

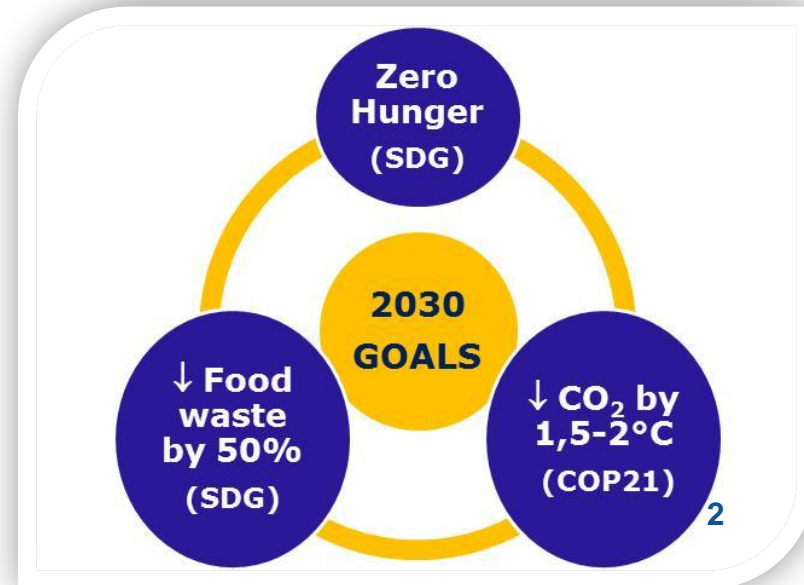
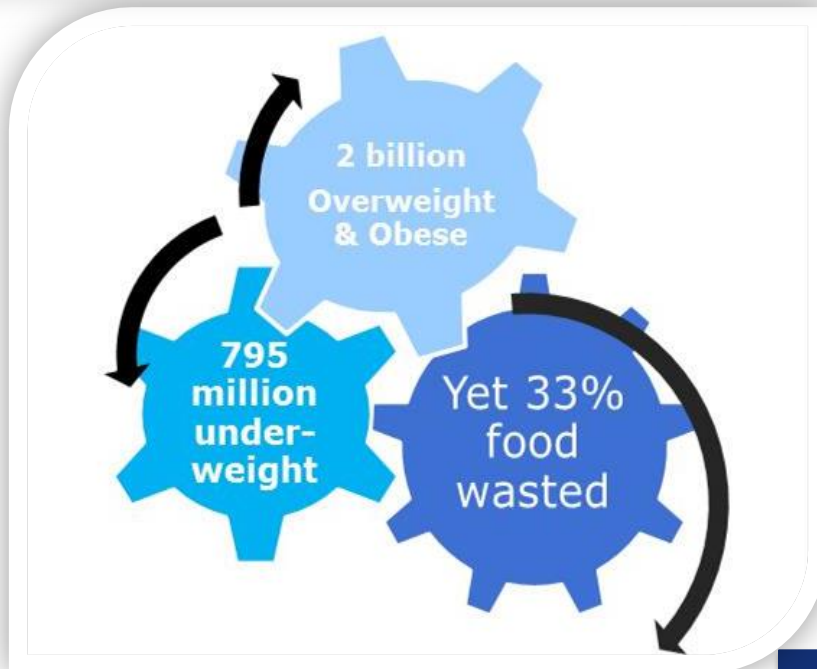
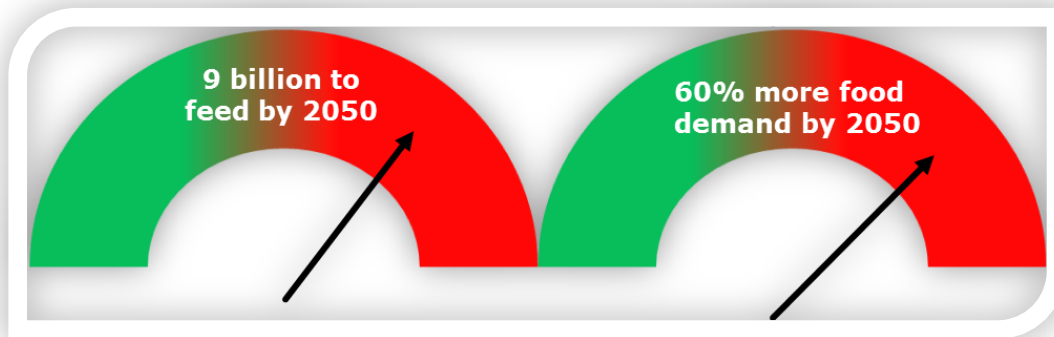
Microbiome in the context of Food2030 strategy

