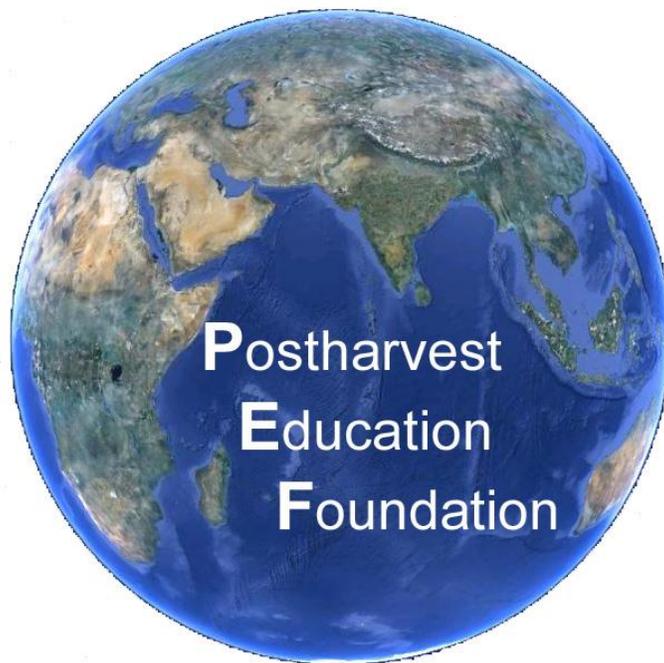


# **Gathering Data to Address Postharvest Loss Challenges: Commodity Systems Assessment Methodology**

PEF White Paper No. 13-02

**The Postharvest Education Foundation (PEF)**

October 2013



**Gathering Data  
to Address Postharvest Loss Challenges:  
Commodity Systems Assessment Methodology**

PEF White Paper No. 13-02

Contributing authors:

Harvey C. Neese

Director of the Postharvest Institute for Perishables (PIP), University of Idaho – Retired

Thomas V. Dechert

Former Field Director of the Postharvest Institute for Perishables (PIP), University of Idaho – Retired

Robert J. (Bob) Haggerty

Director of International Agricultural Programs, University of Idaho

James McCullough

Former Professor of Marketing, Washington State University – Retired

Judith Edmister

Former Field Director of the Postharvest Institute for Perishables (PIP), University of Idaho

Jerry La Gra

Rural Development and Marketing Specialist, Inter-American Institute for Cooperation in Agriculture (IICA) – Retired

Lisa Kitinoja

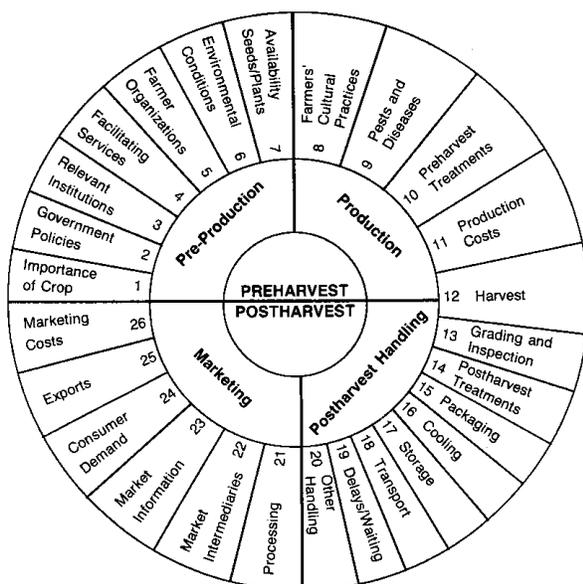
Postharvest Specialist, The Postharvest Education Foundation

## Gathering Data to Address Postharvest Loss Challenges: Commodity Systems Assessment Methodology

The Commodity Systems Assessment Methodology (CSAM) is a step-by-step methodology for describing and evaluating the planning, production, postharvest handling and marketing of agricultural commodities. The CSAM concept was conceived and initiated by Harvey Neese, Director of the Postharvest Institute for Perishables (PIP) and developed as a joint effort with the Inter-American Institute for Cooperation on Agriculture (IICA), and the ASEAN Food Handling Bureau. The primary author is Jerry LaGra, IICA Rural Development and Marketing Specialist, working in collaboration with PIP staff during the 1980s. Since that time, CSAM has been utilized in the field to gather data on postharvest losses and to document the constraints and opportunities for agricultural development in many developing countries, initially for several USAID funded projects in Egypt, Lebanon and Indonesia.

