

## LO 11: PLANTS AS VEHICLES FOR CROSS-INFECTIVE PATHOGENS TRANSMISSION

The **Learning Outcome (LO) 11: Plants as vehicles for cross-infective pathogens transmission** presents information on growing awareness that infected plants, such as fresh fruits and vegetables, are responsible for a significant portion of food poisoning with pathogenic microorganisms. It addresses the need for a new understanding of the interaction between plants and human pathogens in the context of the described in the literature many types of pathogens with a wide range of hosts. The learning material provides an overview of the plants as a habitat for human pathogens on the basis of the characterized at present 22 bacterial and 38 fungal taxa causing phytoses. These cross-infectious microorganisms are more insidious than the others, which are transmitted to humans by contact or consumption of plants. The biology of several bacterial pathogens that exhibit cross pathogenicity (such as *Salmonella*, *Listeria*, *E. coli*, *Enterococcus*, *Serratia*, *Enterobacter*) is presented. The difficulties and approaches to determine the retention of cross-pathogenicity and the direction of the host association (from plant to human or from human to plant) are discussed. Special attention is paid to human pathogens capable of colonizing different biological kingdoms, to the plants as their potential reservoirs, and to their importance for the emergence and spread of infectious diseases.

## LO 12: FOOD SAFETY, PLANT PATHOGEN AWARENESS AND MANAGEMENT

The **Learning Outcome (LO) O12: Food safety, plant pathogen awareness and management** is focused on the main issues of food safety and its major implications on human health, social behaviour and economy. Information is presented on topics related to food-borne disease outbreaks that can make substantial numbers of people ill while attendant recalls and publicity can reduce consumer confidence and decrease demand with significant economic loss for all parts of the supply chain. The remarkable incidence of food borne illness associated with the contamination of agricultural crops is discussed in the view point of the ability of pathogenic bacteria to grow and persist on crop plants as well as their versatile life style. Problems associated with the interactions of enteric pathogens on plants that enhance not only their survival in that habitat but also their ability to infect humans are discussed. The known information from previous risk assessments, key risk factors and profiles, hazard assessments and sanitary risk analysis of plant products is summarized. Finally, the three steps in a Food Plant Safety Awareness Program are discussed: 1) spotting the hazard; 2) assessment of the risk; 3) making the changes and plant food risk management.

## BASIC DATA ABOUT THE COURSE

**Course Title:** Ecological awareness and management of cross-kingdom pathogens

**Course authors:** Petya Hristova

**Course type:**

Academic	Enrichment	Work-oriented training
		✓

**Target Group:** Teachers/trainers in adult education; career officers, counselors, inspectors; head teachers / principals; education manager and other management staff in adult training institutions; non-teaching administrative staff

**EQF level:**

EQF level 5	EQF level 6	EQF level 7
✓	✓	✓

**Course aim:** to present information on growing awareness that infected plants are responsible for a significant portion of food poisoning with pathogenic microorganisms. It is focused as well on the main issues of food safety and its major implications on human health, social behaviour and economy.

**Knowledge background:** basic knowledge in plant physiology, microbiology and management

**Course content:**

### Learning Outcome 11: Plants as vehicles for cross-infective pathogens transmission

1. Introduction
2. Insights into cross-kingdom plant pathogenic bacteria
  - 2.1 The plant environment as a habitat for human pathogens
  - 2.2 Human pathogens that can infect plants
3. Conclusions
4. References

### Learning Outcome 12: Food safety, plant pathogen awareness and management

1. Introduction
2. Key risk factors affecting pathogen infection and spread
3. Sanitary risk analysis in plant products food safety schemes
  - 3.1 Vulnerable person's food safety scheme
  - 3.2 Risk assessment
4. Plant food risk management: monitoring, control, and prevention
  - 4.1 Microbiological monitoring
  - 4.2 Plant products quality control and prevention
  - 4.3 Food plant sanitation
  - 4.4 Examples of implementing specific food safety controls in specialty foods processing
5. Food safety awareness, messages, and knowledge
6. References