European Research and Innovation perspective



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A "Perfect Storm"





European
Commission



Political Opportunity

Juncker Priorities

10 priorities

- | | | |
|----|--|--|
| 01 | | A new boost for jobs, growth and investment. |
| 02 | | A connected digital single market. |
| 03 | | A resilient Energy Union with a forward-looking climate change policy. |
| 04 | | A deeper and fairer internal market with a strengthened industrial base. |
| 05 | | A deeper and fairer Economic and Monetary Union (EMU). |
| 06 | | A reasonable and balanced free trade agreement with the United States. |
| 07 | | An area of Justice and Fundamental Rights based on mutual trust. |
| 08 | | Towards a new policy on migration. |
| 09 | | Europe as a stronger global actor. |
| 10 | | A Union of democratic change. |

Sources: European Parliament, European Commission

Sustainable Development Goals



COP21+



IPCC



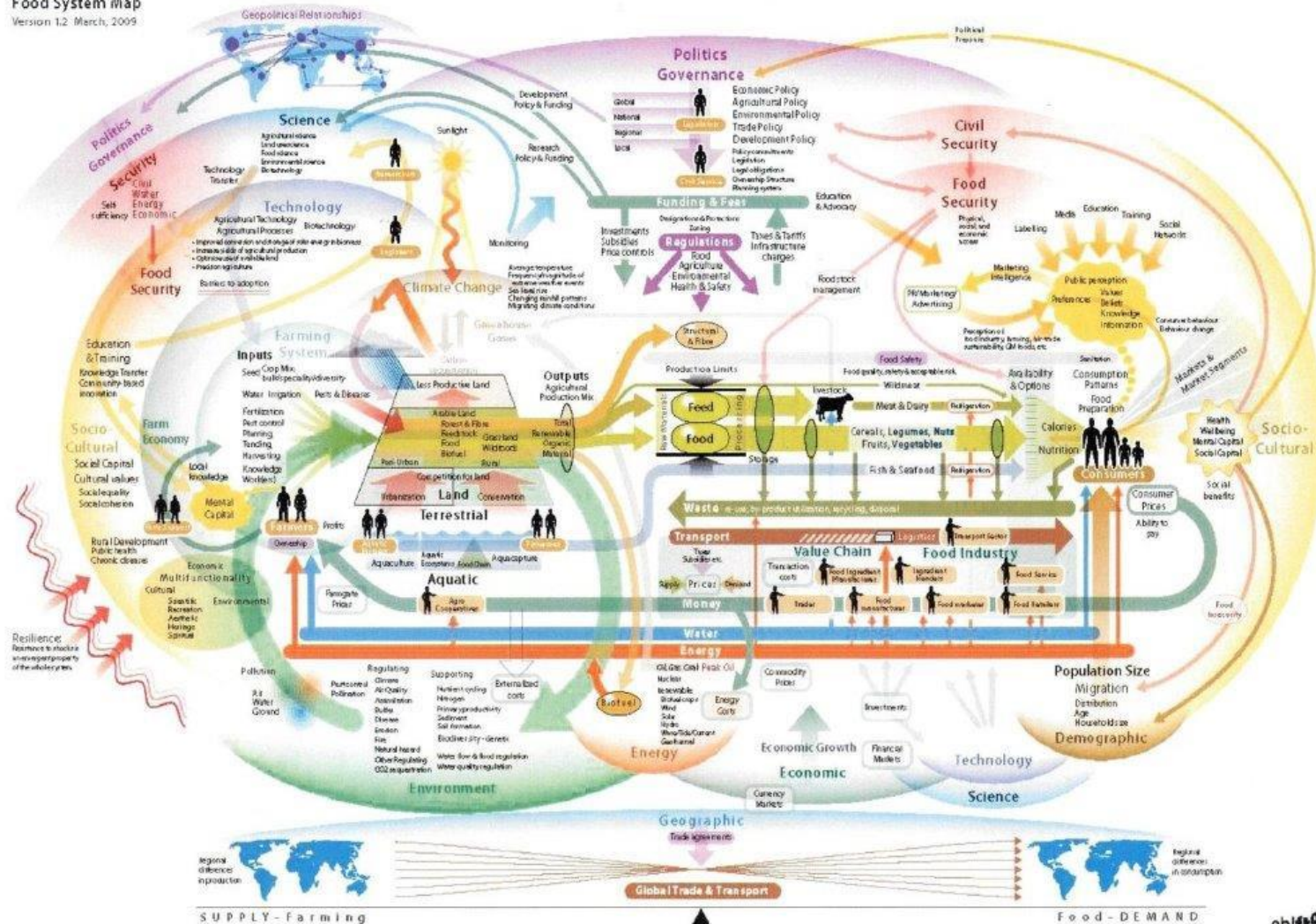


European
Commission