Using the CSAM approach, individual commodities (fruits, vegetables, root crops, grains, animal products, fish, etc.) from a chosen region are studied from planning production through retail marketing. The studies usually occur as 5-6 day workshops with local agricultural specialists and private sector personnel. One or two persons familiar with the CSAM should be present as facilitators. The CSAM is dependent on the knowledge and active input of local participants in the commodity system (i.e., farmers, traders, transporters, merchants, researchers, agriculturists, etc.) rather than high level agricultural specialists.

The CSAM divides the food system into 26 components and identifies in questionnaire format the type of information which should be collected on each component. During the application of the methodology, working groups gather information to describe institutional and environmental aspects, pre-production, production, harvest, postharvest handling, agro-processing, transportation, and marketing conditions in commodity systems. The methodology is adaptable to local needs and may also include the collection and review of secondary literature, working groups, plenary sessions, on-farm visits, and field work by one or more inter-disciplinary teams.



Postharvest experts and trainers at the World Food Logistics Organization (WFLO) and The Postharvest Education Foundation (PEF) have been using this data collection methodology in Africa and South Asia since 2009. We believe that it could help USAID, USDA and other global organizations to collect missing postharvest data while at the same time teaching local people to identify priority causes and sources of losses and cost-effective solutions.

As part of a Bill and Melinda Gates funded project, WFLO trained more than 300 people to conduct commodity systems assessments, and

then sent teams to collect data on 30 crops in India, Rwanda, Benin and Ghana during 2009-10 (Kitinoja, 2013). As part of a recent USAID Hort CRSP project with colleagues at UC Davis, WFLO just completed a Training of Trainers capacity building program for 36 African postharvest professionals from government agencies and the private sector which included training in CSAM (2010-12). The Postharvest Education Foundation is currently providing three e-learning programs (2012-13) for 85 trainees from 13 countries that include CSAM fieldwork and reporting on a crop of interest in their country.

As noted by Lisa Kitinoja, a frequent CSAM trainer and facilitator, “The most useful sections of the manual have been the data gathering forms provided (and in each case we have modified these to fit the country, commodity, and culture), and the many data summarization ideas, which serve both as examples of what kinds of formats might be used to present the data, and give people ideas for new ways of organizing their results.”

### **Expected CSAM Outputs**

The expected output from implementing the CSAM is to identify problems in a commodity systems and solutions for increasing food supplies and farmer incomes (food security). The result of implementing any particular CSAM is an understanding of the total commodity system and the identification of priority problems throughout the system as identified by those directly involved in the value chain. Once these problems are clearly defined, possible solutions can be identified and projects for change designed. The resulting solutions tend to be effective because they include active roles for the intended beneficiaries and actions can thus be implemented on a timely basis.

Applications to date have shown it is an effective tool of utilizing the knowledge and experiences of local personnel and participants in the food chain to improve the system.

The CSAM provides tested methodologies for problem identification (brainstorming), cause-effect analysis (problem tree), definition of objectives (objective tree), and the formulation of project ideas into project profiles which can then be inserted into a logical framework for project proposal presentation. Percent losses (as measured by changes in weight or volume) are often determined to be less important than economic losses (as measured by the decline in market value per kg or unit sold). One of the most direct and practical results is a list of the priority problems categorized as 1) Research Needs, 2) Extension/Training Needs and 3) Advocacy Issues.

In addition to the identification and formulation of sound development projects by the working groups, using the methodology often leads to improved communication and coordination among professionals and local participants in commodity systems; improved coordination between institutions; improvement of the information based on specific commodities; and hands-on training for agricultural professionals, farmers, and intermediaries. WFLO uses CSAM for project assessment and start up, and PEF trained consultants have been hired to do commodity systems assessments for organizations in East and West Africa. The trainees who have undergone recent CSAM training programs with WFLO and PEF have successfully used their

CSAM reports to write proposals for their own research projects, extension programs, and master's theses.

