

# **A commodity systems assessment methodology for problem and project identification**

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**INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE  
POSTHARVEST INSTITUTE FOR PERISHABLES ASEAN FOOD HANDLING  
BUREAU**

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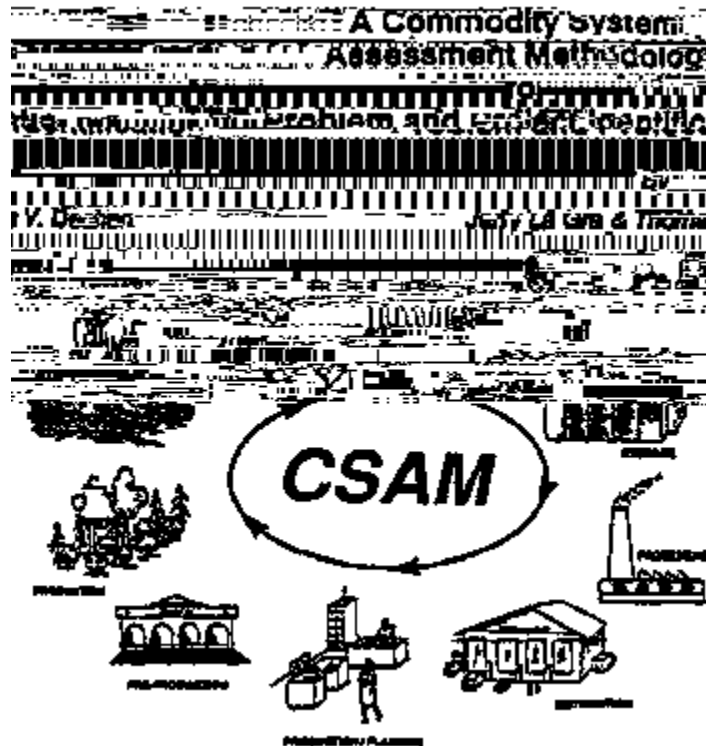
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### A Commodity Systems Assessment Methodology for Problem and Project Identification



by Jerry La Gra & Thomas V. Dechert

## **Acknowledgments**

In writing this Commodity Systems Assessment Methodology, I have drawn information from several different sources and countries. For their innovative research and dedication to understanding commodity systems, I am strongly indebted to Maria Loli

## Foreword

The publication of this manual marks the culmination of a long period of collaborative research by numerous professionals and organizations. In fact we believe that by providing the necessary organizational, institutional, and financial support over a period of approximately five years, the Inter-American Institute for Cooperation on Agriculture

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This publication is a **SUMMARY VERSION** of the **Commodity Systems Assessment Methodology (CSAM)**. The complete manual may be purchased from the Postharvest Institute for Perishables or the Inter-American Institute for Cooperation in Agriculture. Addresses are given below:

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# Chapter 1 - Purpose and origin of this manual