The Global Food System

Food System Map
Version 1.2 March, 2009



FOOD PRODUCTION

FOOD SYSTEMS

The Food System

Future-proofing
By 2030

Good soil,
water, land &
biodiversity

Connecting
land & sea

Food & Feed:
trade, relations,
culture, jobs, etc



When it comes to Microbiome

MICROBIOME

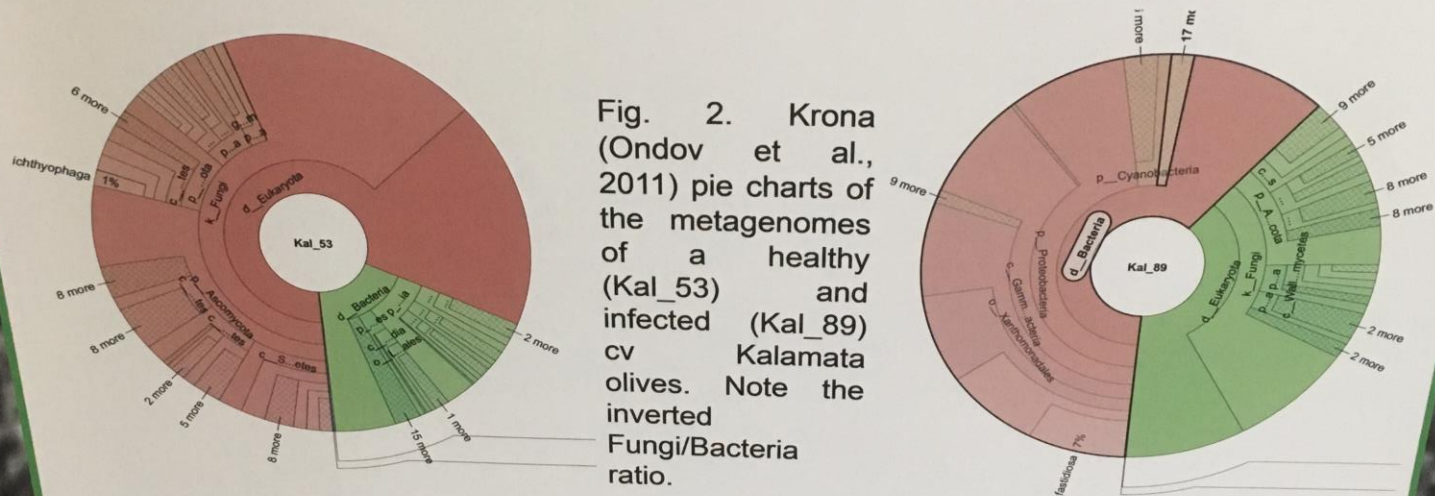
Definition Microbiome

*Microbiome refers collectively to communities of microorganisms and their genome in a defined environment**

**Marchesi and Ravel Microbiome (2015)3:31*

Xylella strongly perturbs the microbiome

In all but one sample (Kal_89), Fungi dominate the microbiome with 70-87% abundances of the total metagenome and Bacteria represent the remaining 13-30% (Fig. 1 and 2). Archaea and Viruses are present with negligible abundances. This Fungi/Bacteria ratio is inverted in sample Kal_89 in which total Bacteria and *Xylella fastidiosa* represent respectively the 61% and the 15% of the total microbiome, whereas Fungi occupy the remaining 39% (Fig. 2).