### **Conclusions and Vision (Ideation)**

The impact of CSAM to date is only a fraction of what it could be with a more organized effort for its implementation. The CSAM methodology has withstood the test of time. Users of the manual are now calling for its updating (integration of recent case studies and insights into sustainable agricultural development) and funding for more training workshops.

It would be highly advantageous for countries with food problems, if USAID would consider supporting a program to set up CSAM Training Workshops in the many Feed the Future and other developing countries that are having food systems problems and experiencing high postharvest food losses. Training local agricultural specialists in these countries through CSAM Training Workshops would greatly benefit the ability of these countries to collect appropriate data and to solve some, if not most, of their food problems currently and in the future.

From the various CSAM workshops that have been completed in a number of countries, it has been found by agricultural officials that the CSAM helps them solve some, if not many, of their own food system problems before they became serious and complex. The training of locals in use of the CSAM principles and practices allows them to begin solving problems in an organized manner very early instead of having waiting until foreign experts can be brought in to assist them.

We believe that aid donor agencies could save on their financial inputs to various developing countries by training local agricultural ministry personnel and/or university faculty in the basics of the CSAM in all countries receiving agricultural assistance in order for them to utilize the CSAM principles on a regular and systematic basis as part of planning and implementing their food security programs.

### **References**

Kitinoja, L. 2013. Innovative Small-scale Postharvest Technologies for Reducing Losses in Horticultural Crops. *Ethiop .J. Appl. Sci. Technol.* (Special Issue No.1): 9- 15 (2013)  
<http://ucce.ucdavis.edu/files/datastore/234-2584.pdf>

La Gra, J. 1990. *A Commodity System Assessment Methodology for Problem and Project Identification*. Moscow, Idaho: Postharvest Institute for Perishables.

### **Commodity Systems Assessment Methodology (CSAM): A Brief History**

In the 1970s, an agricultural economist, a food technologist and an agronomist initiated descriptive studies of the production, postharvest and marketing systems of important fruit, vegetables and grain crops in the Dominican Republic. The resulting reports identified the main

problems (and their causes) occurring for each of the products. The research identified wide variability in key participants, sub-systems, marketing, and decisions that impacted product quality, quantity, price, and sustainability.

During the next ten years, the Inter-American Institute for Cooperation on Agriculture (IICA) and the Postharvest Institute for Perishable (PIP) formed a partnership to develop the Commodity System Assessment Methodology (CSAM) in 5 Caribbean islands, 4 Central American countries, and 7 Asian countries. Agricultural systems for specific crops were described and analyzed using CSAM techniques in over 15 countries. As examples, in St. Lucia, 15 small farmers formulated three projects that were later implemented and grew into sustainable NGO businesses; in Honduras, participants at the Zamorano Pan-American Agriculture School generated information for design of the government's agricultural policy; and during a two week CSAM workshop at the Malaysian Agricultural Research & Development Institute (MARDI), 25 PhD/MSc participants wrote a book on the production, postharvest handling and marketing of carambola – a major export crop for Malaysia. Based on that CSAM workshop, MARDI restructured its approach to research.

In 1990, PIP (funded by USAID) published "*A Commodity System Assessment Methodology (& training manual) for Problem and Project Identification*". In 1993, IICA published the manual in Spanish and sometime later USAID published it in French for use in French speaking African countries. During the decade of the 1990s, CSAM was promoted at the country level in Africa, Asia and Latin America and the Caribbean. FAO digitized the CSAM manual in the following decade and disseminated it from its library database. During the 1990s CSAM was utilized by Dr. Lisa Kitinoja in a variety of USAID and USDA funded projects in Egypt, India and Indonesia. Since 2000 CSAM has been used by consultants trained by WFLO and PEF to organize hundreds of workshops and training sessions for scientists, university students and farmers around the world. In 2005 parts of the CSAM manual were translated into Arabic for systematic training of scientists, extension officers and farmers in Egypt and Lebanon. An MCC project in Cape Verde (2007-08) used the CSAM manual for training, and for working with small farmers and marketers for problem solving and identifying local needs. At that time parts of the manual were translated into Portuguese. Since 2009, WFLO projects and PEF e-learning programs have trained more than 400 young people in CSAM principles and practices.

