

Course Code : HRT 305

Course Title : Postharvest Horticulture

Credit Hours : 3 (2+1) Full Marks: 75 Theory: 50 Practical: 25

OBJECTIVES

Upon the completion of this course, the students will know basic knowledge on postharvest physiology handling and storage of the fresh. produces, processing and preservation.

I. SYLLABUS

Importance and scope of postharvest horticulture. Postharvest physiology of fruits, vegetables and cut flowers. Maturity judgment and harvest indices. Causes of deterioration; transpiration, respirations, ethylene production, physiological disorders, postharvest pathology and postharvest entomology. Packaging and packing house operations; grading, sorting, curing, waxing, trimming, de-handing, chemical treatment, sugar pulsing, pre-cooling, fumigation and packaging. Storage of fruits and vegetables, factors affecting storage, different methods of storage. Marketing and markets for fruits, vegetables and cut flowers. Principles and methods of preserving fruits and vegetables. Quality control and assessment, organoleptic evaluation. Handling of specific fruits, vegetables and cut flowers. In practical the students will be taught about physiological aspects of fruits, vegetables and flowers as well as the principles and methods of processing and preservation.

II. COURSE OUTLINE

A. Lecture

S.N.	Topics	No. of Lectures
1.	History and Importance of postharvest horticulture	1
2.	Postharvest physiology of fruits, vegetables and flowers	9
	1.1 Growth and development of fruits and vegetable	
	1.2 Transpiration:	
	2.1 Factors affecting transpiration	
	1.2.2 Effects of transpiration on post-harvest life	
	1.3 Respiration:	
	1.3.1 Aerobic and anaerobic respiration and Electron transport system	
	1.3.2 Effects of respiration on postharvest life	
	1.4 Ripening:	
	1.4.1 Physiological changes during ripening	
	1.4.2 Control measures of ripening	
	1.5 Ethylene	
	1.5.1 Mode, mechanism, biosynthesis uses of ethylene	
	1.5.2 Effects in climacteric and non-climacteric fruits	
3.	Maturity determination:	2
	3.1 Physiological and commercial maturity, methods for maturity judgment	
	3.2 Method and time of harvesting	
4.	Causes of postharvest losses and techniques to reduce them	1

5.	Postharvest pathology:	
	5.1 Postharvest disease	
	5.2 Control measures of pos harvest diseases	2
6.	Physiological disorders:	2
	6.1 Postharvest physiological disorders	
	6.2 Preventive measures of physiological disorder	
7.	Postharvest Entomology: Nature of damage, control and preventive measures	1
8.	Introduction to packing house operations:	2
	8.1 Packaging, Grading, Sizing, Curing, Trimming and Cleaning	
	8.2 De-handing, Sorting, Waxing, Chemical treatments, Irradiation and fumigation	
9.	Design of packaging material and consideration in packaging	1
10.	Principle and method of curing	1
11.	Storage:	3
	11.1 Principles of storage	
	11.2 Factors affecting storage	
	11.3 Different methods of storage and existing storage facilities in Nepal	
12.	Postharvest Quality: Quality criteria and judgment	1
13.	Markets and Marketing of horticultural produces	1
14.	Preservations:	2
	14.1 Principles of preservations	
	14.2 Methods of preservations	
15.	Commodity profile: Handling of major fruits, vegetables and cut flowers	1
Total		30

B. Practical

S.N.	Topics	No. of practicals
1.	Identification of equipments, tools and chemicals used in postharvest horticulture	1
2.	Determination of Total Soluble Solids (TSS) and Titratable acidity (TA)	1
3.	Experiments on cumulative weight loss and evaluation of visual quality	1
4.	Artificial ripening of banana	1
5.	Drying of vegetables	1
6.	Preparation of potato chips	1
7.	Preparation of tomato ketchup	1
8.	Preparation of squash	1
9.	Preparation of Jam	1
10.	Preparation of pickles	1
11.	Preparation of jelly and marmalade	1
12.	Visit to horticulture farm for evaluating various factors affecting qualities of fruits, Vegetables and cut flowers produced and identifying various disorders	1
13.	Maturity judgment and harvesting of fruits	1
14.	Maturity judgment and harvesting of vegetables	1
15.	Organoleptic evaluation and hedonic rating for different qualities	1
Total		15

REFERENCES

Gautam, D.M. and D. R. Bhattarai 2012. Postharvest Horticulture. Pabitra and Shanta. Bhawani Printers Chabahil Kathmandu, Nepal 168 P.

Bhattarai, D.R. 2012. Postharvest Technology: Marketing, Handling and Processing of Fruits and Vegetables, Public Printing Press, New Plaza, Kathmandu.

Kays, S.J. 1998. Postharvest Physiology of Perishable Plant Products, CBS Publishes & distributors, New Delhi 532 P.

Khatiwada, B.P. and D.M. Gautam and D.D. Dhakal 2011. Ripening banana by chemicals and plant materials LAP LAMBERT Academic publishing, Germany 86 P.

Bautista, O.K. 1990. Postharvest Technology for Southeast Asian Perishable Crops, University of the Philippines, Technology and Livelihood Resource Center, Philippines.