Xylella microbiome perturbation in Kal_89 is also demonstrated by a strong decrease of intra-sample ecological diversity. α -diversity calculated with two size in tissues of the susceptible cv Kalamata, the microbiome richness shifts downward (Table 1).

Why Microbiome?

- *Technological breakthroughs*
- *International momentum (USA, CN, CA, NZ, AU)*
- *Information hidden within microbiomes*

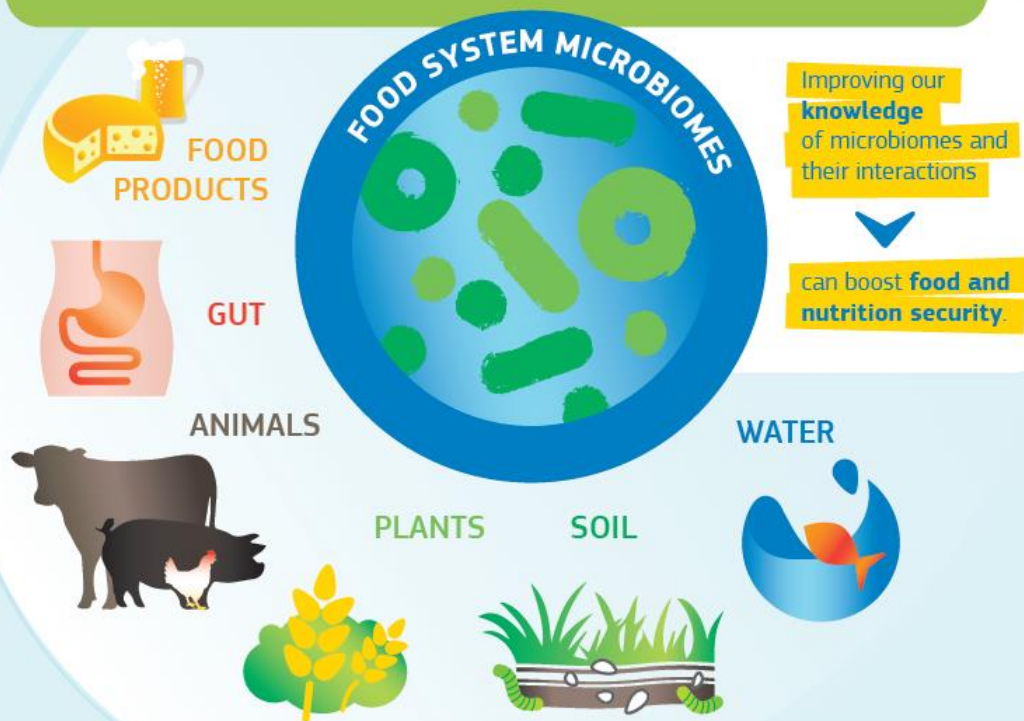
FOOD SYSTEM MICROBIOME

RESEARCH & INNOVATION

Exploiting the huge potential to benefit Europeans citizens

Microbiome - the genomes of a community of microorganisms (eg bacteria, fungi, viruses) that inhabit a particular environment

- in or on certain parts of the body
- in a sample of soil
- on the leaf of a plant





...but there is a gap in our knowledge
which needs to be addressed in order to achieve
more resilient and efficient food systems

To this end...

the EU will invest
+ €100 million

TO ADDRESS MICROBIOME

RESEARCH AND INNOVATION (R&I) AIMING AT:

- ✓ Coordinating cross-cutting research efforts
on the Food System Microbiome (FSM)
- ✓ Better alignment and coherence of
microbiomes research at EU and global level
towards a unified microbiome initiative
- ✓ Promoting a multi-actor, multi-sectorial
and multi-disciplinary approach.



