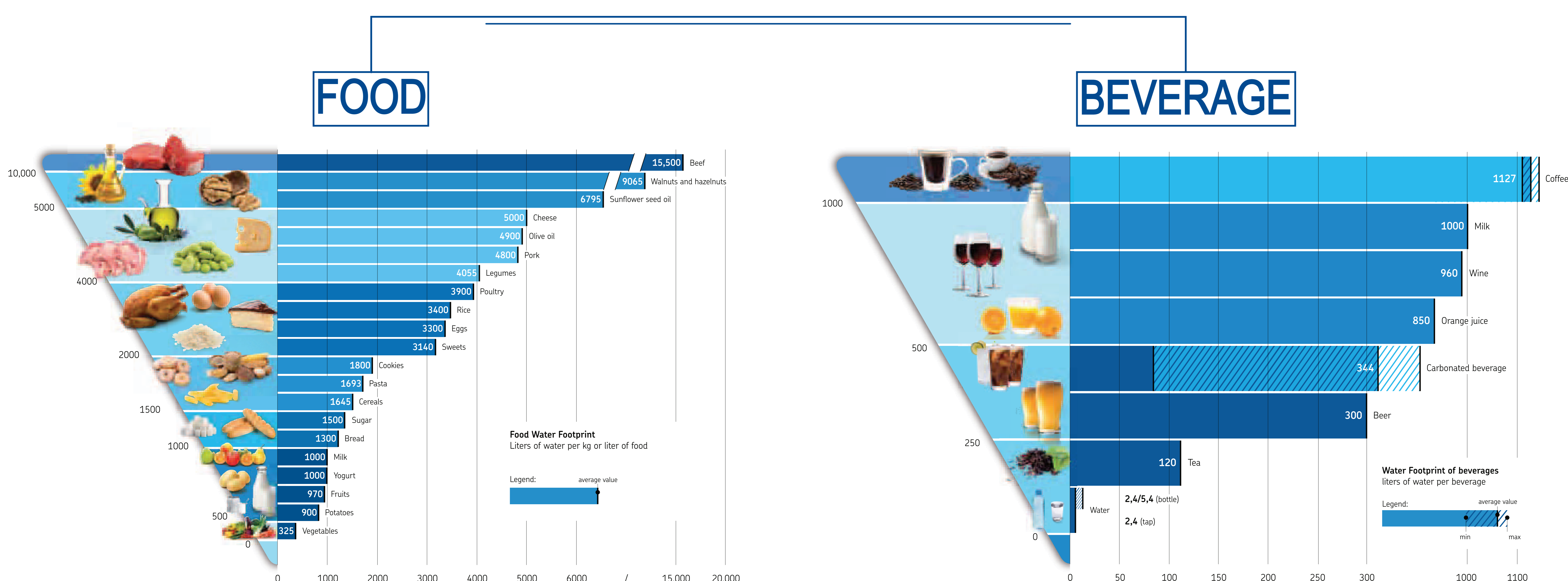
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BARILLA CENTER FOR FOOD AND NUTRITION

