

ANNUAL REVIEW OF OPG 515-0127

SOYBEAN PRODUCTION AND LOW COST EXTRUSION COOKING PLANT

SPONSOR: CARE-COSTA RICA

SCOPE OF REVIEW

1. A project review team met April 14-16, 1980 in San José to review the status of the OPG.
2. The review team consisted of the following:
 - a. Del Prado, Sandy, Assistant General Development Officer, USAID/CR.
 - b. Harper, Dr. Judson, Professor and Head, Department of Agricultural and Chemical Engineering, CSU.
 - c. Hornstein, Dr. Irwin, Associate Director, Office of Nutrition, AID/W.
 - d. Jackson, Justin, Director, CARE-Costa Rica.
 - e. Rutman, Ing. Max, Director, INUAL, Santiago, Chile.
3. The team met with representatives of Asignaciones Familiares (DESAF), Ministry of Health (MOH), CITA and Plant Management
4. The team reviewed project documents and reports and other literature as briefing materials.
5. The team visited the processing plant, two school feeding programs and a CNP expendio.
6. The review team has summarized project accomplishments during the past year, documented their perception of existing problems and developed a set of recommendations which they believe could resolve many of the existing problems.

ACCOMPLISHMENTS

1. The plant was installed and inaugurated in June 1979 by the President of Costa Rica and commenced commercial production mid-July 1979.
2. The production feasibility of Nutrisoy and Full Fat Soy Flour (FFSF) has been demonstrated. The following table gives Nutrisoy production during the four months it was produced.

| <u>Month</u> | <u>Quantity Nutrisoy Produced, Kg.</u> | <u>Cost/Kg.^{1/}</u> |
|--------------|--|------------------------------|
| July | 61,455 | \$ 0.80 |
| August | 65,620 | \$ 0.65 |
| September | 142,360 | \$ 0.62 |
| October | 83,920 | \$ 0.58 |
| Average | 88,339 | \$ 0.65 |

^{1/} Includes: raw materials, packaging, plant operations (both fixed and variable) and depreciation on plant and equipment.

These costs, while higher than comparative PL 480 commodities, are relatively low in relation to locally produced products used in the nutrition program. The difference in costs relates to the higher local raw ingredient costs which make up 70% of the finished product cost. The four month production of Nutrisoy exceeded the projected target by 17%.

3. A contract was signed with a plant operator after pre-qualification tenders were evaluated. Soy Agil, S.A., the contractor, has proved to be very satisfactory.
4. A Nutrisoy recipe book was developed by the Department of Nutrition of the MOH and approved by DESAF as part of a campaign to educate cooks in the use of the product.
5. Nutrisoy has been distributed to MCH (both CEN and CINAI) recipients since commencement of plant production. This distribution has exceeded projected targets.

PROBLEMS

1. Plant Operations

The plant has been inoperative since the first week of November 1979. A directive was sent to CNP by DESAF (August 7, 1979) instructing them to decrease distribution of protein blends by 75%. This has resulted in reduced distribution of Nutrisoy.

2. Distribution

In visits to 8 schools on 3/21/80, it was found that none had ever received Nutrisoy. Of three CNP expendios visited, one had received five bags of Nutrisoy the preceeding week. A total of 78,500 kgs. of Nutrisoy was distributed during the three month period mid-August to mid-November 1979 as compared to 345,730 kgs. of imported CSM in the preceeding three month period, a 77% reduction in distribution.

3. Acceptability Tests

Although preliminary acceptability tests have been conducted by MOH on two occasions for Nutrisoy, they were inconclusive and additional acceptability tests need to be conducted to establish its most appropriate and effective utilization.

4. Decision Making

A decision needs to be made by the GOCR to establish the future of the plant. Specific areas for decision are:

- a. Products to be produced
- b. Production schedule
- c. Distribution
- d. Utilization
- e. Institutionalization of plant and its operations

5. Product Usage

There are indications that there is a need for an educational effort to establish proper product preparation and utilization for Nutrisoy.

6. Packaging

There are indications that the large size (20 kg) of the Nutrisoy package is detrimental for proper utilization.

7. Institutionalization

No plan has been formulated for CARE's phase out and the GOCR's assumption of plant responsibility.

8. Coordination

There are numerous examples of a lack of coordination between entities involved in the project.