FARMER



DOCTOR



RESEARCHER



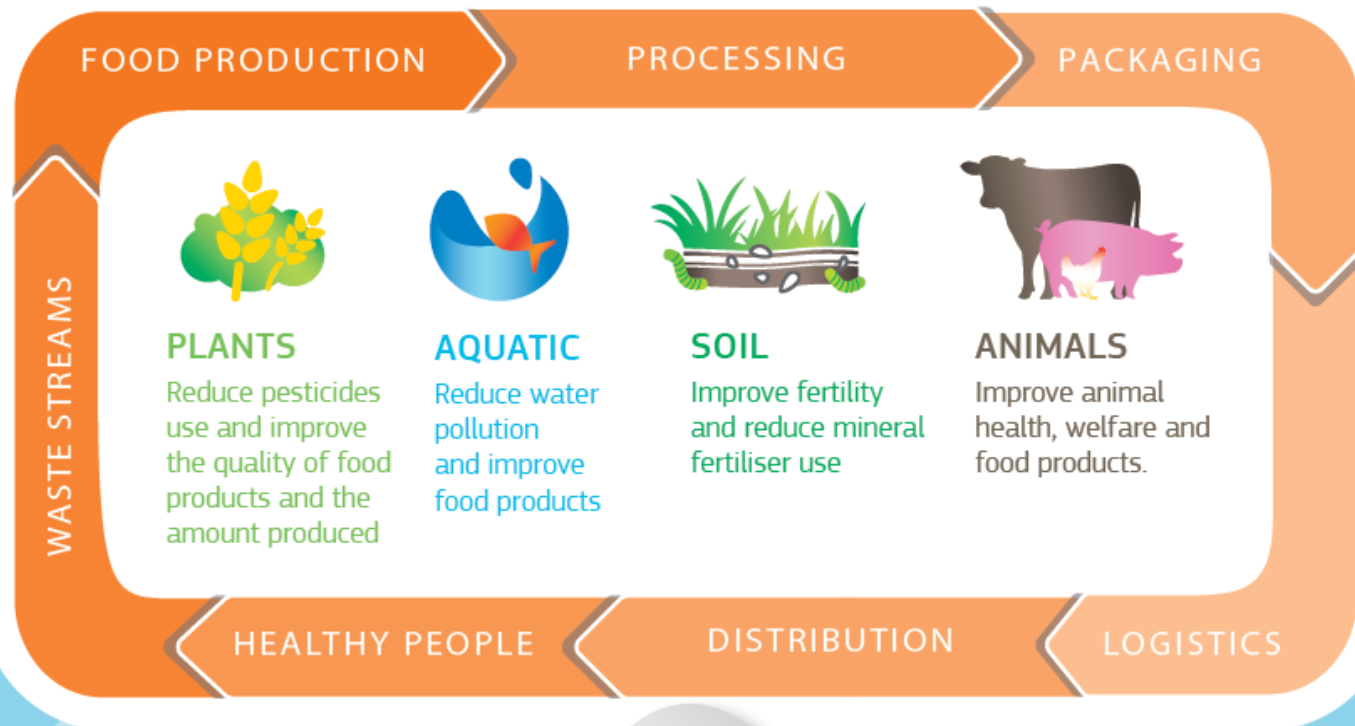
CONSUMER



Promoting a multi-actor, multi-sectorial and multi-disciplinary approach.

The investment substantially adds to EU countries R&I efforts, and other EU initiatives.

EU R&I investment will target areas such as...



The untapped potential

Only 1% of all microbiomes are currently providing applications in health, food systems, and ecosystem resources.

The remaining potential is enormous.





European Commission Role

- *Facilitate multi-actor engagement*
- *Align*
- *Structure*
- *Boost*



How to provide a more coherent approach to Microbiome R&I activities ?



IBF Microbiome



- 1. Propose an umbrella mechanism to frame and convey Microbiome projects with relevance to FOOD 2030 and Food Systems*
- 2. Incorporate the selected projects within the complete EU Microbiome portfolio (contribution to IBF)*

Thank You



Website FOOD 2030:

<http://ec.europa.eu/research/food2030/>

Twitter: #FOOD2030EU