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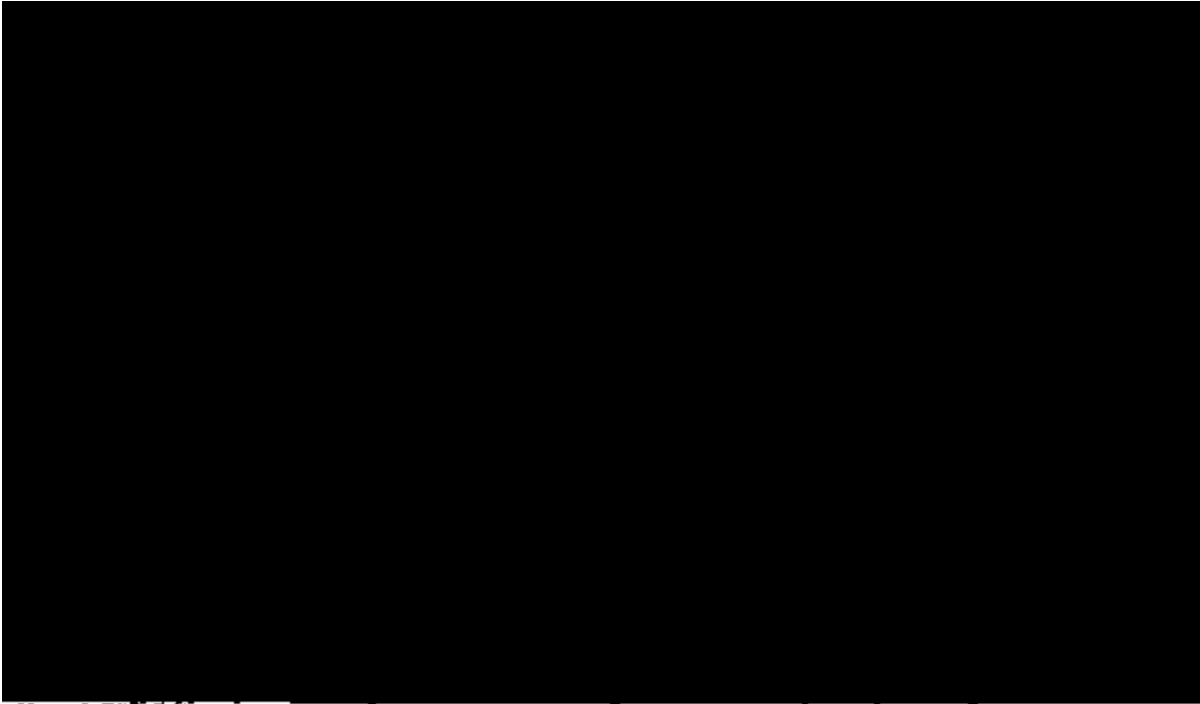
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**Solution**



The **first pitfall** is the tendency towards **over-reliance on readily available literature**. By this we mean literature available in libraries of embassies, developmental banks, international organizations or other information centers. Many In-depth studies with useful insights are only found at national and international universities and research centers and may not be readily available to short-term consultants. Some important documents are often available in only a few copies and are "hidden away" in private libraries or locked in desks of public sector employees. Being believers in the concept that information is power, they use these documents as their personal resource base. Local personnel are often aware of these documents while outsiders usually are not.

Additionally, much of the literature has been written by short-term consultants, based on work of previous consultants. In this way, statistics, problems, weaknesses, characteristics, cultural practices, and other statements are repeated so often in the literature that they become thought of as fact, even though at times they may have no substantive base. An example of this is the now often repeated statement that national postharvest losses of perishables are in the range of 20 to 40 percent. The greater the desire to obtain financing for a particular postharvest project, the higher the percentage of losses cited. Since there exists no quantifying data to prove the contrary, statements of this nature can be made with impunity. People often quote the document Postharvest Food Losses in Developing Countries (National Academy of Sciences, 1978), which itself was based on a review of secondary literature and expert opinion. While being perhaps the best estimate of losses in perishables on a global basis, statements from this document are misleading when applied to specific circumstances.

In fact, postharvest losses range between near-zero and 100%, depending upon such local conditions as climate, politics, cultural practices of farmers and intermediaries, market demand, government marketing policies, road conditions, and level of knowledge. Without an in-depth understanding of these conditions, many writers introduce misconceptions into national planning documents.

A **second pitfall** is the **over-dependence on a few national technicians** with limited experience. Like professionals everywhere, they tend to be specialized in one particular field with their corresponding biases. It is also not uncommon to find national "specialists" in the agriculture sector, often in decision-making positions, who lack recent field experience or direct contact with the rural sector. Additionally, with a shortage of trained personnel in many developing countries, technologically trained specialists may occupy purely administrative positions and be out of touch with their specialties.

