TECHNOLOGY AND QUALITY CONTROL OF FRUITS AND VEGETABLES

Teaching Staff: Talelli Aikaterini, Giannakourou Maria

Course type: Mixed

Weekly teaching hours: 3 hours of theory + 4 hours labs

Credit units: 7.0

Course level: Mandatory

Semester: 5th

AIM OF COURSE

The course structure intends:

- to enable the students to understand those characteristics of fruits and vegetables related to the final product quality
- to get acquainted with the processing methods and the quality control of fruits and vegetables
- to acquire skills in the ranking of products based on quality criteria

Assessable learning outcomes:

At successful completion of the module students should be able:

1) To understand the properties of fruits and vegetables, which are linked with the quality and safety of the final products.
2) To develop an understanding of fruits and vegetables processing procedures.
3) To develop the necessary skills to undertake quality and safety control of fruits and vegetables products.

COURSE DESCRIPTION

Theoretical Part

The industrial production of processed fruits and vegetables in Greece (production data). Morphology of plant cell and morphological classification of fruits and vegetables. Chemical composition, the relation of constituents with nutritional value and their effect in the final product quality. Environmental and biological factors affecting the post-harvest preservation. Quality characteristics of fresh fruits and vegetables destined for industrial processing - Choice of the appropriate variety.

Laboratory Part
The laboratory exercises include:

- Syrups-Brines. Preparation of syrups and brines and calculation of their concentration.
- Peeling-Blanching.
- Fruit canning and quality control of fruit cans. Quality assessment.
- Vegetable canning and quality control of vegetable cans. Quality assessment.
- Determination of acidity, dissolved total solids and vitamin C in fruits and vegetables.
- Jam manufacturing. Quality assessment of gels and jams.
- Quality control of tomato-based products.
- Ketchup manufacturing.
- Refrigeration and deep freezing of fruits and vegetables.
- Quality assessment of frozen peas.
- Quality assessment of fruit juices.
- Products preserved in brine.
- Quality assessment of cucumber pickles.
- Quality assessment of olives.

REFERENCES


Fruits and vegetables are plant derived products which can be consumed in its raw form without undergoing processing or conversion. Fresh-cut fruits and vegetables (FFV) are products that have been cleaned, peeled, sliced, cubed or prepared for convenience or ready-to-eat consumption but remains in a living and respiring physiological condition. With studies showing the nutritional benefits of fruits and vegetables, consumption of FFVP therefore promotes health through increase in the supply of antioxidant and other phytochemical nutrients to the body. 

2. Processing of FFV. Presently, new and alternative technologies for safety, improved quality and extended shelf life of processed fresh-cut products have been developed. Recent advances in alternative postharvest technologies to control fungal diseases in fruits and vegetables. Transworld research network, 37/661 (2). January 2006. Projects: Postharvest technology of fruits vegetables and nuts. Postharvest biology and technology of fruits and vegetables. Authors: Pedro M. Civello. Be considered in postharvest quality and disease management programs. Further work will be useful in order to fully understand physiological basis of the response of horticultural crops to UV-C radiation. Beneficial effects of fruit and vegetables have been associated with an increased antioxidant consumption leading to higher plasma antioxidant capacity in humans [74].

Greater consumption of fruit and vegetables in the EU; increased use of eco-friendly cultivation and production techniques. The scheme promotes product quality by applying marketing standards and supporting operational measures. Producer organisations. The EU fruit and vegetables regime supports POs for implementing operational programmes with funding contributions. The POs regime requires national authorities to recognise any group of producers that applies for PO status, if they meet the requirements: be voluntary. Countries that allow these measures must adopt detailed rules on their implementation and control. Compensation amounts (including EU and PO contributions) must be set per hectare by national authorities, to cover either. While fruits and vegetables are desirable components of a healthy diet, they are perishable commodities that may only have a shelf life of days or hours. The food industry uses a variety of preservation, or processing, methods to extend the shelf life of fruits and vegetables such that they can be consumed year round, and transported safely to consumers all over the world not only those located near the growing region. Food preservation aims primarily to create a microbiologically safe product, but processors also strive to produce the highest-quality food. Depending on how processing is carried out, processing may result in a change in color, texture, flavor and nutritional quality, the last of which is the subject of the following literature ...