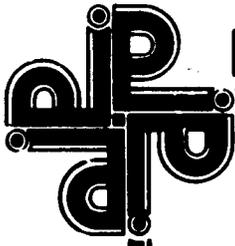


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Postharvest Institute for Perishables

Evaluation of Marketing Systems Component Of Agricultural Marketing Project

by
Dr. W. Smith Greig

for the
U.S. Agency for International Development
Kingston, Jamaica

and the
Postharvest Institute for Perishables

GTS Report No.
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United States Agency for
International Development

Project Title: Storage and Processing of Fruits and Vegetables
Project No. AID/DSAN-CA-0266
Washington, D.C., U.S.A. 20523

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December, 1983

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Executive Summary

The Postharvest Institute for Perishables (PIP) was requested via cable Kingston 08221 to participate in the mid-term evaluation of the agricultural marketing development project. Specifically, PIP was requested to provide the services of a marketing systems specialist who would be responsible for evaluating the components of the agricultural marketing project associated with the upgrading of the marketing infrastructure of Jamaica. The component to be evaluated most carefully was Phase II of the project which was designed to establish a network of approximately 25 assembly and grading stations (AGS) operated by producer marketing organizations (PMO), and 4 subterminal wholesale distribution markets (SWDM) to be managed by a limited liability company with space leased to private wholesalers.

In response to this request, Dr. Smith Greig, an agricultural economist from Washington State University spent the period of October 30 to November 19, 1983 in Jamaica. Because of the magnitude of the scope of work, Dr. Greig was assisted by Dr. Ronald Curtis, an agricultural economist from the University of Idaho, for the period October 30 to November 7, 1983.

It was concluded that the establishment of 25 AGS's is infeasible, and that their number should be reduced to about 6. Furthermore, the buildings for the first 2 or 3 Producer Marketing Organization (PMO)/AGS's were over-designed, and the equipment was over-designed and too expensive. Some alterations have already been effected in these areas. Some options are suggested to make the equipment more cost efficient.

It was found that the AGS concept placed the stations in isolation, rather than integrated into a complete assembly, transportation and distribution system. Also, there were misunderstandings and barriers to the development of effectively operational PMO's.

Recommendations are made for the establishment of 6 PMO/AGS's, with specific sites identified. Also recommendations are made for some redirection in the efforts of the Marketing and Credit Division (MACD).

The original concept of the SWDM's was changed by the team in conjunction with MACD from fruit, vegetable and meat wholesaling to livestock markets. It was recommended that 3 facilities be funded from the SWDM budget and that the potential for an additional meat facility be considered for Montego.

Market Systems Report

by

W. Smith Greig

I. Feasibility/Options Concerning PMO/AGS/SWDM Marketing Systems

- a. The original project paper specifying 25 Agricultural Grading Station (AGS) and 4 Sub-Wholesale Distribution Markets (SWDM's) for fresh produce and meat is currently considered infeasible and unnecessary for Jamaica.
- b. Despite all the "feasibility" studies of potential PMO's/AGS it is not possible to suggest that the system as a whole, or even if individual parts will be successful (economically and financially) in Jamaica. There are simply too many untested or unmeasurable factors affecting total feasibility of the project. Failure in other Caribbean countries, similar systems (University of West Indies Report), many failures in other countries (Mittendorf, FAO, letter to Mr. Zenny) and many failures in the southern U.S. suggest that at best, the whole project is a speculative venture. The options then are: 1) cancel the project, or 2) despite limitations, assume that some PMO/AGS/SWDM is feasible in Jamaica. If Option 2 is chosen, then change or modify the originally proposed system. The following suggestions for changes or modifications in the project design are based on assumption 2.

