-PN-AAP-004

ISN 30816

Postharvest Institute for Perishables

Workshop on

POSTHARVEST HANDLING, STORAGE, TRANSPORTATION AND MARKETING OF FRUITS AND VEGETABLES IN THE YEMEN ARAB REPUBLIC

Sponsored by
USAID/Yemen Arab Republic
The Consortium for International Development
The Postharvest Institute for Perishables

in cooperation with
The Ministry of Agriculture and Fisheries
The Agricultural Marketing Company
of the Yemen Arab Republic

GTS Report No.
PIP/Yemen/June 83/No. 6

University of Idaho

in cooperation with
United States Agency for
International Development

Project Title: Storage and Processing of Fruits and Vegetables
Project No. AID/DSAN-CA-0265
Washington, D.C., U.S.A. 20523

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The Ministry of Agriculture and Fisheries
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of the Yemen Arab Republic

with technical assistance from

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Fayetteville, Arkansas

GTS Report No: PIP/Yemen/June 83/No. 6
Postharvest Institute for Perishables
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U.S.A.

June, 1983

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I. EXECUTIVE SUMMARY

The USAID Mission in Sana'a, Yemen Arab Republic received a request from the Ministry of Agriculture and the Yemen Marketing Association to provide technical assistance and training in the postharvest handling, transportation, storage and marketing of vegetables and fruit. The particular crops involved were onions, potatoes, tomatoes, okra and grapes.

In cable Sana'a 1528, the Mission requested the Postharvest Institute for Perishables to develop a postharvest training program for Yemen. In response to this request the consulting services of Dr. Ronald Buescher, Postharvest Horticulture Scientist at the University of Arkansas, were arranged.

Dr. Buescher went to Yemen and spent the period of April 17 to 24, 1983 working with representatives of USAID/Sana'a, the Ministry of Agriculture and Fisheries, and CID on plans for the training course. The postharvest channels were studied, problems identified, priorities established for the recommended interventions to be used as a basis for the training program. Then the participants in the training program were identified, as well as the training that they needed and the physical equipment such as training manuals that would be needed to accomplish the assignment.

Following the pretraining assessment Dr. Buescher returned to the U.S. where he developed a training manual for the specified purpose. Then he returned to Yemen for the period May 24 to June 10, 1983 to present the short course, an outline of which is given in this report. Personnel from the Ministry of Agriculture, USAID/Sana'a and CID who participated in various ways in the presentation of the short course are listed in this report. Dr. Buescher's training manual was translated into Arabic and copies were given to all students who participated in the short course.

Subsequent to Dr. Buescher's return to the U.S. a communication was received from the CID office in Sana'a expressing complete satisfaction with the conduct of the course. Similar satisfaction was received from the Ministry of Agriculture.

II. INTRODUCTION

A short course was presented in Yemen to a group of professionals from the private sector and government agencies involved with marketing and extension activities of horticultural crops. The course was taught by lectures, visual aids, demonstrations and a visit to a wholesale market in Sana'a. The primary objective of the course was to teach the principles and practices of postharvest handling, storage, transportation and marketing of horticultural crops so that appropriate methods would be developed to reduce food losses in the Yemen Arab Republic.

A training manual was prepared and translated from English to Arabic. Translated copies were distributed to the short course participants and various organizations in Yemen with the intent that the information would be used for future reference and teaching.

This short course originated from the awareness of personnel from the Consortium for International Development, Yemen Ministry of Agriculture and Fisheries and Yemen Agriculture Marketing Company that large quantities of horticultural crops deteriorated during marketing because of inadequate knowledge of postharvest techniques.

A request from CID/Core was made to the U.S. Agency for International Development to provide assistance for a short course in Yemen. With approval from USAID, the Postharvest Institute for Perishables at the University of Idaho was requested to utilize their technical assistance and information resources for developing and organizing a short course according to the needs of the situation in the YAR. The Postharvest Institute for Perishables arranged for Dr. Ronald Buescher to assess the needs in the YAR, return to the U.S. to develop the short course materials and then return to the YAR for its presentation. The course was held in a classroom at the German Plant Protection Project facilities in Sana'a.