### **Draft Proposal for USAID sponsored CSAM Training Workshops**

The University of Idaho International Programs in the College of Agriculture, which was involved through the Postharvest Institute with organizing the first CSAM Training Workshops, is proposing a viable and low cost means to initiate this training program.

The proposed Director of the program is Dr. Robert Haggerty who was a participant with the initial team that visited a number of Asian countries to determine if ministries of agriculture could see benefits for their food systems if the CSAM was developed. After ministries of agriculture in every country visited responded positively, Jerry La Gra was asked by the Postharvest Institute for Perishables (PIP) to prepare the CSAM manual for use in developing countries to improve their food systems.

A first step is to set up an initial CSAM Training Workshop at the University of Idaho for consultants with international experience and agricultural training to design and oversee the organizing of workshops in developing countries. At present there are only a few experienced agricultural specialists who have set up and conducted CSAM Training Workshops.

The next step would be for USAID, if it financially supports the project, to announce to ministries of agriculture in developing countries, the availability of the CSAM Training Workshops in their countries. Ideally, setting up a CSAM Training Workshop in each developing country receiving aid from USAID to improve food systems would be a requirement in order to continue financial assistance. It is a good bet that with local ministries of agriculture and professors in agricultural colleges and universities trained to solve some of their own problems and reduce the severity of most food systems issues, the benefits of providing CSAM training would shortly outweigh the costs. Note: The costs for workshops would be paid by each USAID Country Mission requesting a workshop.

#### Personnel and support requirements

1) Home Office Directing the Program for CSAM Training Workshops in developing countries  
--Director for managing and overseeing the office at the University of Idaho  
--Part time assistant  
--Full time secretary

#### 2) CSAM Workshop Personnel

CSAM Training Workshops might be presented at agricultural academic institutions and some might be regional with countries' agricultural personnel attending a workshop for several countries. Each CSAM workshop would require two experienced consultants well versed in implementation of CSAM workshops. Including preparation, travel, directing and evaluating each workshop, it would require approximately 6 weeks of consultant time. With minimum investment, an estimated 5 to 7 CSAM training workshops could be offered each year.

Below are some of the experts who have been involved in CSAM workshops for a number of years and support the *initiation* of workshop training programs in *all* countries receiving agricultural assistance programs:

Lisa Kitinoja, Postharvest Specialist, The Postharvest Education Foundation (PEF)  
Hala Chahine, Postharvest Specialist, The Postharvest Education Foundation (PEF)  
Nikki Duncan, International Programs Manager, World Food Logistics Organization (WFLO)  
Lizanne Wheeler, Horticultural Trainer/Consultant, World Food Logistics Organization (WFLO)  
Kerstin Hell, Agricultural Researcher, International Institute of tropical Agriculture (IITA)  
Jerry La Gra, Rural Development and Marketing Specialist, Inter-American Institute for Cooperation in Agriculture (IICA) – Retired  
Harvey C. Neese, Director of the Postharvest Institute for Perishables, Univ of Idaho Retired  
Thomas V. Dechert, Former Field Director of the Postharvest Institute for Perishables (PIP), University of Idaho – Retired  
Robert J. (Bob) Haggerty, Director of International Agricultural Programs, University of Idaho  
James McCullough, Former Professor of Marketing, Washington State University - Retired

**The Postharvest Education Foundation  
2013-2014 Board of Directors**

Lisa Kitinoja, President  
Patrick D. Brown, Secretary  
Devon Zagory  
Diane M. Barrett  
Hala Chahine-Tsouvalakis  
Deirdre Holcroft  
Chase DuBois

Copyright 2013 © The Postharvest Education Foundation  
ISBN 978-1-62027-002-8

**[www.postharvest.org](http://www.postharvest.org)**  
PO Box 38, La Pine, Oregon 97739, USA  
[postharvest@postharvest.org](mailto:postharvest@postharvest.org)