

Acknowledgements

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Preface

In many developing countries, plenty of food resources go to waste due to inadequate post-harvest handling, poor storage facilities and the unavailability of appropriate food processing technologies at village level. This especially applies to highly perishable food products such as fruits and vegetables for which marketing has been identified as a major constraint in horticultural production in smallholder farming systems. During the seasonal harvest glut, e.g. of fruits, most of the produce goes to waste before it reaches the markets. Smallholder agriculture is also hampered by limited investment capital in post-harvest handling and processing activities. In order to address some of the problems facing small-scale horticultural farmers, introduction of appropriate technologies in post-harvest handling and processing that are within the financial reach of the farmers is therefore important. Such technologies help to preserve the foods and make them available even when they are out of season. This allows farmers to earn income not only from sales of fresh produce but also from processed products.

Despite the fact that extension efforts from the government and non-governmental development agencies are involved in the dissemination of processing technologies to the rural communities, the impact so far has been low since only few farmers have been enabled to produce good quality processed products that find a place in the markets. This was mainly caused by the fact that the appropriate technologies have been disseminated with an inappropriate extension approach that placed more emphasis on individual farmers and the dissemination of information rather than practical skills.

Hence, ITFSP in collaboration with extension officers of the Ministry of Agriculture and Rural Development (MoARD) in Kenya has developed group oriented, farmer-trainer extension approach for the dissemination of fruit processing technologies. In principle 2 or 3 interested women farmers from rural women groups are trained to become farmer trainers during on the job training workshops. The major components of the training of these farmer-trainers and the facilitating extension officers in processing technologies are:

- On the job group trainings of farmer trainers from different groups at a central place such as a vocational training center
- Networking for trained farmer trainers to regularly share experiences
- Product development
- Importance of quality and hygiene standards during regular follow-up meetings
- Marketing and linking the farmers to market

As a result of this extension process in the pilot areas of Kenya (Eastern, Rift Valley and Coast Provinces), about 48 women groups consisting of 194 farmer trainers and 923 farmer followers produce dried mangoes, bananas, pawpaws, tomatoes as well as jams, marmalades, chutneys and pickles. This directly contributes to the overall household economy, and also provides a year-round supply of preserved fruits and vegetables products that increase the nutrition standards in the farm households.

This training manual is the result of the six years' experiences of ITFSP in processing of fruits and vegetables. It is meant to equip farmers and extension officers with skills in processing through on-the-job training. It presents successful village-level processing activities that proved applicable for the processing of high quality products at farm level.

The manual is structured in a modular format under the following major topics:

- Preservation by drying
- Preservation by use of acid, salt and sugar
- The manual also outlines basic principles of hygiene and preservation
- How to utilize the preserved products and gives the nutrition aspects of some dried products
- Nutritive value of preserved fruits and vegetables

The different recipes included in the manual are a selection of applicable processing activities at farm/village level, which result in marketable products for both the local and export markets.

It is hoped that this manual will be used both by the farmers, extension and research officers to reach out to more farmers and disseminate the processing technologies. This will in turn improve the utilization of fruits and vegetables in their contribution to higher nutrition standards and income to farm households at village level.

Introduction

A variety of fruits and vegetables are produced in Kenya. They include mangoes, pawpaws, bananas, passion fruits, guavas, tomatoes, and green vegetables among others. During peak production season – when there is a glut - the fresh produce fetches low prices. The problem is further complicated by the low quality of the produce due to poor handling during harvest, transport, and storage practices. During wet seasons, poor roads hinder access to markets further leading to more losses, as most of the produce is perishable.

To solve some of these problems, processing of the fresh produce is necessary in order to:

- Reduce bulk and perishability leading to ease in transportation and marketing.
- Add value to the fruits and vegetables thus improve farm family income.
- Reduce post-harvest losses and spread out the availability of the fruit and vegetables for longer periods. This will improve nutritional standards of the rural population.
- Introduce market dynamics to the rural farming communities by exposing them to local and export market of the processed products.
- Support local cottage industries through increased awareness of locally available processing technology and equipment.

The village level processing aims at utilising locally available materials, without adding commercial preservatives and/or the use of expensive industrial equipment. Village level processing of fruits and vegetables is ongoing with a few groups in Embu, Mbeere, Kitui and Mwingi districts of Kenya. The processing activities include drying of mangoes, tomatoes, pawpaws, bananas, guavas and green vegetables. Jam is being processed from mangoes, pawpaws, and guavas. Other products in the pipeline are squashes, chutneys, marmalade, jellies, syrups, sauces, and pickles.

Introduction of cottage industries through village level processing is one step towards realisation of Kenya's dream of industrialisation by the year 2020.