Development and In-Field Testing of a Sustainability Assessment Method for Durum Wheat Cultivation

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Barilla
The Italian Food Company. Since 1877.

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.

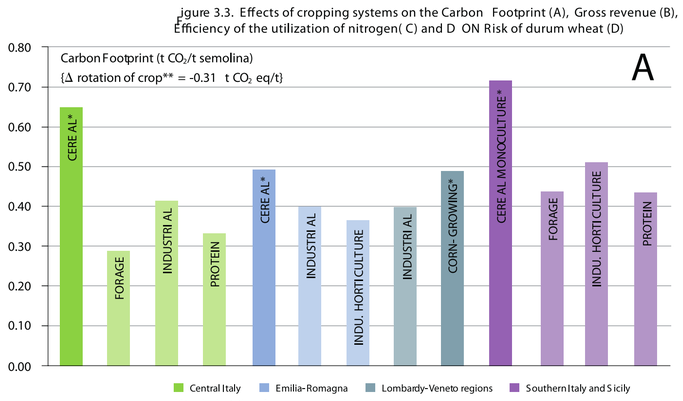
LOMBARDY-VENETO REGIONS				
CORN*	Corn	Durum wheat	Corn	Corn
INDUSTRIAL	Soy	Durum wheat	Rapeseed	Corn
EMILIA-ROMAGNA				
CEREAL*	Corn	Durum wheat	Sorghum	Wheat
INDUSTRIAL	Soy	Durum wheat	Corn	Wheat
HORTICULTURE	Tomato	Durum wheat	Corn	Wheat
CENTRAL ITALY				
CEREAL*	Durum wheat	Durum wheat	Sorghum	Durum 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	Chickpeas	Durum wheat	Chickpeas	Durum wheat
INDUSTRIAL	Tomato	Durum wheat	Durum wheat	Durum wheat

*Standard crop rotation normally adopted in each area.

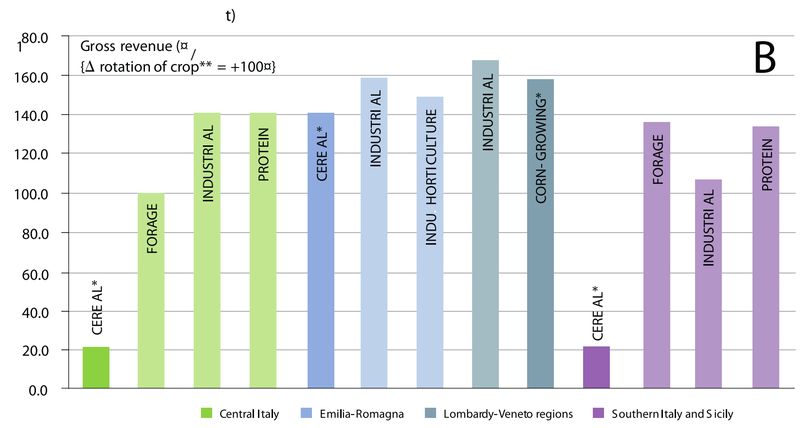
Source: Sustainability of Cropping Systems with durum wheat in "Grano Duro News," 2011.

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

Figure 3.3. Effects of cropping systems on the Carbon Footprint (A), Gross revenue (B), Efficiency of the utilization of nitrogen(C) and D ON Risk of durum wheat (D)



*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.



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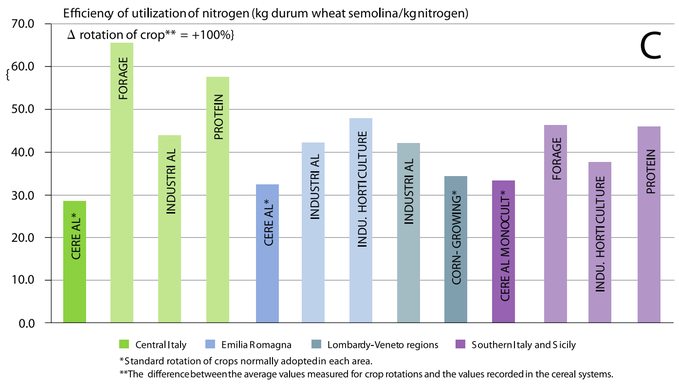

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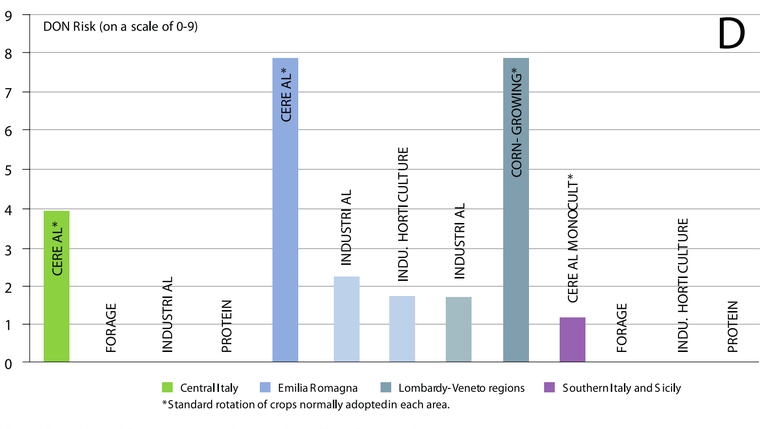

*Standard rotation of crops normally adopted in each area.

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 EXTENSIVEIN-FIELD EXPERIMENTATIONS. THE PROJECT IS BEING EXTENDED TO OTHER COUNTRIESAND TO SOFT WHEAT AND RYE PRODUCTION.