A **third pitfall**, related to the former, is the tendency to involve **too few disciplines** in problem identification. National professionals or consultants, bound by their terms of reference, may find themselves working with one particular institution. Since most institutions tend to specialize in one or a few disciplines, e.g. water resources, agronomy, marketing, or food processing, consultants may find themselves looking at a system which in fact is only part of the system. If the project is related to irrigation or production, the marketing or agroprocessing aspect may be overlooked. If the project deals with marketing, perhaps the production or postharvest elements are overlooked, or given too little attention. For want of a multi-disciplinary approach, projects often do not produce the desired results.

A **fourth pitfall** is related to **timing** of project implementation. For example, information systems, including investments in hardware, software, and personnel, are often implemented before there is a clear understanding of who is to use the information, what decisions are to be made with what frequency, and what is the least costly and most practical method to institutionalize the process. Yes, information systems are necessary, but they should evolve to satisfy needs and not be introduced as a panacea!

Another example of wrong timing which often occurs in developing countries is related to the construction of cold storage facilities. Although the technology is readily available and the inauguration of infrastructure makes for good politics, lowering temperatures at one point in a perishable food chain without being able to maintain the lowered temperature throughout the system may well increase, rather than decrease, postharvest losses.

As a result of improper timing of projects, good ideas can lead to costly mistakes. Additionally, white elephants create negative feelings among decision makers, making it all the more difficult to introduce such projects into the system when they are truly needed. Poor timing in project implementation is often a reflection of decision making based on insufficient information.

A **fifth pitfall** is related to the **biased nature of specialists**. When a problem is identified there is a natural tendency to identify its causes. Each expert will identify those causes with which s/he is most familiar. Faced with a problem of high postharvest losses, the technologist may point to deficiencies in equipment and storage areas; the agricultural economist may identify weaknesses in the distribution system; the agronomist is likely to blame preharvest factors; the sociologist is likely to stress contradictions between government policy and local customs; and so on. Even those who follow a holistic approach are, by nature, going to give more attention to certain parts of a commodity system than to others. This underlines the importance of an interdisciplinary approach.

Using the step-by-step commodity systems assessment methodology and instruments presented in this manual, professionals will be able to avoid the pitfalls described. Working together as an interdisciplinary team, they will be able to systematically organize their combined knowledge into a comprehensive overview of a particular commodity system. This will produce the necessary information for proper problem and project identification, thereby improving the chances for success of development projects. In this way, national specialists will also play a more direct role in the determination of those priority projects which get submitted to funding agencies.

A basic assumption made throughout this manual is that professionals can be found in developing countries who, when presented with good baseline information on a commodity system, will be able to identify projects and establish realistic priorities. The more complete and more accurate the information base, the more likely it is that decisions made will be the correct ones to overcome the identified problems.

Based on the above

**THE KEY TO PROBLEM SOLUTION IS PROPER PROBLEM IDENTIFICATION.**

**Application of this manual**

This manual will prove useful to short-term consultants and decision makers interested in rapid appraisals and development from a commodity systems perspective. However, it has been prepared primarily with the national technician in developing countries in mind.

**The application of the methodology contained in this manual requires an interdisciplinary or team approach.** It is unlikely that one person will have all the knowledge to properly identify the problems related to preproduction, production, harvest, postharvest, and marketing which make up any commodity system.

This manual can be used in a workshop environment to train professionals in the commodity systems approach, either from a theoretical point of view, or as an applied, in-service, case study (specific commodity) form of training. In the first instance the trainees may be of the same or different disciplines. When the case study approach is used, the trainees should include persons with expertise in economics, agronomy, social sciences, food technology, postharvest, and marketing.

The manual will also prove useful to ministries of agriculture, marketing boards, corporations, research institutes, and other national institutions interested in the systematic improvement of production, postharvest handling and marketing within existing commodity systems. At the regional or national level, the methodology will prove valuable in the identification of agricultural development projects. It will be of particular value in the execution of rapid appraisal exercises, using interdisciplinary teams of national specialists.

A systematic and interdisciplinary application of this methodology will permit a rapid appraisal (2-4 weeks) of a commodity system. It will facilitate the identification of priority problems and alternative project ideas, and will permit the ordering of priority solutions into a development strategy and time frame.

