

# AGRI-FOOD SAFETY

**Reggio Emilia Campus**

By:  
Emilio Stefani, Professor of Plant Pathology  
[emilio.stefani@unimore.it](mailto:emilio.stefani@unimore.it)



# What do we mean for “*Agri-Food*”?



EN English Menu

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## Foods of non-animal origin: what are the risks?

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Basically - Food of non-animal origin, as:

Fruits and Vegetables  
Roots and Tubers  
Cereals  
Herbs and Spices

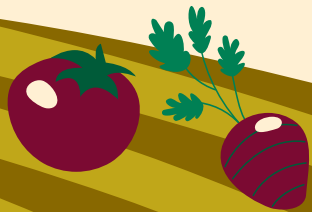


# WHAT IS THE AGRI-FOOD SAFETY?



Integrating food safety and nutrition in agri-food systems by:

- **Guidelines and regulations** on safety and sustainability of agri-food production;
- Knowledge on **risks**, their **mitigation** and **management**;
- Design of agri-food production systems to **reduce losses and increase nutrition**;
- Evaluation of **consumers' perceptions** and **awareness** and development of correct **communication strategies**;
- Ensuring **fair-trade practices**, market access and income generation across agri-food value chains.





# 01

## CHALLENGES

- Develop **sustainable** production systems
- Produce **nutricious food** and contribute to **healthy diets**, especially in low income countries
- Ensure **quality and safety of raw material** and protect consumers' health
- **Avoid losses** in post-harvest
- Ensure **traceability** and avoid frauds along the agri-food markets

# LIST OF CLASSES, 2<sup>nd</sup> Year



01

**Good agricultural practices and identity preservation**

*3 CFU*

Prof. Enrico Francia

**Biotechnology and safety aspects of vegetable-based foods**

*3 CFU*

Prof. Maria Gullo

02

**Animal pests in stored agri-food products and their management**

*6 CFU*

Prof. Lara Maistrello

03

**Post-harvest losses and their management**

*6 CFU*

Prof. Emilio Stefani

04

**Mycotoxigenic fungi in agri-food and pesticide contamination: analysis and risk management**

*6 CFU*

Prof. Emilio Stefani and Prof. Antonio Prodi



# LIST OF CLASSES, 2<sup>nd</sup> Year

## - free choices



### 05 Chemometrics

6 CFU

Prof. Marina Cocchi

### 06

### Coding in R for data analysis

3 CFU

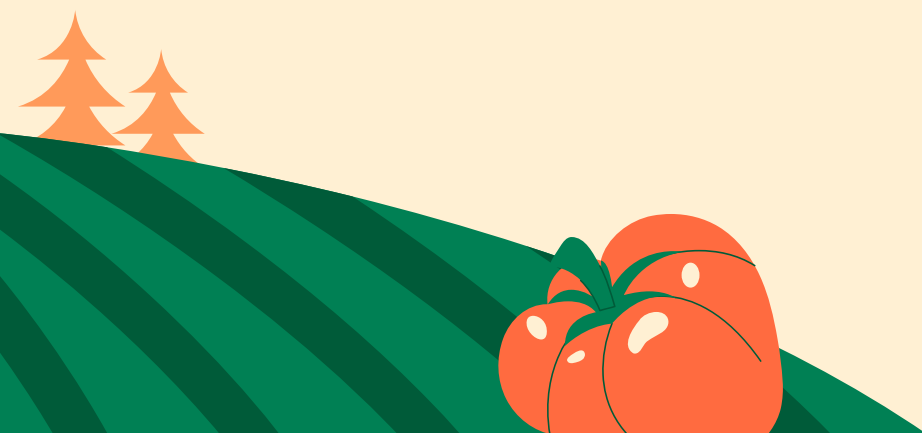
Prof. Anna Maria Mercuri

### 07

### Ethnobotany: the role of plants in our life

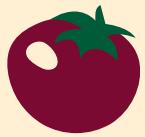
2 CFU

Prof. Anna Maria Mercuri



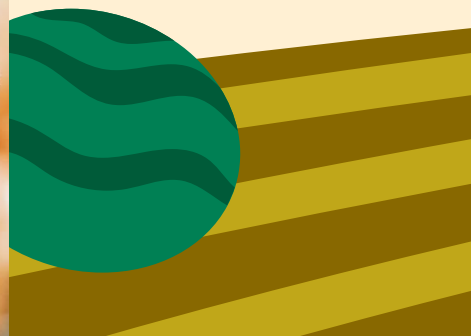
# ROADMAP INFOGRAPHIC

		1 <sup>st</sup> Semester			2 <sup>nd</sup> Semester		
Class	CFU						
<b>Animal pests in stored agri-food products and their management</b>	<b>6</b>						
<b>Biotechnology and agronomy for safety and identity preservation of agri-food products</b>	<b>6</b>						
<b>Mycotoxigenic fungi in agri-food and pesticide contamination: analysis and risk management</b>	<b>6</b>						
<b>Post-harvest losses and their management</b>	<b>6</b>						
<b>Chemometrics (free choice)</b>	<b>6</b>						



# Who will be the Agri-Food specialist?

- A **professional** involved in the development and implementation of **international regulatory issues** concerning agri-food safety.
- A **skilled coordinator** of technical personnel that supervises production, supply and handling of raw materials.
- A **risk manager** able to **address problems and emergencies** that may arise along any step of the agri-food production chain.
- An **excellent communicator** that will play a key role in the **dialogue** among policy makers, companies, farmers, consumers.





