Case Study on ACP Postharvest Knowledge System

Background

The CTA Strategic Plan 2011-2015 identifies three strategic goals: strengthening the African Caribbean and Pacific (ACP) agricultural and rural development policy processes; enhancing priority agricultural value chains; and enhancing ACP capacities in information, communication and knowledge management for agricultural and rural development. Within this context, CTA has identified strengthening capacity for evidence based policies, decision making and implementation for supporting agricultural transformation in the ACP Group of States. At the 10th meeting of the Advisory Committee on Science and Technology for ACP Agricultural and Rural Development in Dominica in 2011, senior ACP and EU scientists and decision makers agreed that reducing postharvest losses was of strategic importance for ACP countries.

The problems of low agricultural productivity and food insecurity in ACP countries are exacerbated by a high incidence of postharvest losses. Recent estimates by the FAO (2011) show that postharvest losses are highest in the ACP regions. In Africa alone, for instance, postharvest losses have been estimated to be 25% for grains, 50% for horticultural produce, and 10% for fisheries capture, amounting to over USD 48 billion per annum (NEPAD PCA, 2011). These estimates do not include losses in (a) quality (due to downgrading), (b) nutritional value and (c) the health burden associated with consuming contaminated food products. Recent studies by Opara et al. (2012) have shown that postharvest losses in fruit and vegetables are high, and depending on the value chain, postharvest losses at retail alone can exceed 20%.

A wide range of factors contribute to postharvest losses along the supply/value chain, including pre-harvest factors and physical/mechanical damage, environmental hazards (poor temperature and relative humidity control), pests and diseases, senescence, and rigorous quality standards which cause products with minor physical blemish such as slight discoloration or misshapen produce to be rejected. To reduce the incidence of postharvest losses, investments in capacity development and adoption of improved technologies and infrastructure including the implementation of appropriate policies, are essential. These improved techniques and procedures result in good postharvest management harvest. Reducing the incidence of postharvest losses contributes to: improving 'physical' food availability to address food insecurity; increasing 'economic' access to food through jobs and income generation and increased market access.

In the ACP region, the associated reasons for the high postharvest losses and socio-economic costs are not sufficiently known or well understood in the ACP region. There is insufficient accurate data because postharvest losses are not systematically

collected, quantified and analyzed. Consequently, the ACP postharvest knowledge system is considered weak based on a number of limiting factors namely:

I. Poor pre-harvest systems including limited knowledge and / or availability of appropriate varieties/species for processing and other value added markets;
II. Limited knowledge and / or availability of tools/equipment for harvesting and facilities for value addition/processing - sorting, grading, cleaning/washing, preservation, packaging, storage and distribution;
III. Inadequate information on the extent of the problem and the underlying reasons for the losses at various stage of the supply chain;
IV. Inadequate training, research and development on pre-harvest and postharvest systems and limited investments in improving the knowledge and skills base;
V. Inadequate policies, policy instruments including food and product standards and regulatory frameworks and policy support e.g. incentives for purchasing the necessary equipment.

A postharvest knowledge system includes the human and institutional capacity and infrastructure for generating, disseminating and using knowledge. It also includes the state of postharvest research and innovation, and the availability of centres of excellence. Therefore, assessing and understanding the status of postharvest knowledge system is critical for evidence-based policy making and improving practices for strengthening ACP agricultural systems.

Given the need to better understand the strengths and weaknesses of the ACP postharvest knowledge system, to better identify, plan and implement interventions for improving policy and practice, selected country case studies will be conducted by focusing on one priority commodity (tracking from field to market) to learn lessons. The following questions will be addressed:

I. What is the extent of the problem? How is it quantified? Are the underlying causes well understood? Is available information being disseminated and used for informing policy and practice? What mechanisms need to be put in place to improve the information/evidence base?

II. Using the particular commodity as a reference, what is the status of postharvest research, teaching and innovation? Does the capacity exist to generate, disseminate and use knowledge to reduce postharvest losses?

III. What is the status of postharvest handling and processing facilities, engineering and equipment design and development capability, as well as packaging facilities and capability.