Finally, for the student, this manual will promote a better understanding of commodity systems and the interrelationships between the diverse components and participants. It should serve as a valuable reference document for technical schools and universities teaching agricultural economics, food technology, postharvest handling, agronomy, sociology, and other subjects related to agricultural development.

**Original subjects related to 48 Tf 0 0 - 244x244g, agronomy, -**

the Dominican Republic by the Inter-American Institute for Cooperation on Agriculture (IICA).

In 1975, an IICA food technologist developed a technological approach to looking at a food system, integrating the industrial flow diagram concept with a step by step case study method (Amezquita and La Gra, 1979). Case studies using this technological focus were carried out in the Dominican Republic on white potatoes, tomatoes and cassava (Secretaria de Estado de Agricultura, 1976 & 1977).

During the four year period 1975-79, the Ministry of Agriculture in the Dominican Republic and IICA executed an Integrated Marketing Project to develop marketing systems for organized farmers. A diagnosis of the agricultural marketing system in the Dominican Republic was published (Secretaria de Estado de Agricultura, 1977) including marketing channels of a variety of food crops utilizing the analytical approach commonly used by agricultural economists.

In analyzing the alternative approaches used by anthropologists, food technologists and agricultural economists, it became apparent that none of the three approaches provides a complete picture of a particular commodity system. However, the three approaches taken together yield a comprehensive overview which facilitates problem and project identification.

In the 1970's, the reduction of postharvest losses became a major objective of development organizations, just as food security has in the eighties. Each of these concepts generated new methods and instruments for looking at food systems (SEA-IICA, 1977; Rodriguez et al, 1985; La Gra et al, 1985).

During these same two decades (1970-89), development planners contributed valuable tools for project identification and design. The logical framework (Rosenberg and Posner, 1979) method of analysis has been adopted by many development institutions into their internal planning systems. Problem and objective analysis, based on cause-to-effect relationships, is another tool being promoted among professionals in the developing world (Deutsche GTZ, 1987). Concurrently, development banks have been carrying out intensive training programs for third world specialists in project identification, formulation and evaluation (Gittinger, 1972), and more recently, project monitoring.

By the mid-eighties, a paradoxical situation seemed to exist.

While:

- methodological instruments were available to study and evaluate food systems;
- techniques and methods for project identification and formulation were commonly known and available at the national level, and
- competent professionals were available at both technical and managerial levels in developing countries,

many agricultural development projects continued to yield poor results.

Analyses at the country level indicate that one of the reasons for this situation is the lack of integration and coordination among the diverse institutions involved in the development process, and among the specialists in the planning and execution of their work programs.

As a result, many specialists and their institutions seem to be "missing seeing the forest for the trees," giving highest priority to favored projects without a clear understanding or complete examination of the potential impact on the overall system. Review of experiences in many developing countries indicates an unhealthy misallocation of resources. Many research, training, infrastructure, information, and other types of projects have terminated without producing the desired results. In many cases they have made difficult situations worse. As examples:

- The construction of vertical silos in one country in the early 70's, when rice was traditionally handled in bags. The silos went unused for many years at a high cost of maintenance while warehouse space remained inadequate.
- The introduction of large-scale, state-operated cold storage facilities before production was properly developed and organized. This resulted in high maintenance and operational costs due to small volumes and improper location of the infrastructure.
- The establishment of sophisticated information systems in many countries of the developing world without a clear definition of users' needs for information. The raw data often goes unused and the systems are frequently abandoned when external funding ends.
- The establishment of regional and international information networks before national systems have the capacity to either generate or receive reliable information.
- The implementation of projects to increase production or productivity before markets are identified. This often results in higher production costs to the farmer, and decreased income, when increased output causes gluts and a corresponding drop in price.
- The implementation of research programs designed at universities or research centers without a clear understanding of farmers' major problems and needs. This often leads to for uncn.

