



### PROJECT NOTIFICATION

<b>PN Issue Date</b>	7 December 2018
<b>PN Revision 1 Issue Date</b>	20 May 2019
<b>Project Code</b>	18-AG-23-GE-DLN-A-01
<b>Title</b>	Self-learning e-Course on Modern Food Storage and Transport Technologies
<b>Timing and Duration</b>	1 August–31 July 2020 (twelve months)
<b>Implementing Organization(s)</b>	APO Secretariat and national productivity organizations (NPOs)
<b>Number of Participants</b>	Minimum of 400 participants
<b>Self-registration</b>	<p>Self-registration opens from 10:00 AM Japan Standard Time on 1 August 2019 on the eAPO's web portal: <a href="http://eAPO-tokyo.org">http://eAPO-tokyo.org</a></p> <p>Note: Participants can register directly from this portal on the APO website. Those who are already registered can access the course by using the assigned username and password. If you have forgotten your username and password, please refer to the help page on the home page of the portal.</p>

#### Change History of Project Notification: 18-AG-23-GE-DLN-A

Revision	Date of Issue	Clause	Modifications
Revision 1	20 May 2019	Timing and Duration	Timing has been changed from 26 April 2019–25 October 2019 (six months) to 1 August 2019–31 July 2020 (twelve months)

## 1. Objectives

- a. To acquaint participants with the main causes/mechanisms of fresh agrifood product deterioration and measures to prevent them;
- b. To build the capabilities of a critical mass of stakeholders in applying knowledge, technologies, and modern practices for the preservation of agrifood product quality during storage and transportation; and
- c. To improve agrifood value chains (FVCs) in member countries.

## 2. Background

With an expanding middle class and increased per capita income, the demand for food is shifting from quantity to quality. The demand for fresh, safe food is increasing worldwide. Maintaining food freshness and safety adds value and reduces food losses. Efficient FVCs also contribute to increasing the income of each actor.

As most agricultural products are perishable, their quality starts deteriorating immediately after harvest due to respiration, water loss, and insect pests and diseases. About 30% of the total food produced is lost due to poor postharvest infrastructure including storage and transport in developing countries. Therefore, maintaining quality throughout storage and transportation is critical to deliver fresh, healthy food to retail markets and consumers.

Modern food storage and transport technologies can help maintain quality throughout FVCs and reduce postharvest food losses. This course will enhance the understanding of key FVC stakeholders of technologies and modern practices for the preservation of agrifood product quality during storage and transportation, thereby increasing the productivity and competitiveness of Asian FVCs.

## 3. Scope and Methodology

### Scope

The course will consist of eight self-learning e-modules. After every two modules, there is a short quiz for self-assessment. Passing the final examination is required to receive the APO certificate.

### Module 1: Overview of Modern Food Storage and Transport Technologies

Contents: 1.1 Modern food storage and transport technologies: Key concepts  
1.2 Quality of fresh produce  
1.3 Nutrition and health benefits  
1.4 Food preservation technologies  
1.5 Food losses

### Module 2: Characteristics of Fresh Produce

Contents: 2.1 Unique characteristics of fresh produce: Introduction  
2.2 Maturity/ripening and spoilage  
2.3 Respiration and evapotranspiration  
2.4 Hormones  
2.5 Physical properties

Quiz 1 (for self-assessment based on questions from Modules 1 and 2)

### Module 3: Important Environmental Factors Affecting Produce Quality

Contents: 3.1 Environmental factors affecting produce quality: Introduction  
3.2 Temperature  
3.3 Humidity  
3.4 Gas concentrations  
3.5 Shocks and vibrations  
3.6 Other factors

### Module 4: Optimum Storage Conditions

Contents: 4.1 Optimum storage conditions: Introduction

- 4.2 Temperature
- 4.3 Humidity
- 4.4 O<sub>2</sub>/CO<sub>2</sub> concentration
- 4.5 Ethylene

Quiz 2 (for self-assessment based on questions from Modules 3 and 4)

**Module 5: Harvesting and Precooling of Produce**

- Contents:
- 5.1 Harvesting and precooling of produce: Introduction
  - 5.2 Optimum harvest time
  - 5.3 Precooling
  - 5.4 Air cooling
  - 5.5 Vacuum cooling

**Module 6: Packaging of Produce**

- Contents:
- 6.1 Packaging of produce: Introduction
  - 6.2 Packaging materials and general technologies
  - 6.3 Cushioning
  - 6.4 Humidity control
  - 6.5 Gas modification

Quiz 3 (for self-assessment based on questions from Modules 5 and 6)

**Module 7: Transportation of Produce**

- Contents:
- 7.1 How transportation affects the quality of agrifood products
  - 7.2 Transport vehicles
  - 7.3 Temperature control
  - 7.4 Shock and vibration of vehicles
  - 7.5 Loading and unloading

**Module 8: Marketing of Fresh Produce**

- Contents:
- 8.1 Trends in marketing fresh agrifood products
  - 8.2 Product out/market in
  - 8.3 For fresh consumption
  - 8.4 For processing including freshly cut
  - 8.5 Farmers' markets and direct sales

Quiz 4 (for self-assessment based on questions from Modules 7 and 8)

**Final Examination**

Passing the final examination is required to receive the APO certificate.

**4. Qualifications of Candidates**

The target participants are managers and officers involved in food supply chains and academics, extension officers, consultants, and other technical personnel engaged in planning, training, extension, and/or promotion of food storage and transportation.

**5. Eligibility for e-Certificate**

A minimum score of 70% on the final examination is required to qualify for the APO e-certificate.

Note: Participants from nonmember countries are welcome to take the course for self-development, although APO e-certificates will not be provided.



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