IV. Where are the centres of knowledge/excellence in teaching and research located and what are their major areas of focus, strengths and weaknesses;

V. What additional data are needed to guide policy and strategic interventions to adequately address this important issue?

Towards a Conceptual framework

To facilitate the conduct of the case studies a conceptual framework has been developed which includes:

1) An agreed set of criteria for identifying priority commodities which reflect national or regional priorities;
2) A methodological framework for assessing and understanding the status of postharvest knowledge systems.

Identifying key commodities which reflect national/ regional priorities for pilot testing

Given the limited resources to develop evidence-based policy to guide practice and system improvement, it is important to use an agreed approach to identify key commodities which reflect national/regional priorities is necessary. The following steps are proposed:

(a) Identify the top ten locally produced crops/livestock/fisheries based on available production (and consumption) statistics (see national or regional statistical databases, FAO statistics or other internationally available data);
(b) Using existing national and agricultural development plans and related policy documents (e.g. food and nutrition security policies and plans), identify priority commodities that are earmarked for meeting food security goals or other specific development actions e.g. regional trade or diversification;
(c) Identify a list of key stakeholders involved in the supply/value chain, from private and public and public sectors and development practitioners;
(d) Identify the main steps in the supply /value chains (from farm to fresh produce market, major supermarket and processing plant) and the incidence and magnitude of postharvest losses along the chain based on available studies/reports;
(e) Using the information gathered in (a) to (d) and working with the group of 'experts' identified in (c), rank the major commodities based on national and regional economic importance and opportunities for value addition. The ranking can be achieved through a series of meetings and/or electronic (e.g. email) consultations;
(f) Prepare a synthesis report of the work undertaken.

Pilot testing – Evaluating the postharvest knowledge system: Simulating postharvest losses from Field to Market/Fork

The following steps are to be applied for such an assessment of the postharvest knowledge system, using a combination of desk top reviews, site visits and consultations with key stakeholders:

(a) Select one of the top priority commodities ranked in item (e) above for pilot testing;
(b) Map the current state of knowledge on postharvest handling of the particular commodity based on current literature and good practice;
(c) Map the indigenous/traditional knowledge on postharvest handling from consultations with key stakeholders based on current practices;
(d) Track the commodity from farm to market (fresh produce, major supermarket and processing plant) and document existing methods of harvesting, transport

from field, preparation (sorting, trimming, cooling etc), further processing/preservation, packaging, storage and distribution.

(e) Identify the main hot spots or areas where postharvest losses occur;
(f) Record available data on the extent of postharvest losses for the commodity;
(g) Assess the status of postharvest knowledge - handling, processing and packaging facilities, and capability for engineering and equipment design;
(h) How does existing practice differ from current state of the art/knowledge of postharvest handling based on literature survey results from (b) above.
(i) Identify the centre(s) of knowledge/excellence in teaching and research on postharvest and the major areas of focus;
(j) Assess the human, infrastructural and institutional capacity and readiness to generate, disseminate and use postharvest knowledge across the value chain;
(k) Determine what additional data is needed to guide policy and strategic interventions to improve the postharvest knowledge system based on findings; and
(l) Prepare a report mapping the postharvest knowledge system and highlight specific policy options on key areas needed to strengthen the postharvest knowledge system in the selected ACP region.

Duration

Start and end dates: 15 September - 15 November 2012

S/No.	Activity	No. of Days
1	Identify a key commodity and prepare flow charts for key supply /value chains to include from farm to fresh produce market; supermarket; processing plant based on established theory and practice for minimizing postharvest losses	3.0
2	Conduct desk research on available data / information on postharvest handling and losses for the commodity identified including research and training	5.0
3	Track the commodity to identify the true nature of the harvesting and postharvest handling methods within country to identify major problem areas	10.0
4	Identify the gaps between the theoretical optimum and the actual	2.0
5	Prepare a draft report on findings and share results with some key stakeholders and colleagues prior to submitting draft to CTA – (list of names of colleagues and stakeholders consulted should be included)	3.0
6	Finalize report which incorporates CTA's comments	2.0
	Total	25