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



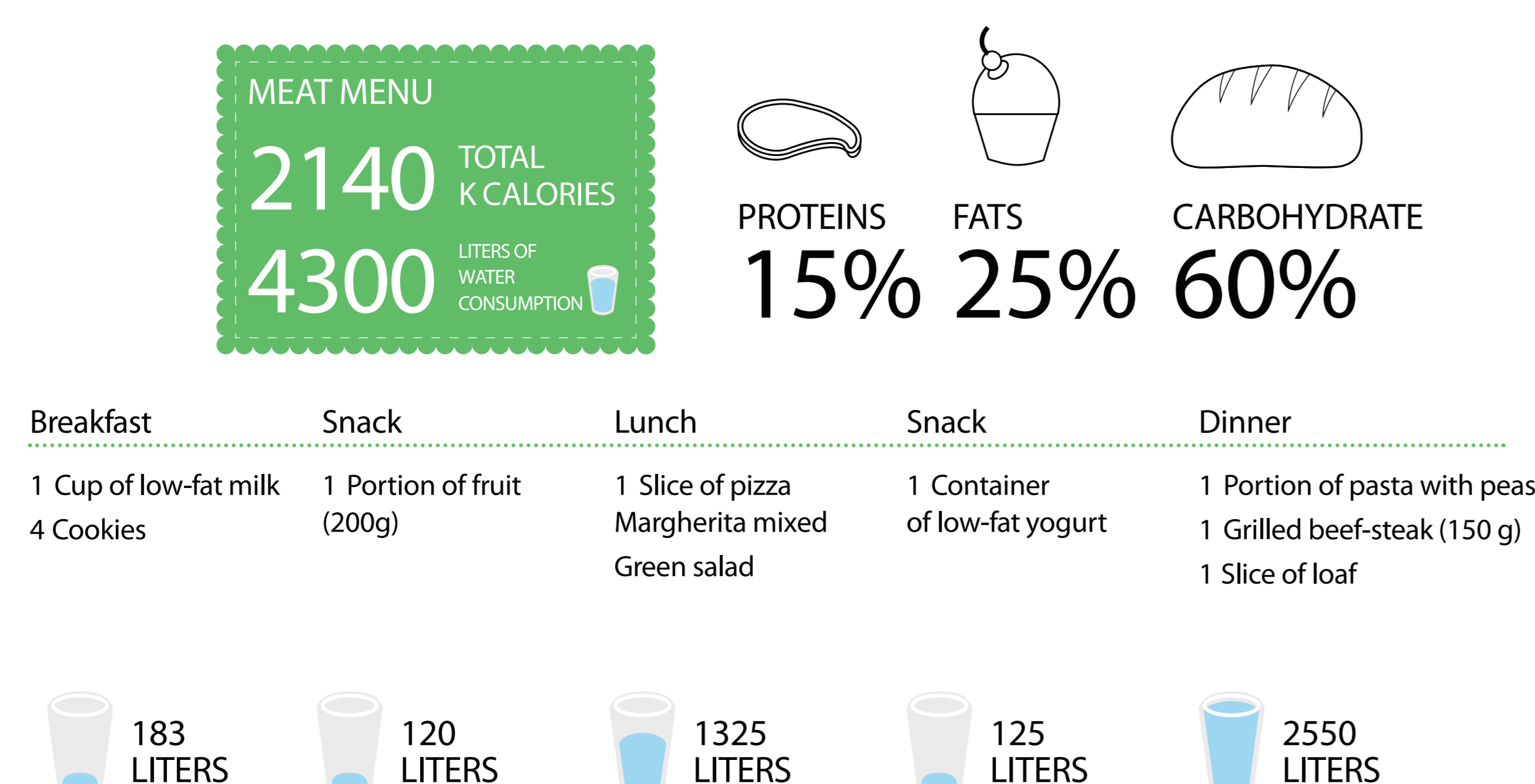
POPULATION INCREASE, CLIMATE CHANGE, UNREGULATED USE AND WASTE HAVE LED US TO ASK OURSELVES IF WE WILL HAVE SUFFICIENT FRESHWATER IN THE FUTURE FOR EATING, DRINKING, FARMING AND MANUFACTURING.

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.