II. Agricultural Grading Stations (AGS)

- a) Number - It is recommended that the immediate potential for AGS's be reduced from the oft-quoted 25 to around 6. The reason for this will become clearer as the report proceeds and the six will be specified in more detail.
- b) Sizes of AGS's - Buildings and Equipment

As the project was initiated 2 or 3 years ago, the original buildings for the first 2 or 3 PMO/AGS were too large and over-designed, and the original equipment was too expensive for the proposed use or needs. The original building requirements have been scaled down (redesigned by Urban Development Corporation, based on specifications furnished by MACD/RONCO.)

Some of the original equipment was deemed unnecessary or over-designed and too expensive for Jamaica's initial use. As there has been so much discussion of the originally purchased equipment and its "excessive" cost, the originally purchased equipment and the "extra" cost involved will be discussed in some detail.

The original equipment purchase was for U.S. \$979,336 to satisfy the needs for the first three PMO/AGS, and for a red pea and potato grading line for Christiana Potato Growers Cooperative (CPGA). (See Exhibit A). However, the order for one hydrocooler and two proposed yam lines were cancelled (about U.S. \$80,000 for the hydrocooler and U.S. \$92,000 (approximately) for the yam lines was recovered from the supplier). These cancellations result in a total encumbered fund of approximately \$800,000 to \$810,000 for 25 AGS's of an original estimate of approximately \$1,200,000 equipment needs.

The original Packing Line Number 1 - combination pepper, tomato, cucumber and mango packing line (initially scheduled for Southfield) was over-designed. The estimate for more appropriate equipment suggests around U.S. \$130,000 could have been saved on this line. Similarly, for the original Packing Line Number 2 - "Utility Packing Line for Various Fruits and Vegetables" (originally scheduled for Busby Park), estimates suggest a savings of around U.S. \$60,000 could have been made.

Packing Line Number 3 - three yam lines. Two were cancelled and one is being rebuilt for around U.S. \$8,000.

Packing Line Number 4 - acceptable as is. (This includes a Red Pea line).

Packing Line Number 5 - Potato grading, washing and packaging line - acceptable as is. (For Christiana).

Cold Storage System - The equipment is in storage, but will be used. Therefore, no projected extra costs of the total equipment ordered so far, perhaps \$130,000, could have been saved on Line 1 and perhaps \$60,000 could have been saved on Line 2, with a total possible unnecessary expenditures of U.S. \$190,000. The options for this equipment are:

1. Do nothing. Use as is.

2. Sell Line 1 and buy cheaper equipment. (The equipment has been offered to AGRO 21 for sale).
3. Keep the equipment, but MACD/AID pay the excess costs over more practical equipment and that full costs would not be charged to the FMO/AGS that eventually will use the equipment. This would mean that MACD/AID would absorb costs of around U.S. \$190,000.

Currently, building design and equipment designs are deemed to be appropriate for the locations, crops and volumes expected at the proposed AGS.

c) Feasibility Analysis

Feasibility analyses for the AGS's have been developed for Southfield, Busby Park (Thetford), Dias, Douglas Castle and Guy's Hill. The quality of the analysis has improved through time and the Guy's Hill systems and method of analysis will be used as a "model" for future studies. A recently completed re-evaluation of the Dias AGS has suggested that this AGS is not feasible. Other analyses are in progress including Moore Town, Wait-a-Bit, Trinityville and South Manchester. A feasibility study of Rhymesbury (Ebony Park) is expected to be undertaken soon.

The feasibility studies are based on the general assumption that the AGS will receive some specified percentage of the total crop marketed from an area in a 5-mile radius of the AGS, and that a certain markup for grading and packaging of 5 to 10% of the value of sales will be received for the grading services rendered. These assumptions are probably untestable until operations actually start.

d) Problems of the AGS Concept

A grading and packing system contains the following elements for financial and/or economic success:

1. production of raw product,
2. assembly,
3. grading and packing, and
4. distribution and sales of the packed product and sale or disposal of off-grade product.