# Myth Busting:

A recent survey from the Consumer Reports National Research Center of 1,050 Americans found that consumers have some misconceptions about pesticides and organic produce.



Source: Consumer Reports Inc., USA



# Post-harvest losses and their management

*"Do you not understand that one needs a little more than nothing in order to exist?" - Jean Baudrillard, La société de consommation, Paris, 1970 (free quoting of Shakespeare, King Lear, Act 2, scene 4)*

## The issue

The **post-harvest system** should be thought of as encompassing the delivery of a crop from the time and place of **harvest** to the time and place of **consumption**, with **minimum loss**, maximum efficiency and **maximum return** for all involved. (D. Spurgeon: *The Hidden Harvest*, 1976).



## Course outcomes

Knowledge of the **value chain** for Agri-Food produce: **quality indicators** and **safety issues**.

Knowledge on factors and reasons for **post-harvest losses** and approaches for their **mitigation** and **management**.

Introduction to **crop physiology** as a subject to ensure agri-food safety and prevent loss reduction.

Knowledge of some important **disorders** and **diseases** affecting fruits and vegetables in post-harvest and methods for their management..



# Mycotoxigenic fungi in agri-food and pesticide contamination: analysis and risk management

## The issue

**Mycotoxins?** What are they? Consumers' awareness and perception say: they do not exist.

And **Pesticides?** Oh my good Lord, they are killing us all.

Do you really know **how many** and **how much** pesticides we introduce through each meal?

**Multiresiduality:** the real challenge.



## Course outcomes

Knowledge of the **mycotoxigenic fungi**, their epidemiology, and their control.

Knowledge of the **most important mycotoxins**, their detection and indications for their management in food and feed.

Knowledge on the “real” nature of pesticides: **toxicology** and **risk matrix**.

Introduction to the **environmental toxicology**.

**Cumulative risk assessment** of pesticides.

Consumers' perception and indications for a correct **communication strategy** to face mycotoxins and pesticides risks in food and feed.

Knowledge of the **RASFF**: the European Alert System for Food and Feed



# Biotechnology and agronomy for safety and identity preservation of agri-food products



## The issue

**Agri-Food Security and Safety:** Combining good agricultural practices (**GAP**) and identity preservation (**IP**) in the different agricultural systems is **essential**.

Additionally, **biotechnology** and **safety** aspects are crucial when applied to **plant-based foods** along the value chain.

*A comprehensive approach is needed.*



## Course outcomes

Knowledge of GAP for the management of **phenotypic** and **genotypic** variability in different agricultural production chains.

Knowledge of the main methods of **traceability** and **identity preservation** of agri-food products in the value chains.

Knowledge of different vegetable fermented foods/beverages and the main **microorganisms** responsible for **fermentation processes**.

Knowledge of **bioprocesses** management considering raw materials, microorganisms, propagation methods and process parameters.



# Animal pests in stored agri-food products and their management



## The issue

Animal pests infest stored agri-food products, causing serious **quantitative** and **qualitative** damage and specific **health issues**.

The protection of food from pests is largely **underestimated**.

Producers are **discredited**.

**Chemical control** is NOT a viable/sustainable option.



## Course outcomes

Knowledge of the **main animal pests** of stored foodstuffs, the damage they cause, the main factors affecting pest presence, **pest prevention**, control and monitoring techniques.

Ability to **detect infestations** in products and facilities, correctly recognizing the pests; evaluate and prepare appropriate **prevention and monitoring plans**; choose the most appropriate **management strategies**.

**Awareness raising** on the risks (**economic impact** and **health issues**) associated with pest infestations; emphasize the importance of integrated sustainable management.

HYVÄÄ PÄÄSTÄISTÄ!



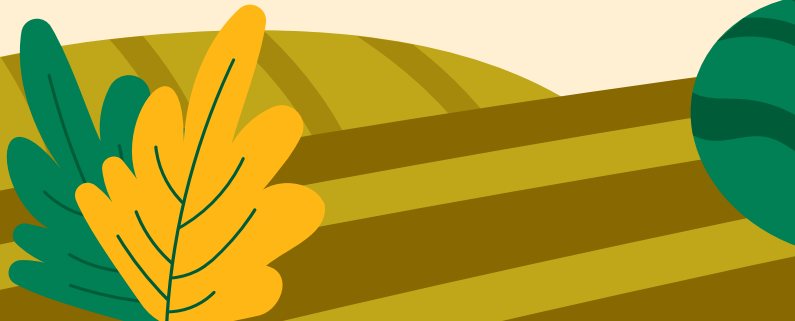


Lab premises in via J.F. Kennedy



Lab premises at the Technopole

# The Campus in Reggionorte



Besta building: The teaching premises



# THANKS!

**Do you have any questions?**

emilio.stefani@unimore.it

+39 0522 522013

www.unimore.it



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