Gra et al, 1983) under the sponsorship of the Asian Vegetable Research and Development Center (AVRDC).

From this experience it was concluded that loss assessments should begin with a comprehensive overview of the commodity system. It was further concluded that due to the high cost in time and resources required to accurately quantify losses, such exercises should only be conducted after an initial assessment of a commodity system or when quantitative data is required to evaluate the economic feasibility of introducing change. From that point on, IICA and PIP decided to concentrate on developing an approach to evaluating commodity systems using existing instruments and methods.

In 1985, the ASEAN Food Handling Bureau (AFHB) invited IICA to participate in a workshop on postharvest loss assessment in Manila, Philippines. IICA presented a comprehensive approach for studying commodity systems and identifying those points in the system where food losses are greatest (ASEAN Food Handling Bureau, 1985).

In 1986, IICA and the Caribbean Development Bank (CDB) initiated a study of the production and marketing constraints of fruit systems in the Windward Islands of the Caribbean. This comprehensive study (La Gra and Marte, 1987) was carried out over a period of 18 months, using a commodity systems approach applied to seven specific fruits in four different countries.

In an attempt to develop a comprehensive methodology for analyzing commodity systems, from a postharvest point of view, PIP, AFHB and IICA formed an interdisciplinary team in 1986 to visit ASEAN countries and identify common problems and needs of both public and private sector institutions dealing with postharvest problems. As a result of numerous consultations with professionals in five countries, the first version of this manual was prepared (La Gra et al, 1987).

In 1987, the University of California at Davis, and PIP at the University of Idaho, with support from the US Agency for International Development (USAID), the United Nations Food and Agricultural Organization (FAO), and IICA, combined forces in the organization of a training course for 20 technicians from the Eastern Caribbean. The training concentrated on methods for reducing postharvest losses in perishables, based on a commodity systems approach. Participants were divided into four interdisciplinary teams. Each team used a commodity systems approach to prioritize problems and to identify solutions, with the ultimate goal of identifying ways to improve the production and marketing of specific food crops in specific Caribbean islands (PIP/UCDAVIS, 1987).

In 1988, the Heads of State of the Organization of Eastern Caribbean States (OECS) requested the Caribbean Agricultural Research and Development Institute (CARDI), CDB, and IICA to prepare an "OECS Diversification Programme" for the export of non-traditional crops. This Programme was prepared in 1988, using a commodity systems approach (CDB/IICA/CARDI, 1988).

Based on the above experiences, the present manual was compiled in 1988 in draft form. During the period June 13-25, 1988, it was field tested in Malaysia at the Malaysian Agricultural Research and Development Institute (MARDI), under the joint sponsorship of MARDI, AFHB, PIP and IICA. During the two week in-service workshop, 24 MARDI professionals, covering 12 disciplines, applied the methodology, step-by-step,



as presented in Chapter 4 of this manual. The end result was a case study (MARDI, 1988) on carambola (referred to as "star fruit" throughout this manual) which describes the system, analyzes the problems, identifies possible solutions, and outlines four project ideas in project profile format.

In April 1989, PIP applied the methodology to the case of ginger in Nepal. Modifications in the workshop were initiated based on the educational backgrounds of participants and their estimated knowledge of the subject matter. The workshop was shortened to one week and a case study was completed (McCullough and Haggerty, 1989) on ginger handling and marketing. The system was described, problems analyzed, and potential solutions were identified.

As can be seen from this brief history, many years of research and testing by dozens of professionals in numerous countries have gone into the development of the methodology contained in this manual. It is, therefore, with a great deal of confidence that it is presented to the reader for application and further development.

Whether utilized for a rapid appraisal or an in-depth case study, this Commodity Systems Assessment Methodology will produce for the user the following products:

- A description of the commodity system, identifying the principal components of the system and the major participants and their roles;
- Identification of the priority problems within each component of the commodity system and their causal relationships;
- Identification of possible solutions to the problems and their order of priority; and
- An adequate data base to identify project ideas and prepare project profiles.

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