

AGT-852	Postharvest Processing and Management	3(3-0)
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1. Learning Objectives

Upon successful completion of the course, the student will be able to explain the basic knowledge of postharvest processing, management of agricultural products after harvesting, and machinery involved in processing. Students will also gain knowledge about basic elements involved in drying such as water, air, and products to be dried as well as basic principle of heat and mass transfer.

1. Outcomes

On successful completion of this course, the student will be able to learn:

- a. Critically evaluate the physiological changes occurred in agricultural products and make postharvest management decisions based on these changes
- b. Select and apply methods used to monitor and measure post-harvest physiological processes and environmental parameters and analyze and interpret results with reference to post-harvest management
- c. Identify sources of information needed to determine the technical feasibility of developing an export trade for a specified commodity and make initial plans for export trials
- d. Assess the effect of environmental factors on product quality and determine how to measure these factors
- e. Identify the equipment and machines for drying and storage

2. Content

▪ Introduction

Importance of cereal grains and other food products, food preservation,

The food cycle,

Important factors of food production,

Properties of cereals: cereal grains and their structure, physical properties, biochemical properties,

Factors affecting grain stability: physical factors, biological factors, chemical factors, thermal factors

Management of postharvest agriculture products

- **Nutritional aspects of agricultural produce**

Wheat, and rice and other cereal crops

Fruit and vegetables

- **Hydrothermal treatments in processing of agricultural products**

Soaking, hot water soaking, pressure soaking

Steaming, low pressure steaming, high pressure steaming

- **Post-harvest losses**

Forms and measurement of post-harvest losses,

Measures to control losses,

Pre-storage handling of food products: physiological maturity, harvesting, threshing, collection, transportation, and receiving system.

- **Drying and aeration**

Principle of drying, solar drying, artificial drying, heat pump drying and other dryings

Types of dryers, components of dryers,

Factors affecting drying rate, natural aeration, artificial aeration,

Methods of aeration, air conditioning/refrigeration.

- **Storage**

Basic requirements for a storage structure,

Classification of storage structure, types of public storage structures,

Storage structure design,

Temporary and permanent storage facilities, non-conventional storage facilities,

Considerations in selecting type of storage structure,

Problems in grain storage, stored grain pests, control methods

- **Grades and standards**

Importance of grades and standards, food quality,

Establishing grades and standards, assessing the grade,

Grade factors and their importance,

Grading equipment, representative sampling, WTO and its regulation regarding quality control

- **Standard and novel methods of quality assessment**

- **Recent developments in postharvest technology**
 - g. **Details of lab work (if applicable)**

Not applicable

3. Recommended Readings

Text Book

1. Amalendu C. and R.P. Sing. 2014. Postharvest Technology and Food Process Engineering, CRC press, Taylor and Francis, USA.
2. Pandey, H. H. K. Sharma, R. C. Chauhan, B. C. Sarkar and M. B. Bera. 2004. Experiments in food process engineering. CBS Publishers and distributors, New Delhi, India.
3. Sahay, K. M. and K. K. Singh. 2002. Unit operation of agricultural processing. 2nd ed. Vikas Publishing House, New Delhi, India.