The success of the short course was the result of support, cooperation, dedication and efforts of several agencies and many persons. In particular, Ahmed Al Hamdani (the Minister of Agriculture and Fisheries), Tom LaQuey (CID/Core), Pat Peterson (USAID/Yemen), Ahmed Said (Ministry of Agriculture

and Fisheries), Ali Saif Hasson (Yemen Agriculture Marketing Company), Faisal Saif (Yemen Agriculture Marketing Company) and the Postharvest Institute for Perishables were instrumental in the planning, preparing, organizing and supporting of this project.

Most important to the success of this short course was the interest and enthusiasm of the participants for obtaining knowledge on the subject of postharvest technologies to reduce deterioration of horticultural crops. The completion of this course is encouraged to be the initiation for the participants to become actively involved in developing new methods for improving postharvest quality and reducing losses which are compatible with the situations in the YAR.

III. SHORT COURSE AGENDA

Program May 28 to June 8, 1983, Sana'a, Y. A. R.

DATE	TIME	TOPIC AND SPEAKER OR LECTURER
May 28	9:00	Introduction
	9:10	Address by the Minister of Agriculture and Fisheries: His Excellency Ahmed Al-Hamdani
	10:00	Break
	10:30	Components and Importance of Postharvest Horticulture and Technology - Dr. Ronald Buescher
	11:30	Break
	12:00	The Importance of Fruits and Vegetables - Dr. Ronald Buescher
	1:00	Adjourn
May 29	8:20	Structural Components of Fruits and Vegetables as Related to Postharvest Quality - Dr. Ronald Buescher
	10:00	Break
	10:30	The Life of Fruits and Vegetables as Related to Postharvest Quality - Dr. Ronald Buescher
	11:30	Break
	12:00	The Importance of Respiration to Postharvest Handling, Storage and Marketing - Dr. Ronald Buescher
	1:00	Adjourn
May 30	8:30	Economic Consideration for Postharvest Technologies in the Marketing of Fruits and Vegetables - Dr. Tom Clevenger
	10:00	Break
	10:30	Economic Considerations, continued - Dr. Tom Clevenger
	11:30	Break
	12:00	The Concept of Quality Control and Standards - Dr. Ronald Buescher
	1:00	Adjourn

Short Course Agenda, Continued

DATE	TIME	TOPIC AND SPEAKER OR LECTURER
May 31	8:30	Economic Impacts of a Market Information System That Reaches Farmers and Traders - Dr. Tom Clevenger
	10:00	Break
	10:30	Policy Issues Related to Domestic and International Market Development - Dr. Tom Clevenger
	11:30	Break
	12:00	Postharvest Losses of Perishables: Situations Causing Losses - Dr. Ronald Buescher
June 1	8:30	Biological Causes of Postharvest Losses - Dr. Ronald Buescher
	10:00	Break
	10:30	Physical Causes of Postharvest Losses - Dr. Ronald Buescher
	11:30	Break
	12:00	Environmental Causes of Postharvest Losses - Dr. Ronald Buescher
	1:00	Adjourn
June 2	8:30	Plant Diseases that Occur on Vegetables and Fruits During Storage, Transportation and Marketing. Mr. Hammood Al-robaid, Phytopathologist, Plant Protection Project, Sana'a.
	11:00	Adjourn
June 3		Rest and Review