As such, a system was not designed. The AGS design was for an AGS to stand in isolation. Project design did not include assembly or distribution, and assembly and the associated costs of loading. Also, transportation to the AGS was not incorporated into the project design. Assembly can be a very costly and time consuming process. Perhaps a series of assembly locations need to surround each AGS. (Christiana, for example, has 26 assembly points on a certain schedule). Small pickup trucks, or in some locations, a group of donkeys may be necessary for efficient assembly and transport to the AGS. Similarly, large trucks (3-5 ton trucks) may be necessary for both assembly and for transport of graded products to market. A recommendation is for at least one 3- to 5-ton truck to be owned by each AGS.

Finally, from a comparison (international as well as regional comparison within Jamaica), costs of production are an integral part of the system. Conceptually then, with an analysis of -

- production costs,
- assembly costs,
- grading and packing costs,
- and distribution costs,

one can make comparisons among areas, and comparisons across countries, i.e. tomato production in Southfield compared to Ebony Park, or tomato production in either to costs in the Dominican Republic, Mexico, Puerto Rico, etc. when the markets are the same (U.S. and Canada, for example). A systemized approach needs to be taken both in project design concepts as well as in direct operations of the AGS's, as a grading and packing plant cannot exist in isolation but only as a part of a complete system.

Problems of Volume and Scale Economies

The success of an AGS will largely depend on volume and the markup on the services offered. Volume, i.e. physical quantities per day times the days of operation per year, is extremely important.

Overhead costs of plant and equipment are fixed and the larger the volume the less the cost per unit. This ties into the concept of assembly and distribution being integral parts of a system.

Capital Costs of Operations

A grading and packaging operation has need of considerable operating capital. Managers, laborers and container costs have to be paid, and some advance payment (before final sales) must be made to members of the PMO/Cooperative. This may call for considerable operating capital. Where, how, and when this operating capital will be supplied to the AGS has not been specified in project design to date.

III. PMO's (Producer Marketing Organizations)

Although PMO's are reported separately under another section, a brief discussion will be given here, and a brief section will be given on PMO-AGS interactions and some of the problems involved. The necessity for developing PMO's and the process for developing specific PMO's was only determined and instigated approximately eight months ago. The establishment of a PMO and a contractual agreement between the PMO and the Ministry of Agriculture (MOA) is a Condition Precedent (CP) before agreement of the establishment and funding of an AGS.

Several misconceptions in the establishment of a PMO existed before the arrival of the RONCO team, and to a certain extent, the same misconceptions affect the progress and length of time to effectively develop an operational system of AGS. These misconceptions were a general misunderstanding and underestimates of the time and effort required to:

1. establish an operational PMO,
2. train PMO members and overcome the organizational problems that would be involved,
3. select and develop leadership,
4. get enough growers and volume for a PMO,
5. establish (legal) methods of incorporation when a cooperative was not an acceptable organizational structure, and
6. train and/or select appropriate managers that the AGS would need.

Currently the MACD/RONCO teams are being quite realistic. Effective PMO development is regarded as the major stumbling block for the instigation of AGS. The National Union of Cooperatives (NUCS) is being retained to assist in training of PMO's and assist in the selection and training of AGS managers.

The MACD/RONCO unit involved in organization and training must be beefed up, and resources of other MACD/RONCO units must assist directly in developing information specifically needed in PMO/AGS development. Specific recommendations concerning this will be presented later.

Concerning the legal aspects of incorporation (see 5 above), the MACD is exploring the use of the "Industrial and Providence Societies Act," which may be used in lieu of a cooperative per se.

IV. PMO/AGS Interaction

As a part of the Conditions Precedent for the establishment of an AGS:

1. a clear title to the site must be obtained,
2. a feasibility study must be conducted showing the AGS feasibility,
3. the PMO must be a legal organization, and
4. a contractual arrangement between a PMO and the MOA must be agreed upon and signed.

Inherent in the process is that a manager of the AGS must be trained or obtained. This may partially be through NUCS, but the NUCS/MACD relationship is unclear. In effect, as understood, the NUCS will train prospective managers while the MACD will be held responsible for the success or failure of the managers. A definitive agreement of authority, responsibilities, and coordination of NUCD/MACD activities in cooperative and leadership training should be developed.*

The CP's have not been fully accomplished by any proposed PMO/AGS to date. And, therefore, no managers have yet been appointed.