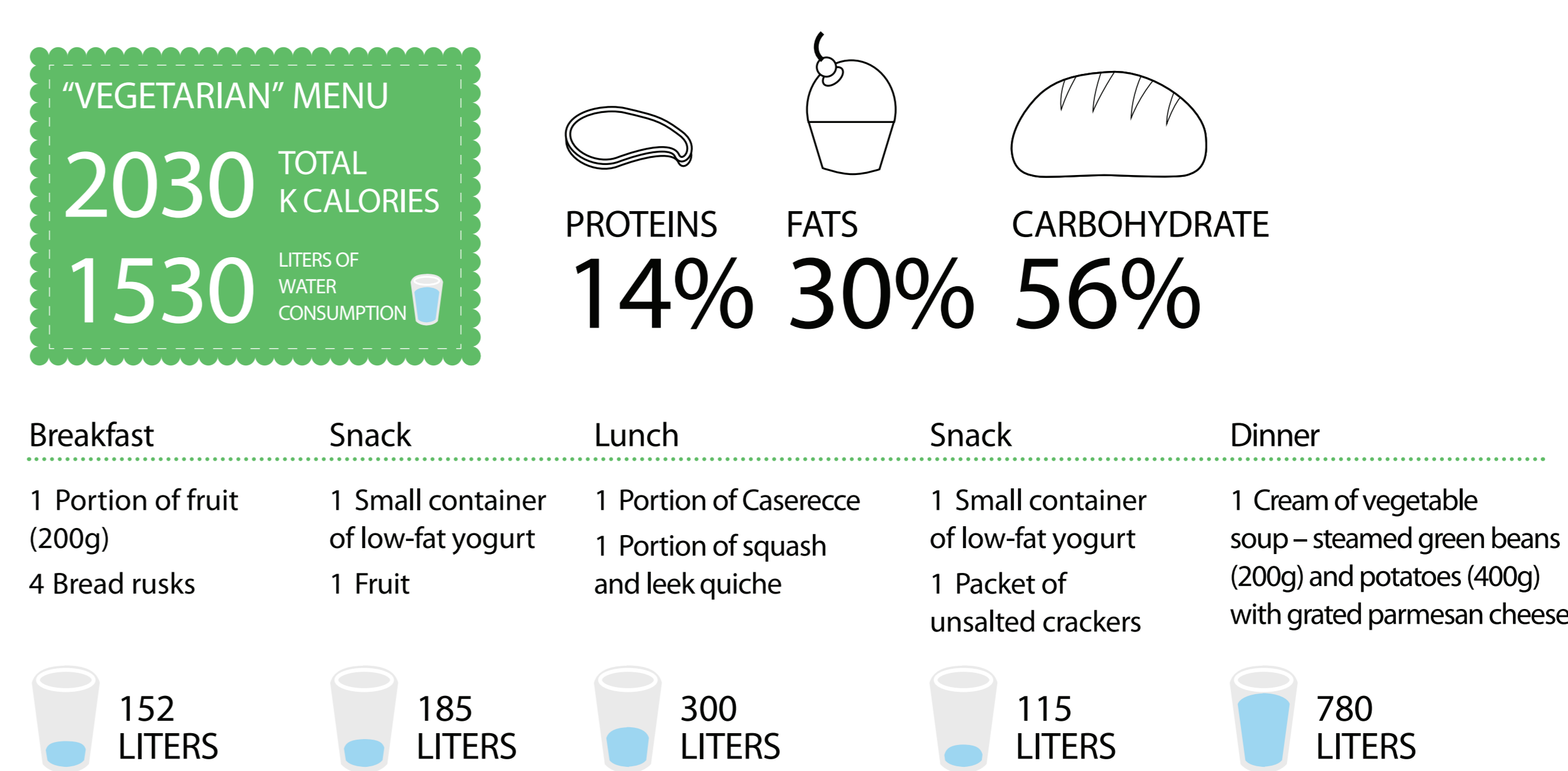
BARILLA CENTER FOR FOOD AND NUTRITION ALSO SUGGESTED BEHAVIOURS AIMED AT A SUSTAINABLE WATER CONSUMPTION ALSO FROM NUTRITIONAL POINT OF VIEW, SINCE EATING HABITS AFFECTED EVERYONE'S WATER FOOTPRINT.

MEAT-RICH DIET



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

VEGETARIAN DIET



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

SUSTAINABILITY ASSESSMENT FOR DURUM WHEAT CULTIVATION

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 Pierluigi Meriggi | **Horta S.r.l.**
 Massimo Marino | **Life Cycle Engineering**



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:

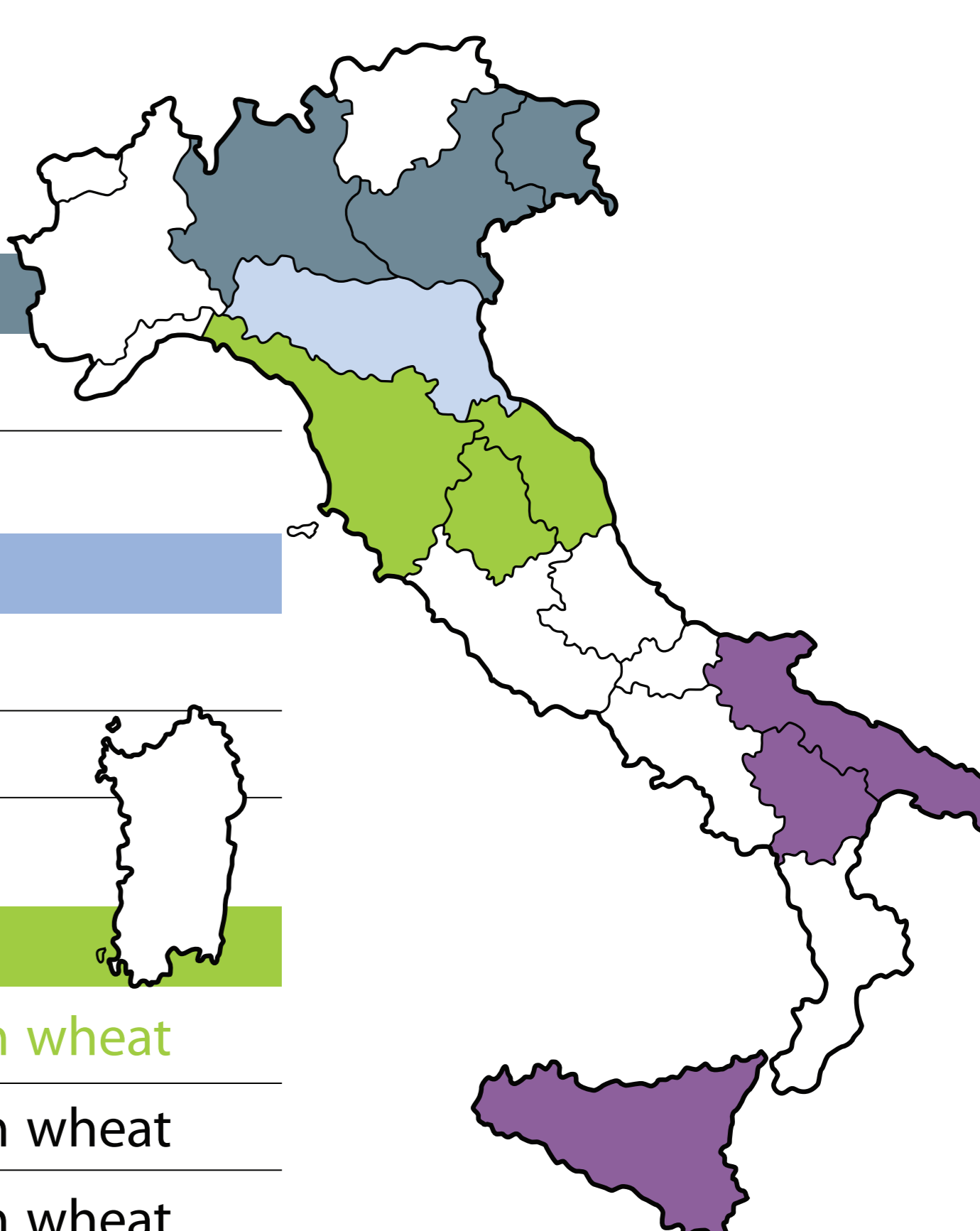
CARBON FOOTPRINT: REPRESENTS THE TOTAL AMOUNT OF GHG (GREENHOUSE GASES) EMITTED IN THE LIFE CYCLE

GROSS REVENUE: REPRESENTS THE DIFFERENCE BETWEEN THE GMP (GROSS MARKETABLE PRODUCTION) AND THE COST OF PRODUCTION OF THE CROPS.

NITROGEN USE EFFICIENCY (NUE): REPRESENTS THE AMOUNT OF GRAIN PRODUCED PER UNIT OF NITROGEN DISTRIBUTED ON THE CROP OF DURUM WHEAT.

DON RISK: EXPRESSES THE RISK OF CONTAMINATION OF GRAIN BY DEOXYNIVALENOL (DON), A DANGEROUS MYCOTOXIN THAT IS DEVELOPED BY A GROUP OF PATHOGENIC FUNGI (FUSARIUM SPP.) THAT ATTACK DURUM WHEAT.

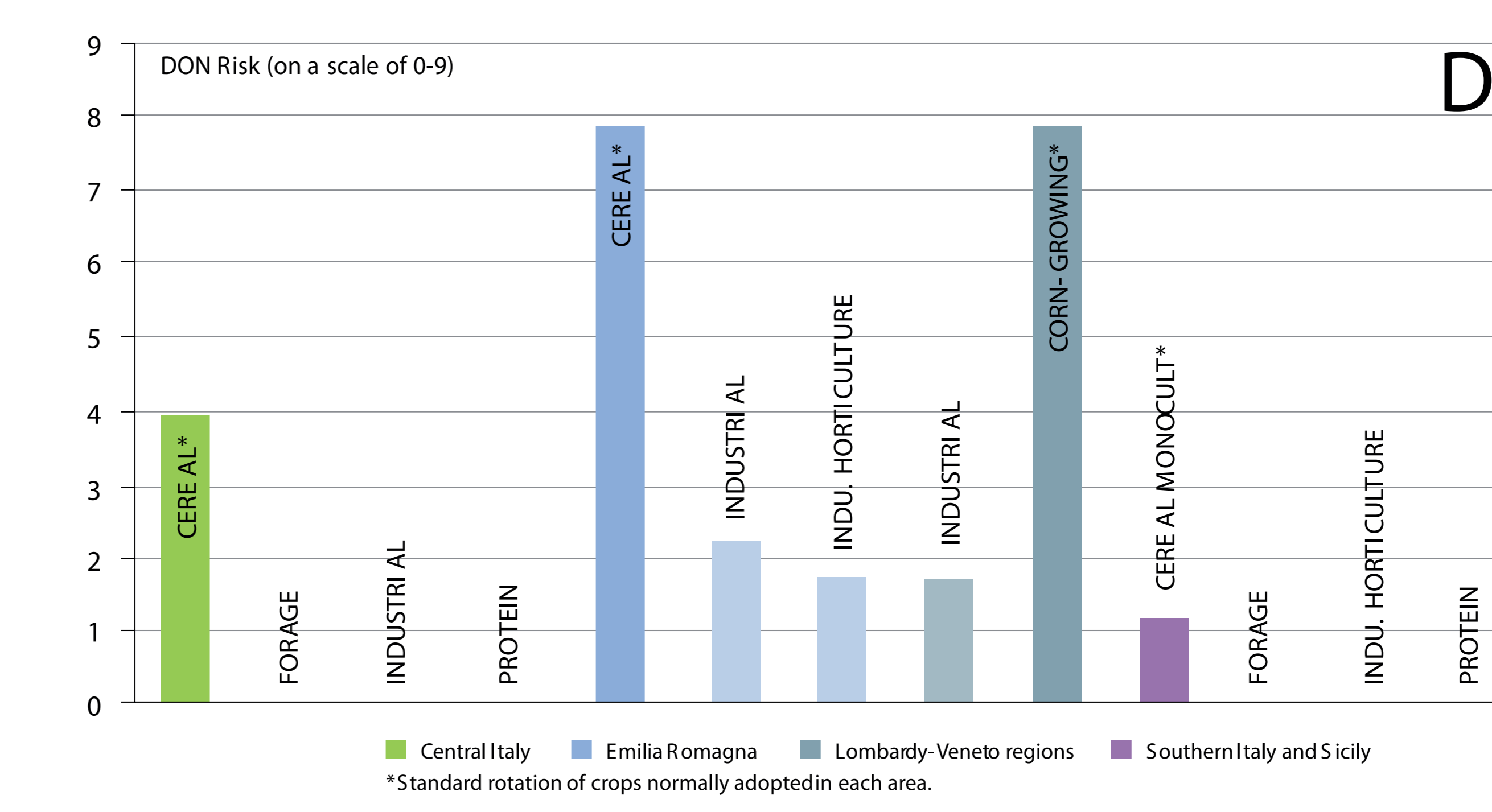
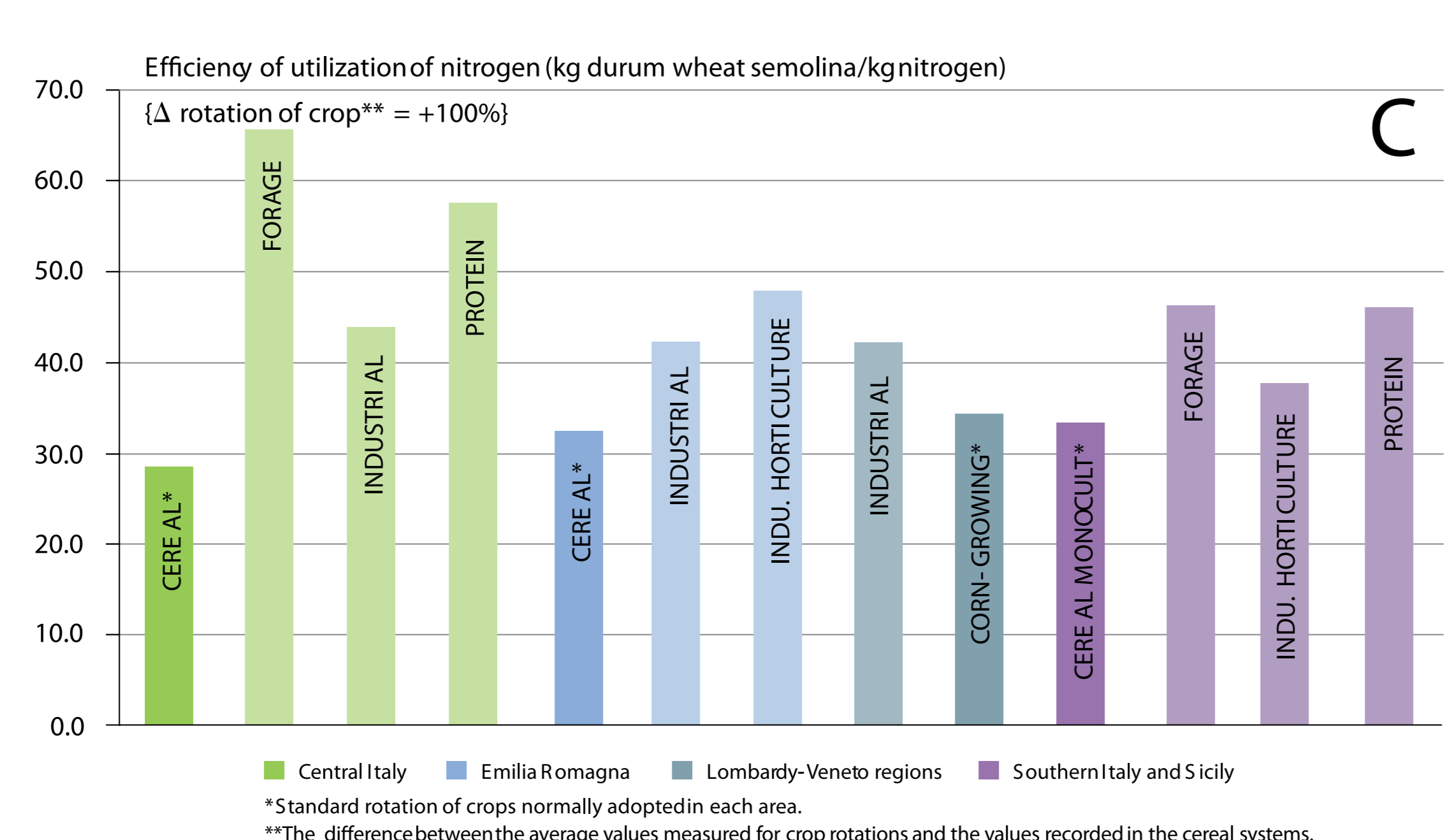
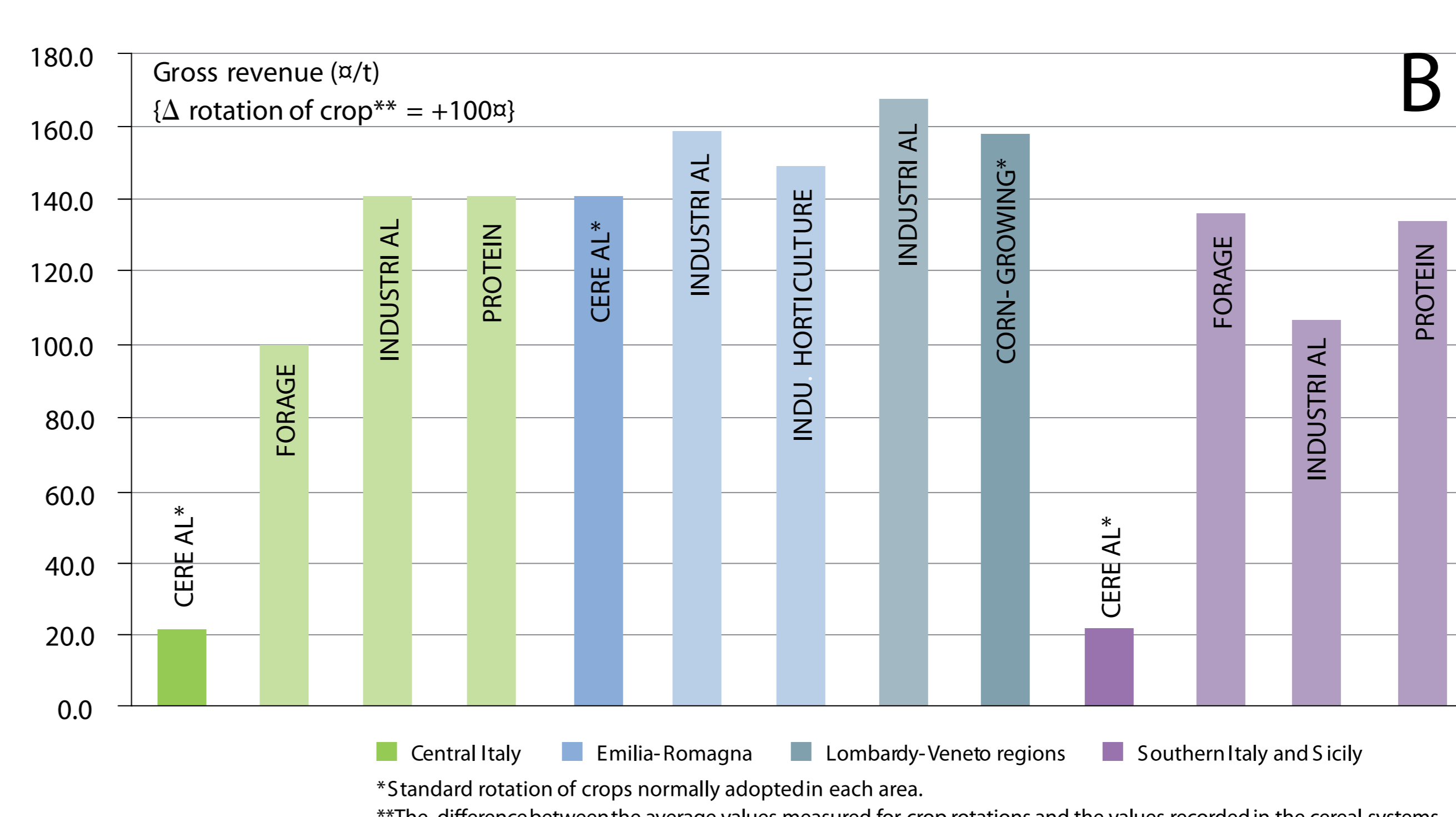
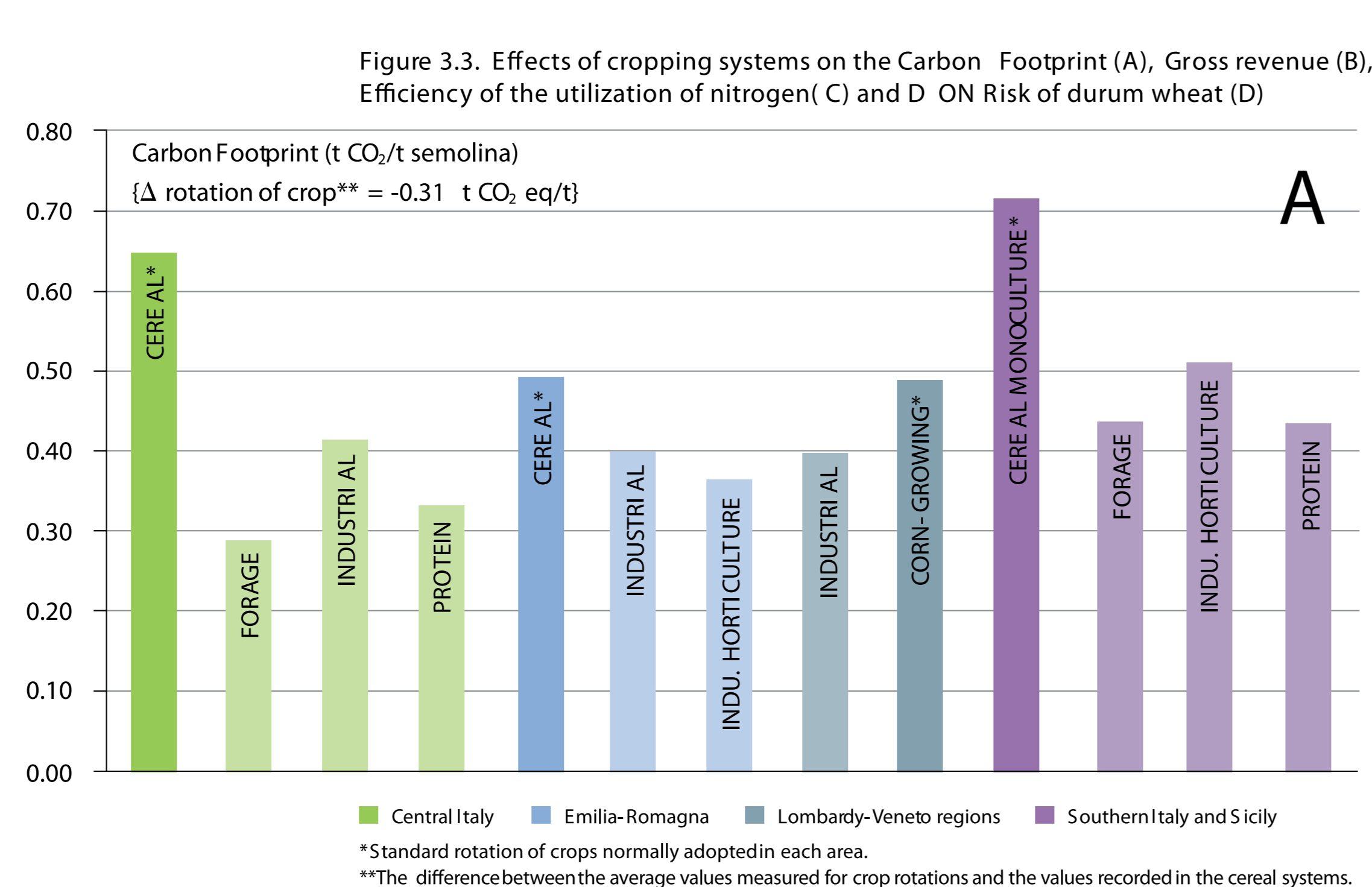
LOMBARDY-VENETO REGIONS				
CORN*	Corn	Durum wheat	Corn	Corn
INDUSTRIAL	Soy	Durum wheat	Rapeseed	Corn
EMILIA-ROMAGNA				
CEREAL*	Corn	Durum wheat	Sorghum	Wheat
INDUSTRIAL	Soy	Durum wheat	Corn	Wheat
HORTICULTURE	Tomato	Durum wheat	Corn	Wheat
CENTRAL ITALY				
CEREAL*	Durum wheat	Durum wheat	Sorghum	Durum wheat
PROTEINS	Peas	Durum wheat	Peas	Durum wheat
FODDER	Alfalfa	Alfalfa	Alfalfa	Durum wheat
INDUSTRIAL	Sunflower	Durum wheat	Rapeseed	Durum wheat
SOUTHERN ITALY AND SICILY				
CEREAL MONOCULTURE*	Durum wheat	Durum wheat	Durum wheat	Durum wheat
FODDER	Forage	Durum wheat	Forage	Durum wheat
PROTEIC	Chick peas	Durum wheat	Chickpeas	Durum wheat
INDUSTRIAL	Tomato	Durum wheat	Durum wheat	Durum wheat



*Standard crop rotation normally adopted in each area.

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

AGRONOMIC AND ECONOMIC STUDIES WERE INTEGRATED IN THE CALCULATION, CONDUCTED WITH THE LIFE CYCLE ASSESSMENT METHODOLOGY, OF CARBON, WATER AND ECOLOGICAL FOOTPRINTS.



Source: Sustainability of Cropping Systems with durum wheat in "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.

HANDBOOK

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 EXTENSIVE IN-FIELD EXPERIMENTATIONS. THE PROJECT IS BEING EXTENDED TO OTHER COUNTRIES AND TO SOFT WHEAT AND RYE PRODUCTION.