Short Course Agenda, Continued

DATE	TIME	TOPIC AND SPEAKER OR LECTURER
June 4	8:30	Socio-Economic Causes of Postharvest Losses - Dr. Ronald Buescher
	10:00	Break
	10:30	Methods to Reduce Postharvest Losses: Production, Variety Selection and Harvesting Practices - Dr. Ronald Buescher
	11:30	Break
	12:00	Methods to Reduce Postharvest Losses: Cleaning, Curing, Sorting, Grading, Waxing, Packing and Packaging
	1:00	Adjourn
June 5	8:30	Methods to Reduce Postharvest Losses: Temperature Control - Dr. Ronald Buescher
	10:00	Break
	10:30	Methods to Reduce Postharvest Losses: Storages - Dr. Ronald W. Buescher
	11:30	Break
	12:00	Methods to Reduce Postharvest Losses: Handling and Transportation - Dr. Ronald Buescher
June 6	8:30	Methods to Reduce Postharvest Losses: Chemical Treatment for Sprouting, Ripening, Cleaning, Decay and Insects - Dr. Ronald Buescher
	10:00	Break
	10:30	Review of Methods to Reduce Postharvest Losses
	11:30	Break
	12:00	Methods of Processing to Reduce Postharvest Losses - Dr. Ronald Buescher
	1:00	Adjourn

Short Course Agenda, Continued

DATE	TIME	TOPIC AND SPEAKER OR LECTURER
June 7	7:00	Visit to Central Wholesale Market in Sana'a
	9:30	Return to Classroom
	10:30	Discussion of Quality, Handling and Marketing of Fruits and Vegetables in Sana'a Markets
	11:30	Adjourn
June 8	8:30	Review of Workshop Materials on Postharvest Handling, Storage and Marketing of Fruits and Vegetables in the Yemen Arab Republic - Dr. Ronald Buescher
	10:00	Break
	10:30	Evaluations, Recommendations and Presentation of Certificates
	11:30	Adjourn

IV. POSTHARVEST HORTICULTURE SHORT COURSE SUBJECTS

Subject

I. Introduction - Components of Postharvest Horticulture

II. The Importance of Fruits and Vegetables

III. Description of Fruits and Vegetables

- A. Classification
- B. Structural Components Important to Postharvest Quality

IV. The Life of Fruits and Vegetables

V. The Importance of Respiration

VI. The Concept of Quality and Standards

VII. Postharvest Losses of Perishables

- A. Causes of Losses: Definition and Situation
- B. Biological Causes of Postharvest Losses
- C. Physical Causes of Postharvest Losses
- D. Environmental Causes of Postharvest Losses
- E. Socio-Economic Causes of Postharvest Losses
- F. Primary Causes of Postharvest Losses of Certain Fruits and Vegetables

VIII. Methods to Reduce Postharvest Losses of Fruits and Vegetables

- A. Production Practices and Variety Selection for Reducing Postharvest Losses
- B. Harvesting Method to Reduce Postharvest Losses
- C. Treatments Before Marketing or Storage to Reduce Postharvest Losses
- D. Methods of Cooling to Reduce Postharvest Losses
- E. Methods of Temperature Control

VIII. Methods to Reduce Postharvest Losses of Fruits and Vegetables, (Continued)

F. Methods of Storage to Reduce Postharvest Losses

G. Chemical Treatments to Reduce Postharvest Losses

H. Methods for Controlling Postharvest Losses Caused by Insects

IX. Reducing Postharvest Losses by Process Preservation

A. Major Methods of Processing to Preserve Foods

B. Methods Used to Process Grapes, Okra, Onions, Potatoes and Tomatoes

X. Chemicals Used in Postharvest Handling of Fruits and Vegetables and Their U.S. Suppliers

XI. Postharvest Pesticide Tolerance on Raw Horticulture Commodities in the U.S.

XII. Specific Requirements for Grapes, Okra, Onions, Potatoes and Tomatoes in the U.S.

V. PLANNING AND PROGRAM COMMITTEE FOR SHORT COURSE (WORKSHOP)

Tom LaQuey, CID/CORE, Sana'a

Ahmed Said, MAF, Sana'a

Ali Saif Hassan, YAMC, Sana'a

Faisal Saif, YAMC, Sana'a

Milton Snodgrass, CID/CORE, Sana'a

Hamood Al-robaid, Plant Protection Project, Sana'a

Tom Clevenger, CID/New Mexico State University, Department of Agricultural Economics

Ronald Buescher, Postharvest Institute for Perishables, University of Idaho; University of Arkansas, Food Science Department

Pat Peterson, USAID/ADO/YAR

FACILITIES PROVIDED BY GERMAN PLANT PROTECTION PROJECT, SANA'A