*This was developed and signed prior to the review team's departure from Jamaica.

V. Numbers and Locations of Immediately Possible AGS

A. Potential Numbers and Locations of AGS

MACD has been working with 11 potential PMO/AGS to date, 12 if Christiana is included. Of the 11, feasibility studies of the AGS's have been completed for five: Southfield, Thetford (Busby Park), Douglas Castle, Dias, and Guy's Hill. Christiana is, of course, currently operational. Other potential locations of AGS are Wait-a-Bit, Trinityville, South Manchester and Ebony Park (Rhymesbury). A revised feasibility analysis of Dias (November, 1983) has shown this potential AGS to be non-feasible.

Apparently, the greatest opportunity for establishing operational PMO/AGS's are (not necessarily in order):

- 1) Christiana
- 2) Southfield
- 3) Guy's Hill
- 4) Douglas Castle
- 5) Ebony Park
- 6) Busby Park

A longer run potential exists at:

- 7) milk assembly
- 8) Mooretown
- 9) Wait-a-Bit
- 10) Trinityville
- 11) South Manchester
- 12) a fish assembly

Feasibility studies for the latter 6 have as yet to be completed.

Because of the tremendous training and educational efforts involved, and because no operational AGS's yet exist, it is strongly recommended that concentrated efforts be made to get the first five PMO/AGS operational. Further, it is recommended that new feasibility studies not be undertaken for any more than the latter 6 listed. If the objectives of the total project are to be accomplished, a few operational AGS's are an absolute must. Further, for the time being, no effort should be expended on expanding the list of 12 until one or more AGS are operational.

B. MACD Organizational Problems

It is strongly suggested that diffusing the work of the teams involved in organizing the PMO's and obtaining the CP's for each AGS to try to obtain the oft involved 25 PMO/AGS's is entirely out of the question from the standpoint of staff time and also limited by the true potentials of these types of operations. It is strongly recommended that MACD solidify its efforts for the first 6 PMO's and not diffuse their efforts among 25 PMO's. The ultimate 25 AGS's might possibly evolve over a 5- to 10-year period in Jamaica.

If and when successful PMO/AGS are established and are paying reimbursement for the invested capital, these returns could then be put into a revolving fund to develop possible potential AGS above the 12 previously listed.

C. Problems and Opportunities to Establish the First Six AGS

It is the team's opinion that perhaps six operating AGS could be established in a very short time. Opportunities and problems exist in all of these (if there were no problems, they would already be established). The following are some recommendations for some specific actions which could overcome some current obstacles:

1. Assign the District Extension Marketing Specialist in each area to work solely and entirely on PMO/AGS problems. For example, he might be appointed as an ex officio member of the board and as Secretary of the PMO/AGS. In that capacity he could take care of many communicational, educational and organizational functions and obtain faster action by PMO leadership.
2. Opportunities for Christiana. The CPGA is an established cooperative and is not a problem organizationally. An opportunity may exist for the development of a frozen french fried potato operation. Apparently there are three small scale frozen french fry processors in Jamaica (at least 2 in Kingston and 1 in Montego). As frozen french fry production is a weight reducing technology (only 50% of the weight of the raw product is shipped), the optimum locations are in production areas rather than consuming areas.

Refrigeration needs are high in frozen french fry production and CPGA currently has excess refrigeration capacity. Finally, Burger King and other operations have expressed interest in frozen french fries. Perhaps a brief study by outside consultants could explore the potential feasibility of this opportunity.

