

Protected cultivation systems

Organic production

Certification of Organic production & Geographical Indication

Advanced Technologies on the agro food sector

The thermal balance in protected cultivation systems; main forms of energy losses. Basic principles of calculations of the energy losses and heating requirements. Temperature management, heating and heating alternatives. Ventilation; passive and force ventilation. Shading. Basic principles of applied plant physiology in protected cultivation systems. The relationships of photosynthesis and respiration with temperature, light intensity and CO₂ concentration. The effects of environmental factors on the physiological performance of vegetable crops under protected cultivation. Plant Water requirements under protected cultivation. Water requirement calculation methods. The specifics of plant nutrition under protected cultivation. Basic principles for calculation of plant nutrient requirements under protected cultivation. Fertilization calculation and distribution methods. Good agricultural practices regarding crop management of Solanaceae, and Cucurbitaceae vegetable crops under protected cultivation. Main soilless cultivation system, organic and inorganic substrates and their respective physical and chemical properties. Basic principles of nutrient solution composition.

Main agricultural systems actually applied and their economic, ecologic and social advantages: Conventional agriculture towards integrated and biological agriculture; The common farming concept or conventional agriculture and which of them dominates; low-inputs agriculture, integrated agriculture / Global GAP, and biological agriculture; Organic agriculture in the world, Europe and Balkan.

- Which systems are used in Europe, in the World and in the Balkans,
- Statistics and trends of agriculture for the future,
- why Europe considers/looks at this system as a system of the future?

Organization of organic agriculture in Balkan area, production, extension service, research, legislation, certification marketing. Statistics and some features that every country has about biological agriculture and the possibility of adding bio-products to the region. Best good practices for production of organic vegetables, production of organic grapes and organic vine, production of organic apples, production of organic olives and olive oil, production of organic potatoes. For each of the products: General concepts of soil fertility and plant nutrition, land selection, location, choice of cultivars, plant protection techniques; concepts of protection of biodiversity, water, soil, animals; Preparing farms to host the certification body. List of allowed inputs for organic production. The types of allowed inputs in biological agriculture for each culture.

Establishing and respecting the production standards in agriculture and food processing are important for the food safety and consumer confidence. For regulating the sector and ensure the transparency to the public the Control and certification of a product or management system is practiced. Certification of products and the quality of management systems are important as well as a marketing instrument for farmers and companies that produce better quality products and services. The regulations, standards, control and certification process for organic production and geographical indications will be presented during this module.

The module will also offer a basic understanding of the geographical indication of local and unique products.

Some of the topics to be focused:

- Geographical Indication concepts and knowledges
- Geographical Indication Development process
- Registration process
- Control system of Geographical Indication

The module will offer a basic understanding of technical aspects on hurdle technologies, combined use of several preservation methods, improving quality and safety attributes of food. The hurdle concept illustrates complex interactions of physical and chemical factors, which are significant to the microbial stability. Potential hurdles in food preservation applying in both large and small industries, manufacture new products according to the need of processors and consumers, doesn't affect the integrity of food. Some topics will be:

- Preservative factors
- Pasteurization and sterilization
- Blanching, low temperature using water activity reduced substances
- Introduction in hurdle technology
- Basic Food Microbiology
- Postharvest handling and preparation of foods for processing
- Major hurdles for food preservation: Physical hurdles
- Major hurdles for food preservation: Physico-chemical hurdles
- Major hurdles for food preservation: miscellaneous hurdles
- Additives and preservations: Novel Thermal and Nonthermal Technologies in Combined Processes
- Principles of food preservation and hurdle applications
- Food Packaging