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Quality management of fresh produce from the highlands of Papua New Guinea: a postharvest manual

By Vincent Haguluha and Ernest Natera

Edited by John Spriggs



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FOREWORD

The Papua New Guinea (PNG) highlands represent a unique environment in which high-quality temperate zone fresh produce is grown organically year-round. This region provides not only for subsistence needs, but also is increasingly important as a source of marketed fresh produce for consumers in both the highlands and the populous coastal regions of PNG. Fresh produce grown in the highlands of PNG represents one of the few sources of cash income for poor rural households in that region.

According to many highland farmers, the biggest constraint to developing their fresh produce industry is the marketing system. A common refrain is: 'we know how to grow it but we don't have the market'. Based on these concerns, the Australian Centre for International Agricultural Research (ACIAR) commissioned a research project in collaboration with the Fresh Produce Development Agency (FPDA). The FPDA, based in Goroka, is a key player in the promotion and development of fresh produce in PNG, working to alleviate the various constraints on the industry. That project, entitled 'Improving the marketing system for fresh produce from the highlands of Papua New Guinea', identified a number of issues with the marketing system for highland fresh produce, and developed a number of strategies for dealing with them.

One of the issues identified was a perceived lack of skills in postharvest management and marketing of fresh produce. The production of this manual brings together basic information on these issues in the Papua New Guinea context. It is authored by two of FPDA's professional staff under the editorial guidance of Professor John Spriggs of the University of Canberra. The authors, Vincent Haguluha and Ernest Natera, are postharvest specialists who have extensive knowledge of postharvest technology relevant to the fresh produce industry in PNG and are well placed to author such a publication.

It is hoped that this manual will prove to be a valuable reference for farmers, marketers and extension personnel as they seek to improve the management and marketing of highlands-based fresh produce.



Peter Core
Chief Executive Officer

Australian Centre for International Agricultural Research

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1. Introduction



1. INTRODUCTION

This manual provides guidelines for improving the management of fresh produce to help maintain its quality through the supply chain from the farmer to the consumer. It is intended primarily as a resource manual for extension agents and commercial farmers.

The most important aim of quality management of fresh produce is to extend its storage life. This can be achieved by reducing the rate of respiration (i.e. the rate at which the food made by the plant is burned to produce energy), reducing the rate of transpiration (i.e. the rate at which the plant loses water), and reducing the rate of disease infection. At the same time, storage life can be improved by moving produce quickly from the farm to consumers once it reaches maturity. Consumers prefer and are willing to pay more for good-quality fresh produce that has a good appearance, taste, flavour and texture, and high nutritive value.

Worldwide, commercial sales of fresh produce are in the billions of dollars. Consequently, huge sums are invested in transportation, packaging, storage and marketing facilities to prolong the storage life of produce, as well as in technologies to maintain a continuous supply of fruits and vegetables within and across international boundaries. Although there are no official figures on postharvest losses, technologists agree that in developed countries up to 25% of produce is lost each year before it reaches the consumer. In developing countries such as Papua New Guinea (PNG), this figure could be as much as 50%. There is therefore an urgent need for improved postharvest management of, and technology for, fresh produce, particularly in developing nations.

The idea of improving quality management and technologies for fresh produce in PNG is still a relatively new concept. There is a general lack of appreciation that specific management procedures are required to maintain the quantity, quality, safety, nutrition and value of fresh produce after harvest, especially if it is intended for long-term storage and/or distant markets. The purpose of this manual is to fill this knowledge gap.



Figure 1.1: Some examples of poor postharvest management of fresh produce. Clockwise from top left— kaukau (sweet potato), tomatoes, capsicums, carrots, English potatoes, and cauliflower.

It is hoped that this manual will help extension agents and commercial growers to:

- better understand the biological and environmental factors involved in deterioration
- use quality management techniques that delay senescence (old age—the final stage of development of the plant organ leading to the breakdown and death of plant cells) and maintain the best possible quality.

It aims to do this by providing management guidelines on how to maintain the quality of produce from harvest through to the final consumer, and thereby generate higher returns for farmers and other participants in the supply chain.

Although the manual concerns activities at harvest and during post-harvest, it should be noted that preharvest cultural practices may also contribute significantly to product quality in the marketplace. Such practices include the choice of inputs such as seed varieties, fertilisers and agricultural chemicals, as well as farm management techniques.

Figure 1.1 shows some examples of poor postharvest management of fresh produce. When produce is in such condition it cannot be sold or must be sold at a much lower price.

Section 2 is concerned with quality in fresh produce, and includes discussion of:

- what is meant by quality
- what criteria are used to judge quality
- why produce deteriorates in quality.

In Section 3 the basics of quality management are discussed, including basic practices that all commercial farmers and marketers of fresh produce should be able to follow. These practices are discussed under the headings:

- harvest management practices
- postharvest management practices (handling)
- storage
- transportation
- marketing and postharvest losses.

In Section 4 a guide to basic quality management of individual produce types that are important in the highlands of PNG is provided. They include: asparagus, broccoli, English cabbage, capsicum, carrots, cauliflower, cucumber, lettuce, bulb onions, potato and kaukau (sweet potato).

Further information on the quality management of these and other types of fresh produce may be obtained from:

Market and Infrastructure Division
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Phone: 675-732-3356.