3. Southfield. Apparently progress at Southfield is being held up by the Conditions Precedent (CP) largely because of an early report which questioned water availability for the AGS. MACD/RONCO specialists suggest that water is needed only for a carrot washing line and that their estimates of water needs are a fraction of that in the original report. Our information suggests that the water needs are adequate for an AGS and that the development of the AGS should not be held up because of the misinformation of the earlier reports.
4. Busby Park. A problem here is in leadership being unable to get an action project going (see item 1 above as a possible solution). Further, USAID apparently doesn't accept the idea of an AGS for 8 to 10 large farmers. A possible solution is the expansion to many more small farmers (which several of the leaders agree to). Also, a possible change in leadership and direct involvement of the District Extension Marketing Agent with this operation as his sole activity, may hasten an operational unit.
5. Ebony Park. An immediate abbreviated feasibility study should be conducted as this is a new development of approximately 110 farmers with 5 irrigated areas each. The farmers are concentrated in a specific area which would lend to an easily researched farmer base. Further, a facility, electricity and water are already available. Essentially all that would be needed is packing and grading equipment. A higgler interview probably would not be necessary because of the "newness" of the area.
6. Guy's Hill. The feasibility study for this proposed AGS was probably the best one - the results appear to be quite positive.

7. Douglas Castle. The farmers, in general, in this area are not as advanced as in several of the other potential PMO's and will need considerable "hand holding". See comment 1 above.

VI. Organization and Operations of MACD/RONCO

The organization and operation of MACD/RONCO will be reviewed only as it affects the direct establishment of operational AGS's. Phase I of the total project, the establishment of one MACD, has been accomplished. The MACD was established in the MOA and most units are functioning quite well, although the Market Research Unit has been constantly and seriously understaffed. Phase II, the development of operational AGS and SWDM's is considerably behind schedule.

The establishment of legal PMO's was not started until RONCO appeared on the scene in March or April, 1983. Since then the work load of all the individuals given this assignment (to establish PMO's) has been tremendous. While they are highly competent and dedicated, the pressure to develop operational PMO/AGS's has been high. Therefore we strongly suggest that the units responsible for Market News, Quality Assurance, Training, Market Research and other units divert some of their efforts toward work more directly related to the establishment of PMO's/AGS.

Market Research has largely been tied to feasibility studies in the sense of a legal requirement as a part of Conditions Precedent. Each potential AGS had to have a feasibility study which showed social, economic and financial feasibility of the venture. In a non-legal but practical approach, even after a feasibility study has been completed, much additional market and economic research needs to be conducted for the PMO/AGS's.

We recommend that except for Ebony Park, no new feasibility studies be conducted at the present time. Those substantially in progress might be completed but no new ones should be initiated. Also the Market Research Unit should reallocate its efforts, along with other MACD units to (but not restricted to) the following concepts and/or approaches:

1. Detailed market analysis for PMO's/AGS
 - a) In-depth studies of hotel, restaurant and institutional (HRI) markets in Jamaica
 - b) More definitive work on sales through retail studies

- c) the potential export markets
- 2. Experimental research. Does it pay to grade? Actual experimental sales tests at retail, wholesale higgler and HRI markets of various graded commodities should be conducted.
- 3. Seasonal cropping patterns of each PMO. As related to seasonal prices, possible modifications of cropping patterns to take advantage of seasonal price increases should be analyzed.
- 4. Opportunities for special crops or commodities for special markets should be developed.
- 5. Types and costs of containers and packaging supplies should be developed
 - a) by type of market, commodity by commodity,
 - b) reusable containers for some commodities should be explored, particularly to the institutional trade, and
 - c) packaging costs for exports should be explored.
- 6. Economies of scale in transportation
 - a) Size of higgler vs size of AGS trucks and comparative costs from various processing areas to principle consuming areas
- 7. Economies of scale in packing house operations (AGS)
 - a) Cropping patterns and commodities to expand length of packing season (increase volume and time of operations to reduce overhead costs)
- 8. Marketing costs and margins studies
 - a) cost of production
 - b) cost of assembly
 - c) cost of grading and packaging
 - d) cost of distribution (freight)
 - e) wholesale and retail margins
 - to HRI
 - to higgler
 - to retail
 - to export

This market research work must be a cooperative endeavor involving all MACD units. The intent of this research is to develop specific information that will help PMO's and AGS's development, and will directly assist AGS managers in future operations. There are many examples where various units in MACD could cooperate. For example, item 2 above, "Does it pay to grade?" Quality Assurance could do the experimental grading, Market Research could set up the experimental design, and Market News could monitor sales, and Market News or Quality Assurance could do the analysis and publicize the results. Of course, assignments may vary, but the concept of units working together to accomplish objectives to directly aid in PMO/AGS establishment and operation is a must.

