Consultancy Report
End of Project Report

Chad: Pilot Project for Fruit and Vegetable Marketing
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LESSONS LEARNED

END OF PROJECT REPORT

PILOT PROJECT FOR

FRUIT AND VEGETABLE MARKETING

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INTRODUCTION

This End of Project Report is primarily aimed at identifying the lessons learned in this project. The report will not go into detail about the conclusions and recommendations concerning the technical interventions. These have been covered in the Report A Review of 1991-1992 Project Activities (Interventions, Evaluations, Recommendations) submitted to AID in September, 1992. The October - December 1992 quarterly report updates administrative and technical activities of that quarter.

DESIGN OF THE PROJECT

Importance of Marketing

Lesson Learned: The project design which addressed marketing problems reflected accurately the major agricultural problem in the project area.

Farmers in the Karal area are interested in increasing yield levels and reducing losses caused by pests and disease. However marketing of horticultural crops and maize remains their greatest constraint to increased income from agricultural enterprises.

The production Issue

Lesson Learned: Farmers are interested in increasing yields, but there is no certainty that net revenues would be increased with increased levels of inputs. Supplies during the peak harvest periods are close to market saturation. Increased supplies at this time would further depress market prices. However, the project has demonstrated that net revenues can be increased through improved marketing techniques.

Because of the lake recessional cultivation practices, the use of fertilizer is not required. There is some problem with pests and disease, but farmers do not use chemicals against them. It is not known whether this would be economically feasible. Systematic evaluation of new varieties is difficult in the karal area because of:

- Highly variable soil types (clay to sandy)
- No control over soil moisture (depending on lake recession and soil type.
- No use of fertilizer and pesticides to test optimal input levels.
- Farmers do not have a test plot orientation.

Concerning the issue of irrigation, the technical assistance team has observed that limited surface and ground water

transport rising lake to flood nearby fields, but this is done on a small scale. Wells are dug by nomads to provide water for livestock, but farmers have not attempted to use wells for irrigation. The attempt to introduce irrigation would require a major evaluation of social, economic and technological conditions. The following are several issues that would have to be considered:

- Irrigation would be an entirely new level of cultivation technology entailing water management, financial outlays and labor priorities.

- The hand pump technology introduced by CARE-Chad & Peace Corps is not fully developed and is not suitable for irrigation. Raising ground water with a shadoof is not a common practice. Waterways in sandy soil have low water transport efficiency and are difficult to maintain.

- Irrigation (and the cultural practices that accompany it) is labor intensive and labor is cited by farmers as a major constraint. Irrigation to lengthen the vegetable cropping season would coincide with the maize planting season.

- ACDI project personnel have noted a relatively high salinity level in much of the shallow well water.

Technical Assistance Linkage Between Producing Areas and the N'Djamena Wholesale Market.

Lesson Learned: The project's development of a strong linkage between the producing areas and N'Djamena was very important in identifying the most beneficial post-harvest interventions.

The project's presence in the N'Djamena market through its marketing unit (marketing advisor and marketing information unit) created an important conduit of information between the producing area and the market. The ACDI Market Information System identified the responsiveness of prices to various factors (quantity, quality, variety, timing, etc and this information enabled the project's post-harvest unit to concentrate on these elements.

Crops on Which to Focus Project Activities.

Lesson Learned: As a first step, marketing problems (varieties, quality control, transport, processing etc.) should be viewed within the context of the agricultural system rather than on a crop by crop basis. The second step is to focus on crops which will respond most effectively to the interventions which are

available through project resources.

Identification of specific marketing problems and the crops to be targeted should be a part of the technical assistance team's activities. Those crops for which there is no strongly felt marketing problem should be excluded, and resources concentrated on crops that the farmers are most interested in and which have marketing problems which can be addressed within the time and resource constraints of the project.