DISCUSSION

To give a better insight into the causes of the problems encountered, the review team met with representatives of MOH, DESAF and CITA. In particular the meeting with CITA was most fruitful. Ing. Luis Fernando Arias, Director. and Ing. Fernando Aguilar, Assistant Director frankly advised the review team that the GOCR did not consider the product NUTRISOY as the ultimate solution for pre-school and school feeding programs. The GOCR was interested in developing a series of second generation products that would be organically acceptable, easy to prepare and serve a diversity of needs. Such products would be in keeping with the concept that the nutrition programs use a variety of foods. In the discussions that followed a consensus was reached that the project goals of resuming Nutrisoy and FFSF production and CITA's goal of introducing more appropriate food products were compatible.

The importance of the plant during the next several years goes beyond the production of specific foods. The plant serves as a catalyst for stimulating soybean production. Without the plant no market would exist for the purchase of soybeans and the fledging agro-industry would be destroyed. Within this framework it was deemed essential for Nutrisoy production to be resumed and the product utilized in a manner similar to CSM. In addition,

CITA and CARE would cooperate in utilizing the plant and developing and testing new products. Once these products were defined they could be introduced into the product line that the plant would produce. To help resolve the major problem of moving the plant into operations, the evaluation team prepared a document (attached) outlining their perceptions of problems and necessary steps for resolving these problems. The document was translated into Spanish. Ing. Luis Fernando Arias, Director CITA and Justin Jackson, Director CARE-Costa Rica then signed a covering letter (attached) addressed to the Director of DESAF suggesting that the team's recommendations be accepted.

Based on this initial step and the further assumption that the Nutrition Loan recognized the importance of the plant in a) helping the GOCR achieve its nutritional objectives and b) stimulating the expansion of soybean production the following recommendations appear to be implementable.

RECOMMENDATIONS

1. That distribution problems be resolved by the responsible agencies. This requires that the method of utilization (amount, recipes, rations, etc.), method of distribution and directives for its use be developed and implemented. We believe that the following entities should be involved in this decision: DESAF, MOH, MOE, CEN, CITA. CARE and AID also have mutual interests in an early decision on distribution and utilization.

2. That production of Nutrisoy be resumed quickly. Distribution problems should first be resolved. Nutrisoy currently represents a product which has been used and serves as a replacement for CSM, a known commodity. It therefore represents a substantial current demand for the soybean grown in Costa Rica and will serve as an outlet for this crop in the form of a low-cost nutritious food until better alternatives, such as second generation products, are developed and introduced.
3. New recipes should be tested and rigorous acceptability tests conducted. Preliminary acceptability tests indicate that the recipes incorporating Nutrisoy into the diet will affect acceptability. There is no documentation which establishes which of these recipes is the most effective vehicle for Nutrisoy utilization. Consequently, current and new recipes need to be rigorously tested and the results incorporated into a revised recipe book and education program for cooks and other personnel associated with the program.
4. That CITA develop and test a new and improved product line for the processing plant and CARE cooperate in this endeavor. CITA is the Costa Rican agency charged with food product development and evaluation. They have been funded significantly by the AID Nutrition Loan and are in the best position to develop a set of second generation products utilizing the plant which will be useful in the PAN program.

5. Investigate new types of packaging and their feasibility for rapid incorporation into the plant. Funds, if required should be found for new packaging machinery that may be needed. Rapid implementation of this recommendation should lead to improved acceptability and demand for the product at sites which have smaller daily requirements for the product.
6. That a plan be formulated by the GOCR for CARE's phase out and the GOCR's assumption of plant operations. As a logical outcome of the evolving role of the processing plant and an increased involvement of responsible GOCR parties, an appropriate plan for CARE's phase out should be developed. It is premature to speculate on the form that this plan should take but all responsible parties should take this on as a goal. In the interim, CARE should remain the manager of the plant and its operations.
7. That a marketing consultant be retained to assist with packaging, distribution and product definition. The possibility of funding for this consultant will be explored with AID/W and others. Initial decisions should be held between CITA and CARE to determine the scope of work and the best qualified person(s) for this task. Added technical input into the project should assure the development and utilization of the best line of current and second generation products to be produced by the plant.