VII. The Establishment of Subterminal Wholesale Distribution Markets (SWDM's)

The concern of the review team is that the suggestion in the original Project Paper that 4 SWDM's be established in Jamaica to handle produce and meat at redistribution centers is considered to be impractical. This review team's concern is based on discussions with many MACD officials and from our own observations and experience. We wish to modify the original concept of the 4 SWDM's handling produce and meats to undertake wholesaling functions more currently needed in Jamaica. The concept of additional wholesale marketing facilities is sound, but those envisioned in the original project paper are considered impractical. We recommend that funds be allocated from the original SWDM budget for the following:

1. a wholesale cattle and livestock "auction" associated with an abattoir,
2. a separate wholesale or retail cattle auction not associated with an abattoir,
3. a produce and meat wholesale/retail facility in Kingston (a conversion of the Agriculture Marketing Cooperative (AMC) building in Kingston), and
4. place on reserve a wholesale or subterminal produce and meat facility in Montego.

VIII. Summary and Conclusions

If a PMO/AGS and SWDM system is feasible in Jamaica, and many factors suggest that it is, then the organization, structure and expertise is largely in place to operationalize the system. The MACD/RONCO personnel are, by and large, eminently qualified, hard working and geared to accomplish the objective of a more efficient assembly, grading and packing and distribution system for fresh produce, meat and milk in Jamaica.

However, the original project paper proposal must be geared down and modified to fit operational conditions in Jamaica.

The recommendation of an immediately attainable objective is to get six AGS's in operation rather than the originally proposed 25. These six would most likely be:

Christiana
Southfield
Busby Park
Guy's Hill
Ebony Park
Douglas Castle

Others can come on line in the future as efficient operations are attained in the above six.

Finally, SWDM's concept is considerably changed. The recommendation is for wholesale markets, largely specified by commodity and locations, to be considered immediately. These would be:

- 1) a wholesale/retail livestock auction/abattoir,
- 2) a wholesale/retail livestock auction market without an abattoir, and
- 3) convert the Kingston AMC market facility to a subterminal wholesale market for produce and meat.

Finally, hold SWDM Number Four in reserve for a possible wholesale subterminal market for produce and meat in Montego.

BID SCHEDULE¹

Name of Bidder: AMERICAN CONVEYOR CORPORATION

IFB No. MACD-2

Item No.	Quantity	Price of Equipment	Price of Installation	Total Price	
1	Packing Line No. 1 - Combination pepper, tomato, cucumber and mango packing line with hydrocooler	1	243,816.00	11,990.00	255,806.00
2	Packing Line No. 2 - Utility packing line for various fruits and vegetables	3	223,602.00	18,570.00	242,272.00
3	Packing Line No. 3 - Yam and root crop washing and packing line	3	127,128.00	6,225.00	133,353.00
4	Packing Line No. 4 - Kidney Bean cleaning, elevating, drying and packing line	2	58,276.00	N.A. ²	58,276.00
5	Packing Line. No. 5 - Potato washing, sizing and packing line	1	119,512.00	6,045.00	125,557.00
6	Cold storage system	3	99,906.00	15,000.00	114,906.00
				Total Price of All Items	930,070.00
				Insurance	7,835.00
				Freight	41,431.00
				Grand Total	939,336.00

-14-

1. This bid is valid for 60 days from date of opening of bid.
2. N.A. This equipment forms an integral part of the storage and fumigating facility.
be installed by buyer at site as bins are constructed.