Of the four crops addressed in this project, tomatoes is the crop which farmers identify as having significant marketing problems. This is the most widely grown vegetable crop and is financially important throughout the area. The other three vegetables have marketing problems, but these crops are not as financially important and farmers are not as concerned with them as they are with tomatoes.

Length of Project

Lesson Learned: a) In a technology transfer project in which interventions are tied to cropping seasons and there is a strong element of institution building, the length of the project must take into consideration the time required to gain the confidence of farmers and begin the process of changing attitudes. b) To achieve end-of-project objectives, the length of this project would have had to have been an absolute minimum of two years with the assumption that everything would go smoothly. Three seasons would have been optimal.

The project start-up (implementation) date is crucial to a project of this type because it is tied to marketing seasons. The technical assistance team arrived in late 1990 and almost immediately faced serious political instability. Because of this, and administrative problems in early 1991, the project personnel were not able to make an analysis of the marketing system and identify its problems. As a result, the project was not able to develop an effective plan of interventions nor implement them during the March - May 1991 season. Many of the project's early activities that year were focused on developing a rapport with the farmers of the Karal project area and assisting in establishing a federation of groupements which would provide a foundation for farmer participation. It was only in the 1992 season that the project was able to begin its market analysis work and to implement marketing interventions. The close of the project in March, 1993 prevented the project from completing its post harvest interventions and evaluating their effects in the market.

ESTABLISHMENT OF THE FEDERATION OF GROUPEMENTS

Response to A Felt Need

Lesson Learned: The success of the Federation and its importance to the project as a means of technology transfer shows the importance of a project being sensitive to farmer needs.

This was an instance in which the project responded directly to a strong desire of the farmers that coincided with the objectives of the project, but was not written into the project paper. ACDI's assistance in establishing and guiding the Federation has become an important element of the project. It has helped to develop the rapport needed to understand the system and constraints and to develop the cooperation of farmers in undertaking the interventions.

The interest of the farmers in establishing the federation indicates that they see it as a vital element in the development of the area. The level of attendance at meetings and ACDI sponsored training sessions and the significant monetary contribution of participating farmers indicates an on-going interest in continuing the association. The federation provides an effective structure through which ACDI introduced interventions which led to marketing efficiencies. Progressive farmers were identified through whom the project introduced improved post harvest technology and marketing strategies.

Construction of the Federation Building

Lesson(s) Learned: a) **Design and construction of a facility such as the one in Karal should not be undertaken until there is a thorough understanding of how it will be used.** b) If there is **to be a farmer contribution to the construction and the maintenance, the amount and scheduling of payment must be clearly understood.**

The building in Karal was designed without a clear understanding of the marketing system which it was supposed to serve. Part of the problem of the farmers not contributing their share of the costs was that the concept and design of the building was not discussed with the farmers. It did not "fit" farmer needs as well as it might have.

The Federation building has become a powerful focal point and an important physical facility for the Federation. In this sense, it was a worthwhile undertaking. However, the many problems associated with the design and construction of the building reduced its benefits to the farmers. The building was over-built in terms of the resources available

to the farmers for construction and the resources that they could generate to maintain it. However, the Federation may rent to a local NGO to generate resources to cover the cost of repair and maintenance of the building.

PROGRAM TO ENHANCE MARKET QUALITY OF PRODUCE THROUGH IMPROVED SEED

GOAL: Improve the genetic quality of vegetables grown in the Karal area.

OBJECTIVES: 1) Encourage the production of varieties of produce which have good market acceptance 2) Develop a program for systematic field selection of seed plants and processing of seeds with market preferred genetic characteristics by Federation farmers. 3) Train farmers in selection of seed plants and procedures for processing the mature fruit for seed.

Lesson(s) Learned: a) The use of high quality seeds of the preferred variety is an important element in improved marketing (and in increasing production). The availability of high quality seeds continues to be a matter of great importance to the area farmers. The most effective way to meet this need is to develop direct contact between the Federation and suppliers of certified seeds. b) On the other hand, many farmers use their own harvested seed and there is a continuing need for training growers in the systematic selection of good seeds and in improved techniques of seed selection and production.

The consumer preference for Roma type tomatoes during the March-May season, as shown by the higher prices paid to producer/traders by retailers, argues strongly for continued encouragement of project zone farmers to produce this variety during the lake recession season. This year the project encouraged farmers to grow Sugar Baby watermelon and retailers have indicated good acceptance.

LATE DATE TOMATO PLANTING PROGRAM

GOAL: Lengthen the Karal harvest season for fresh tomatoes sold on the N'Djamena market.

OBJECTIVES: 1) Harvest a greater portion of the tomato crop later in the season when farm gate prices are higher. 2) Reduce the end of season retail price of tomatoes to consumers by increasing the fresh market supply from Karal as a substitution for the imported tomatoes from Cameroon and Nigeria.

Lesson Learned: In spite of farmer's knowledge of the high "off season" tomato prices, farmers did not show enthusiasm for

lengthening the tomato harvest period.

The end of the tomato harvest period coincides with the planting of the maize crop which has priority in terms of the farmers' management and labor.

Agriculture in the project area is not practiced under irrigated conditions, but under recessional conditions. Under these conditions, moisture content of the soil varies significantly and farmers cannot insure adequate soil moisture. Lack of moisture reduces plant growth and development which leads to smaller fruits resulting in poor market acceptance.

The traditional varieties of tamotoes used currently do not flower well in the hot season, and those that flower abort as a result of the heat.

HARVEST MATURITY PROGRAM & PROGRAM FOR SORTING AND GRADING AT THE FIELD LEVEL.

PROGRAM GOALS: Improve the general quality of fresh produce offered for sale on the market in N'Djamena. Reduce post-harvest loss caused by mechanical injury during transportation and/or when crops rot during retailing.

PROGRAM OBJECTIVES:

1) Increase the portion of high quality fresh produce transported and sold on the market in N'Djamena. 2) Reduce transportation of spoiled and rotten produce. 3) Train farmers in the principles of sorting and grading vegetables for quality and harvesting vegetables at an optimal point of maturity for transportation and sale on the fresh market in N'Djamena. 4) Establish retailer acceptance of tomato purchase at a mature-green stage.

Lesson(s) Learned: a) Farmers are beginning to understand the economic importance of quality control through sorting and grading. However, the scarcity of labor and the need to quickly harvest and load in the mornings makes this difficult. b) One of the reasons for the farmers' reluctance to cull produce is the lack of an alternative use for the second quality produce.

In Linia, tests with a sorting and grading table in the tomato fields found that labor was reduced to a fraction of the previous requirements. Wholesale Market prices received by farmers with graded and sorted tomatoes was about 30% greater than prices for the traditional quality mix. At current prices, a pick-up load of 36 cases of sorted

tomatoes sells for about 24,000 CFA more than a pick-up load of traditional mix cases.

Integrating sorting and grading activities with drying provides a suitable alternative resulting in an economically advantageous solution to this reluctance to cull.

IMPROVED TRANSPORT SYSTEM PROGRAM

GOAL: Improve the effectiveness of transport organization in moving produce in a timely and cost-effective manner.

OBJECTIVE: 1) Determine the effectiveness of farmer proposed transport rotational system. 2) Facilitate communication about transportation needs between producers and traders. 3) Determine optimal inter-field routing for transporters. 4) Evaluate the feasibility of alternative short-haul transport to assembly points.

Lesson(s) Learned: a) There is no evidence of systematic price exploitation of farmers by transporters. b) The current method of transport is sufficient to meet producers needs except at the height of the tomato harvest season. c) The problem of the level of transport prices is not organizational, but is a function of transport distances and vehicle and maintenance cost.

In the 1992 season, transport prices rose and fell according to the level of demand. The large number of transporters available to the project area and the seasonal variation in transport prices indicate that competitive market forces determine transportation prices. Long distances traveled, poor roads, barrier taxes and the high cost of repairs are the primary factors causing high transportation costs.

Lesson(s) Learned: a) There is no discernable farmer interest in the project area in expanding the use of animal drawn carts for short hauls of fresh produce. Motorized vehicles are available and the importance of transporting fresh produce as quickly as possible from the field to market makes the use of animal transport impractical. b) The project investigated the possibility of establishing strategically placed field assembly points to reduce the distances traveled by motorized vehicles. However, without the availability of more carts it is not practical to establish strategically placed field assembly points to reduce the distances traveled by motorized vehicles.

PROGRAM TO EVALUATE FIELD-MARKET CONTAINERS

GOAL: Minimize revenue loss caused by the type of container in which produced is transported.

OBJECTIVE: Determine the best overall type of container(s) to transport fresh vegetables grown in Karal from the field to the market in N'Djamena.

Lesson Learned: The size of the tea case is only one factor involved in product loss during transportation. If tomatoes and melons were harvested at the proper mature-green stage, most mechanical damage would be eliminated. However, the project found that the half (tea) case introduced in Karal and Linia is an economic and technically effective alternative to the full-size tea case. In addition to reducing mechanical damage, the use of the half (tea) case becomes more convenient to handle in the field and retailers prefer them as well.

Since the half-case is a variation on existing technology rather than a completely new method of packaging, it is easily accepted at all levels in the marketing chain.

Retailers believe that there is less damage during transport, and with the shallower half-case, it is easier for them to inspect the contents. For the same quality of tomatoes, the wholesale price of two half-cases is consistently greater (varying from 250 CFA to 500 CFA more) than for one whole case. The cost of converting a whole case into two half-cases is 250 CFA - 300 CFA.

FEDERATION POINT OF SALE HANGER FACILITY

GOAL: Establish an economically sustainable farmer owned and operated market facility in N'Djamena.

OBJECTIVE: 1) Enable producers/traders to temporarily hold vegetables at the market (3-4 days) to wait for improved daily price. 2) Hold tomatoes for ripening. 3) Provide an opportunity to sell directly to retailers--with special emphasis on meeting specific quality requirements for different retailers. 4) Test feasibility of farmer management of point of sale marketing organization. 5) Provide a meeting place to hold training sessions for producers, traders and retailers.

Lesson Learned: The construction of the hangar by the Federation demonstrates the potential for a farmer group to organize and execute a major marketing facility.

As the facility only came on-line in April which is the middle of the harvest season, there has not been time to evaluate its economic and organizational viability.

PROGRAM FOR COMMERCIAL PROCESSING OF PRODUCE

GOAL: To make economic use of produce not suitable for the fresh

market in N'Djamena.

OBJECTIVE: 1) Evaluate the economic feasibility of establishing produce processing at a field site. 2) Evaluate the technical feasibility of tomato and okra drying (and perhaps milling into powder) and producing concentrate.

Lesson Learned: Increasing the scale of tomato and okra drying in the Karal area has the potential to strengthen women's groupements and provide them with an extra source of income.

The potential profitability of selling dried tomatoes in N'Djamena for the producer and the income generating potential for the federation in its role as marketing intermediary makes this a program to be followed up on.

The overlap of the Karal okra harvest season with peak prices means that there is little need for long term storage. For this reason a vegetable banking approach, where dried produce is stored in anticipation of higher prices, is not as appropriate for okra as it is for tomatoes.

MARKET INFORMATION SYSTEM

GOAL: 1) Improve the reliability and usefulness of fruit and vegetable market information to producers and market persons.

OBJECTIVE: 1) Disseminate timely, accurate and relevant market information to producers and market persons on which short-term (daily) supply decisions can be made. 2) Develop a set of historical data for long-term planning.

Lesson Learned: In addition to the traditional uses of a marketing information system in disseminating price information, a project operated Marketing Information System can be very effective in collecting data to be used in developing marketing strategies for farmer groups and monitoring the effects of marketing initiatives.