8. That the commercialization of certain products be investigated. A good example would be the continued investigation of the use of FFSP in baked goods, tortilla mix, as a meat extender, etc. In this form, the FFSP could be sold as an ingredient and any profit be reincorporated into the project and/or Nutrition program. Also, the plant could serve as a pilot plant to produce test market quantities of commercial products such as cereals, drinks, soups and snacks. These can serve as a stimulation for private entrepreneurs who could invest in companion plants.
9. That CARE investigate interesting the soybean growers in promoting production, processing plant production and soy based foods. In this manner, additional support for the plant can be generated which should assist in creating the climate for the accomplishments of the project goals.

16 de abril, 1980

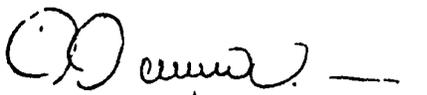
Señora
Lic. Ana Mercedes Brealey
Directora
DESAF
Presente

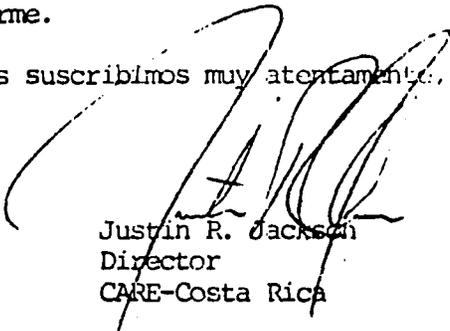
Estimada Lic. Brealey:

CITA y CARE comparten el interés y la preocupación por lograr el máximo beneficio para los programas de alimentos y nutrición en la planta Productora Costarricense de Alimentos.

Por ello, en reuniones conjuntas con el grupo evaluador del estado actual del proyecto, coinciden con las observaciones, sugerencias y recomendaciones que dicho grupo ha indicado en su informe.

Sin otro particular, nos suscribimos muy atentamente.


Ing. Luis Fernando Arias
Director
CITA


Justin R. Jackson
Director
CARE-Costa Rica

LFA/JRJ/lrch

REVISION Y RECOMENDACIONES
PROYECTO DE LA PRODUCCION DE SOYA
Y LA PLANTA PROCESADORA
POR EL
GRUPO EVALUADOR

El equipo evaluador del proyecto, compuesto por los suscritos, se reunió con los representantes de Asignaciones Familiares (DESAF), Ministerio de Salud (MS), CITA, USAID, CARE y con la gerencia de la planta durante la semana del 14 de abril de 1980.

Como resultado de estas reuniones, llegó a las siguientes conclusiones:

1. La producción de soya es importante para Costa Rica ya que ofrece un recurso potencial de aceite y proteína para consumo humano como también concentrado para consumo animal. La producción nacional de soya y su utilización como aceite y proteína tendría un impacto favorable en las reservas de divisas del país además de ser una alternativa al cultivo de arroz tanto en Guanacaste como en otras áreas del país.

2. La introducción de la producción comercial de soya ha sido exitosa. Un tercio del rendimiento obtenido en Guanacaste correspondió a resultados similares a los obtenidos en los Estados Unidos, mientras que la producción en el área de Quepos se aproximó a los mejores re-

sultados obtenidos en los Estados Unidos, a pesar de condiciones desfavorables climáticas durante la siembra.

3. El diseño, la construcción y la operación de la planta Productora Costarricense de Alimentos han sido bien logrados. Se ha demostrado la flexibilidad de la planta para producir Nutrisoy y Harina integral de soya, así como otros cereales suplementados con soya (los cuales parecen prometedores). Todo lo anterior representa la capacidad de producir alimentos de alta calidad nutritiva a bajo costo.

4. La planta es el único mercado actual para el desarrollo de la producción de soya y sirve al mismo tiempo como catalizador en el desarrollo de la agro-industria de la soya.

5. El concepto inicial de la planta para procesar productos elaborados localmente, con el objeto de reemplazar los alimentos donados por CARE, ha sido demostrado exitosamente.

6. Desde el inicio del proyecto, el Programa de Alimentación y Nutrición (PAN) se ha ido ampliando con la introducción de una gran variedad y sofisticación de productos.

7. La flexibilidad de la planta permitiría cumplir satisfactoriamente con las nuevas exigencias del PAN.

8. Durante el período de transición hacia una variedad de productos más adecuados, el grupo evaluador analizó dos alternativas para el uso de la planta: