

R2363(R)
SUPPORT OF AGRO-INDUSTRY IN CENTRAL
AMERICA; FINAL REPORT

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GLOSSARY

AISP	Agro-Industrial Strengthening Programme
CITA	National Centre for Food Science and Technology, UCR
CNP	Consejo Nacional de la Producción
DFID	Department for International Development (formerly ODA)
DTC	Diagnostico Tecnico Cuantitativo (Quantitative Diagnostic Technique)
FMCG	Fast moving consumer goods
INCAE	Central American Institute of Business Administration
MRS	Market Research Society (of UK)
NOP	National Opinion Polls
OEA	Organisation of American States
PHHC	Post-harvest horticulture course
SMEs	Small and medium enterprises
TQM	Total quality management
HACCP	Hazard Analysis Critical Control Point
UCR	University of Costa Rica
UKAS	United Kingdom Accreditation Service

INTRODUCTION

This is the final report on a DFID-funded three and a half year project in support of the National Centre for Food Science and Technology (CITA), which belongs to the University of Costa Rica. The aim of the project has been to increase the competitiveness of agro-industry in Central America and the Caribbean, and it cost £270,000.

The information presented in this report indicates significant steps have been made in achieving that goal. The area of quality management has proved a particular area of strength, with CITA focusing its support sequentially upon the needs of particular sub-sectors. The authors make various suggestions about how CITA might build on this and other achievements in the future.

PROJECT IDENTIFICATION AND DESIGN

At project inception CITA was a department of the University of Costa Rica (UCR), about 100 strong including research students from the neighbouring Food Technology School. It was jointly funded by UCR and the Ministry Agriculture, as well as generating some of its funds. DFID/NRI had supported CITA at a formative stage (late 70s/early 80s) with long and short-term TC. There was no support for the next decade, but in 1992 an DFID Adviser (J.A. Harvey) visited CITA, commenting favourably on the organisation, recommending further support subject to a satisfactory proposal from NRI.

The proposal was prepared in the UK aided by correspondence with CITA, there being no project preparation mission. CITA had recently embarked on an Agro-Industrial Strengthening Programme (AISP) for the small and medium-scale food processing industry in the whole Region, with the following components: Quality and production management; industrial training and reorganisation; rural agro-industrial development; food marketing information systems, and; a short courses programme. The purpose of the proposed DFID-funded project was to help CITA to successfully accomplish this programme, and thereby consolidate it as a base for assisting the food industry of Central America and the Caribbean. DFID/NRI would provide the following assistance - see Box 1.

BOX 1: AREAS OF PROJECT FOCUS

- a) technical assistance for development and dissemination activities involved in the AISP;
- b) inputs into CITA's programme of short courses for trainees from the Region;
- c) diagnosis of training needs for CITA and the Central American food industry in general, and thereupon recommendations for further assistance from UK and other European countries, and;
- d) proposals for other follow-up activity, if appropriate, including staff exchanges, collaborative adaptive research etc..

The rationale for the project rested on the following considerations:

- the importance of agro-industry within Central America's overall industrial structure (e.g. 42% of value of output in Costa Rica)
- the very strong social dimension of agro-industry - it mainly employs semi-skilled and unskilled women
- agribusiness' limited capacity for innovation, particularly among smaller players, and the consequent threat posed by globalisation and the reduction of trade barriers, and
- the perception that amongst post-production NARS with which NRI had had dealings, CITA had a very strong record as a client-oriented institution, with a strong focus on smaller enterprises, and that its research had led to a high degree of commercial innovation. It was moreover partly self-financing, and this had enabled it to survive ups and downs in State-funding.

The proposal was finally accepted on the understanding that the NRI Project Leader should first visit CITA and propose revisions to the project design, providing more detail on project activities, and indicate next steps, particularly actions required of CITA. He would also diagnose training and information needs in the area of marketing research. Providing these proposals were acceptable, funding would be made available for the remainder of the project, up to the total project cost of around £270,000

Being his first visit, the Project Leader treated the visit as an opportunity to obtain a deeper understanding of CITA and where it was going, and accordingly, to jointly plan the project.

On CITA's side, the Deputy Director, Ing Fernando Aguilar, was appointed as Costa-Rican co-manager.

PROJECT LEADER'S INITIAL VISIT AND REVIEW OF OBJECTIVES - May 1994

Strategic considerations

Project Leader Coulter was able to fill out the picture presented in the Project Memorandum. Notably he concluded that CITA existed in a rather fluid institutional and policy environment, with significant staff rotation in the Ministry of Agriculture to which it reported, and the ever-present danger of unforeseen budgetary cuts¹. It had adapted to this environment by acting autonomously within its broad policy guidelines, and developing a significant level of self-financing through services to the private sector. The main factors determining the content of work were: the topics of Food Technology School students' research theses; a commitment to support SMEs in certain key sectors (e.g. meat and dairy products); the requirements of donor-funded projects, and; demands of private clients.

While successfully adapting to short-term challenges, some of CITA's research work seemed to need a more strategic, problem-solving, dimension, involving more subsectoral studies, more proactive inputs from people with economics and business backgrounds alongside scientists, throughout the project cycle, and better training in marketing (as opposed to just market research). CITA had an *Economics Area* (i.e. Economics Department) which was concentrating on consumer market research, and it was suggested that its remit should be widened to involve the recruitment of new staff who would work alongside scientists throughout the project cycle. If for budgetary reasons this proved financially impossible, CITA might seek collaborative arrangements with other departments of UCR, or other institutions such as INCAE.

This was discussed, but in practice such changes were difficult, and the project had to work within this reality. Because of the financial risks referred to above, management was very reluctant to recruit new staff, and there was no move to link up with other institutions.

Significantly, during this visit, one of CITA's staff (Luis Jimenez) suggested a new strategy whereby CITA would sell its services (in chemical and microbiological analyses, organoleptic testing, product development and market research etc.).

It emerged that CITA had scaled down its activities in rural agro-industries, largely on account of the weak record of co-operatives which had been the main recipients of support, and was increasingly concentrating on supporting SMEs in selected sub-sectors (meat, dairy etc.) irrespective of whether beneficiaries were urban or rurally based. The approach adopted was one of

¹ CITA itself had moderate staff turnover, and in this respect was effectively insulated from the knock-on effects of changes of Government.

total quality management (TQM) - a broad concept including consumer satisfaction through variety, convenience, packaging, presentation, company image etc., not simply the chemical, microbiological and organoleptic properties of the food. A group of staff was committed to this area, and had gained experience through their participation in a multi-country project led by the Organisation of American States (OEA). Hence quality management appeared to be the main thrust for the future development of CITA.

As indicated above, CITA's *Economics Area*, consisting of the Deputy Director and five staff, was mainly dedicated to consumer market research, and carried out ad hoc and multiclient studies in consumer satisfaction and other fields. This group was very advantageous to CITA, giving it much more contact with the market place than is normal in a research institution of this kind, and it seemed to be an asset worth nurturing. However, there was a question as to how DFID should support its development: should it compete directly with private sector market research agencies, or should it cut out a public-service niche, in training, particularly teaching firms to commission and make use of market research services, setting industry standards or similar function? CITA sought training in certain advanced techniques, but the group also needed to review some of its existing approaches and, in common with many market researchers, gain a better understanding of the marketing functions to which research findings would apply.

Certain other sub-sectoral priorities emerged in discussions with the Director, notably in export horticulture (an area of strength for NRI), and the development of value-added products, e.g. based on coffee, which could be exported and promoted as gift items through Costa Rica's booming tourist trade.

Revised project objectives and activities

These are shown in the NRI Project Leader's report R2151(R) of September 1994. They were based on discussion with the parties concerned in CITA, and where feasible took account of the strategic considerations listed above.

BOX 2: REVISED PROJECT OBJECTIVES

The project would seek to increase the competitiveness of agro-industry in the Region, particularly small and medium scale industry, and assist in export diversification. This would be achieved by:

- a) strengthening CITA's role as a trainer and adviser in the fields of food safety, quality management and consumer market research, and;
- b) supporting the development of particular technologies involving new market opportunities and increased foreign exchange earnings, particularly in post-harvest horticulture and the tourist market for food products.

Most of the effort was to be devoted to (a). In quality management, the project would enhance the quality of CITA's chemical, microbiological and sensory analysis services, leading to accreditation of analyses under EN 45001, enable CITA both to implement HACCP in quality assurance programmes and apply the ISO 9000 series, and enhance CITA's computing ability in the area of food information. Practical assistance in quality management would be provided to particular sub-sectors, starting with the introduction of the HACCP concept into the meat products sector.

In marketing and market research, Economics Area staff would receive marketing training at UCR Business School, on the job training from a Costa Rican FMCG marketing specialist, a course from a visiting consumer MR specialist (Hamilton), including a review of basic aspects and certain more advanced techniques, training in multivariate analysis and other advanced statistical techniques, and training in the commodity systems approach. This would lead to: (a) the creation of a regional short-course programme in market research, and; (b) CITA putting its own MR services into a separate profit centre. CITA was to draw up detailed plans and these should be operationalised in 1996. Through the activities listed, NRI would seek to structure links between CITA and the Market Research Society (MRS) and other elements in the British MR industry.

As a basis for deciding on appropriate assistance in post-harvest horticulture, CITA would send Ruth de la Asunción for MSc training at NRI, and carry out a diagnosis and SWOT analysis of the sub-sector. NRI would also carry out a desk study on the scope for using prawn by-catch as an ingredient in frozen fish products, with a view to further product development work based on this material. Significant technical research had already been done on this product in collaboration with other departments in UCR.

ACTIVITIES UP TO THE MID-TERM REVIEW

Quality management area

All planned activities were completed, except for the enhancement of microbiological analysis methods and training in advanced methods of sensory analysis. A week was spent with the microbiologists reviewing the methods used and advising on more modern methods, and it was planned to update their methods manual. This has not yet been achieved.

During her visit in September 1994 Linda Nicolaidis presented a three day course: "An overview of HACCP and introduction to the ISO 9000 series" to quality managers from local food industries, as well as to staff from CITA.

A six-week training programme was organised in the UK in April-May 1995 for four members of the quality team. Luis Jimenez and Eugenie Rivera studied quality management and food safety systems as practiced by the UK food industry. Ronald Gonzalez updated his information management skills so that he could collate a data-base on food-based legislation. This has been put into practice in CITA, and he is drawing on data-bases in Europe and the USA. Monica Lois, Head of the Chemistry Laboratory, broadened her skills in chemical analysis and gained an overview of laboratory accreditation to meet with the requirements of EN45001.

CITA identified 21 meat-processing SMEs, and carried out a preliminary quality evaluation using the Diagnóstico Técnico Cualitativo (DTC) which had been developed by Luis Jimenez, and actions were then designed for implementation by each individual plant. The seven most efficient plants were identified in line with the pilot firm approach used under the earlier OEA project, and they were given intensive training on hygiene, maintenance of equipment, plant design, raw material quality, process management and quality of product.

Market research

All planned activities were completed except for training in advanced quantitative techniques and the commodity systems approach. In the case of the UCR Executive Marketing Programme, three out of five Economics Area staff attended, and the same was the case with Hamilton's training course in market research. There were no non-CITA participants.

CITA made significant progress towards the aim of establishing a programme of Spanish-language short courses, by giving two marketing courses within the regular food technology programme to 31 delegates, and a five week diploma on market research to 13 professionals, in both cases with participants coming from throughout the Region.

Horticultural and product development activities

A study of the Costa Rican post-harvest horticulture sector was carried out by an NRI economist (John Cropley) in early 1995, working together with Ruth de la Asunción. He highlighted the key characteristics of the sector along with their implications for future project activities, identifying root crops and mangoes as areas of opportunity. However he noted that CITA's work in this area might overlap with other institutions, and concluded that further investigation was needed before identifying key companies with which to work. Doing this should be integrated into Ruth's MSc research.

Ruth de la Asunción attended the MSc course as planned. Following completion of the formal taught part of the course she returned to Costa Rica where she carried out the research to include in her thesis: "Identification of the constraints in the application of Post-harvest technology at the pack house level in the Costa Rican non-traditional fresh produce exporting sector." Ruth became the first post-graduate student of the newly accredited PHHC to obtain an M.Sc. from the University of Greenwich.

NRI's desk study on the use of prawn by-catch concluded that it would not be financially viable to land most of this material in food-grade quality and convert it into minced fish. No further work was therefore done on this topic.

MID-TERM REVIEW

The review took place at CITA on 11-13 September 1995, and was reported on in the Project Leader's Progress Report - R2290(R). This included the following annexes: the BTOR of the DFID Advisor (Lindsay Bell) who attended the Review; Linda Nicolaidis' BTOR; a report on the market research area; CITA's strategic plan and; the external referee's report on quality management objectives. At the Review, CITA also provided its own record of achievements.

The Advisor concluded that the project had been correctly targeted and well managed by NRI, and had the full support and collaboration of CITA officials. As regards activities for the remainder of the project duration, they would continue to be in the two main areas of quality management and market research.

As regards **quality management**, assistance to SMEs in the meat products sub-sector remained CITA's priority under the project, along with small cheese makers at which it was also targeting assistance. CITA only had capacity to tackle two sub-sectors at once, and after meat and dairy products, it was likely to move on to fruit preserves and spices, and depending upon the results of Ruth de la Asunción's on-going thesis work, post-harvest horticulture might be covered.

As regards laboratory services, impressive progress had been made in the chemistry area, which was well in advance of microbiology. CITA felt that further work in the latter area should only be undertaken after an internal review planned for late 1995.

In the **market research** area, CITA reaffirmed its commitment to the objective of establishing a short-course centre, and this would be the project focus for the remainder of its duration. A study of training needs would be carried out by Julio Alvarado (consultant) and Fernando Aguilar before the end of 1995, following which they would visit the UK to study the organisation of a short course programme. Assuming these enquiries indicated the programme was feasible, it would be established in FY 1996/97, with the support of ODA-funded speakers and scholarships.

With a view to further raising CITA's professional standards, staff would be put through the Market Research Society Certificate and Diploma distance-learning courses, and Aguilar would attend short courses in the UK.

A possible link with the Central American School for Animal Husbandry (ECAG) was discussed, with a view to support from CITA in agro-processing. This was to be followed up by the Adviser.

ACTIVITIES FROM MID-TERM REVIEW TO END OF PROJECT

Quality management

A five-day course on laboratory accreditation was presented by a member of the United Kingdom Accreditation Service (UKAS).

The chemistry laboratory was audited and CITA was assisted in preparing a quality manual for the three laboratories.

In November 1996, UKAS carried out a mock assessment of the chemistry laboratory, and it was found to conform with the requirements of EN45001. In the light of this achievement, Monica Lois was appointed as overall Laboratory Manager, with responsibility for chemistry, microbiology and sensory laboratories.

There was a second study tour in July 1997 where three members of the quality team were placed in UK food industries that had HACCP systems in place. They gained practical experience in the day-to-day running of food factories working to a HACCP system that met with the requirements of the European Food Hygiene Directive. At this time they held discussions with visiting workers from the Central Institute of Fisheries Technology (CIFT), India, with a view to possible collaborative research projects.

Back in Costa Rica in October of the same year, a final workshop was planned to present the findings of the work with SMEs, and delegates from the region were also trained in the practical implementation of HACCP systems.

During the workshop the measured improvement of the SME's targeted for assistance from CITA was presented. This has been summarised and is presented in this report as Figures 1 and 2 in Appendix I

The approach to laboratory accreditation was considered at various times during the project, starting with a short visit by David Baker in late 1994. Ultimately it was decided that CITA would accredit the chemistry laboratory with the National Accreditation Body (INA) of Costa Rica, in preference to UKAS, as this will be more cost-effective. It is hoped that this will be done soon, as the laboratory has already met and continues working to the necessary requirements. Monica will be overseeing the microbiologists and sensory chemist in meeting the standards of their respective laboratories.

Market research

In his feasibility study, Alvarado concluded that it would not be viable to create a regional course centre - such a centre would have to have a very high level of prestige from the outset, and it would only benefit large MR firms, which were a very small segment. He proposed, by contrast, that CITA should support SMEs in the implementation of competitive marketing strategies - they should be trained to compete in the face of market integration. A pilot plan should be carried out, involving consultation with SMEs, round table discussions about new techniques, a training programme, and marketing management support to selected firms. To ensure that the project was self-financing, CITA would be reimbursed with a basic charge and a percentage of profits earned.

The latter proposal bears certain similarities with Jimenez' earlier suggestion that CITA should seek to become the R&D department for a number of enterprises. CITA did not go ahead with either of these proposals.

At the recommendation of the DFID Adviser, who visited CITA in May 1996, NRI then investigated an alternative training strategy, i.e. to turn CITA into a distance-learning centre for market research, through a linkage with MRS and De Monfort University who ran such a system in the UK. MRS responded positively to this initiative, and CITA was briefed and advised of the sorts of inputs which would be required on the Costa Rican side. CITA considered this information and decided not to go ahead, but concentrate on its traditional MR activities in support of SMEs.

Fernando Aguilar visited UK and attended an MRS course in New Product Development, received tutoring in multivariate analysis and the use of SPSS software, and met quality monitoring specialists at NOP. CITA was then

supplied with specialised market research software and this is already being used for multivariate analysis and other purposes. NRI also sent CITA details of distance-learning in market research, for training of CITA staff, but this was not taken up.

Post-harvest horticulture

As part of her thesis work, Ruth surveyed a random group of 25 enterprises (packing root crops, chow-chow, pineapple, blackberries, ginger and other items) in the second half of 1996, identifying many constraints in the packhouse and at further levels of the marketing chain, and seriously affecting product quality and market reputation. Training and advice were needed on post-harvest handling, quality assurance, marketing and related topics. Strong Government commitment was needed to ensure the availability of this support.

CITA will now implement this plan through a joint arrangement with the parastatal marketing corporation, Consejo Nacional de la Producción (CNP). CITA will train packing companies and carry out regular DTCs to assess improvement in performance. In addition it will train CNP staff to provide on-going support to companies in this area (Gisela Kopper, Director of CITA, *pers. comm.*). The arrangement with CNP is significant, because it provides a stronger institutional mandate for CITA's work in this sub-sector, which will now benefit from CITA's considerable expertise in quality management.

There will also be continued research on packaging materials, especially with melon, and a project on minimally processed products (salads etc.) is also planned.

There are indications of significant international demand for CITA's services or collaboration in this area. NRI has been receiving requests for assistance by Caribbean countries which could be satisfied, at least in part, by CITA. Likewise there has been an approach from the National University of Colombia about possible institutional collaboration and exchange of staff (Annabelle Malins, *pers. comm.*).

IMPACT

Impact on CITA's services to the Region

The project has succeeded in its original objective of helping CITA consolidate its position as a base for assisting agro-industry in the Region. The above activities bear witness to the strengthening of its role as a trainer and adviser in quality management and consumer market research.

The quality team is now a particularly effective group, able to design and implement quality systems for SMEs. This resource could be used in DFID

and other international organisations, in programmes within the Region and other parts of the World. The demand for their services is indicated by requests from countries in the Region. They are also in a good position to develop research proposals to attract international funding from bodies such as the EU.

The project has helped capable elements to come to the fore, and this bodes well for the future of microbiology and sensory laboratories, which were not themselves the focus of intensive assistance. This was particularly the case with Monica Lois' appointment as Laboratory Manager.

In the area of market research there has been a major increase in CITA's service income. The number of requests from private sector clients has increased from 28 in 1994, to 35 in 1995, to 38 in 1996, and 55 in 1997, i.e. a doubling in three years. Income earned has risen from 1.02 million colones (about US\$6,600) to 5.6 million (about \$24,200) - the low base level is largely due to the policy of providing subsidised services to SMEs. Overall the figures are indicative of CITA's growing self-confidence and reputation in this area, something which may in part be attributed to external training inputs received under this project. Training has helped CITA create new products with which it is carrying out training and advisory work in other countries including: Guatemala, Honduras, El Salvador, Nicaragua, Panama, Dominican Republic, Ecuador and Bolivia.

Little work has been done on the development of new technologies; it has become apparent that CITA's cutting edge has been in quality management, and the project has therefore concentrated on this area. However, it is suggested that project proposals be prepared to attract funding for research and development in this area.

The regional dimension of this project is reflected in CITA's intake for short courses - see Table 1.

TABLE 1: PROPORTION OF FOREIGN STUDENTS ON CITA'S SHORT COURSES				
	1994	1995	1996	1997
Total of students	263	245	225	98
Proportion - foreign/total students	0.25	0.32	0.45	0.48

Impact of the project on sustainability of CITA's operations

The following table provides some indicative data.

Category	1994	1995	1996	1997
Total budget '000 colones	140,018	145,218	135,012	158,615
Total service income:				
Value '000 colones	12,325	14,124	19,959	16,914
Percent of budget	8.8%	9.7%	14.8%	10.7%
Income from market studies:				
Value '000 colones	1,022	1,485	3,067	5,614
Percent of budget	0.7%	1.0%	2.3%	3.5%
Income from short courses:				
Value '000 colones	7,829	8,520	9,410	4,159
Percent of budget	5.6%	5.9%	7.0%	2.6%
Other service income:				
Value '000 colones	3,474	4,119	7,482	7,141
Percent of budget	2.5%	2.8%	5.5%	4.5%

While the overall budget has increased by 11.3% in local currency terms, in dollar terms it has fallen by about 24% from US\$900,000 to US\$682,000. This is symptomatic of the sort of difficulties which CITA has always faced, accentuated by the effects of devaluation and macro-economic adjustment. Significantly CITA now receives funding from the Ministry of Health, in addition to its two traditional sources, and this may be a factor for financial stability

The percentage of income earned through services increased very sharply, from 8.8% of the budget in 1994 to 14.8% in 1996, but dipped to 10.7% in 1997, with a significant reduction of short course income. We do not know the cause of the latter, but suspect that it is only a temporary change, and does not reflect the underlying trend.

This project has probably contributed to the upward trend.

POSSIBLE LESSONS FOR THE FUTURE

1. The need for an initial project identification/planning mission

Ideally, a long-term institutional linkage project of this kind should be preceded by a substantial project identification/planning mission, which will allow the institutions concerned to get to know each other well and understand each others' strengths, priorities and motivations, and plan accordingly. In the case of this project, the two organisations had worked together up to about 1981, but by 1994 had limited familiarity. The need for such a mission was partly covered by Project Leader's initial visit, but this took place when the project was already substantively approved and there were strong expectations about implementation on both sides.

There are distinct advantages to DFID in funding such a mission. The project can be better designed at the outset, and the implementing agency can be held more accountable for design features.

To ensure good coverage of the disciplines one would want at least two persons to participate in the mission. A two person mission of three week's duration would not have cost more than £20,000 i.e. 7% of the total project cost. In reality, this would not have been extra expense but would have accomplished things required at the project implementation stage.

2. CITA should continue building on its strong sub-sectoral/quality management approach

CITA seems to be achieving considerable impact and economy of effort by concentrating its support on particular sub-sectors, using the TQM approach. The advantages of this approach are that:

- a) Common problems affecting the industry are identified;
- b) Demonstration effects are set in motion, and;
- c) Skills built up in one sub-sector are redeployed in others.

Greater impact could be achieved if the approach was broadened to include a complementary focus on questions of: (a) economic efficiency, and: (b) competitiveness in a business sense. With regard to the former, the case for supporting particular SME sectors could occasionally be screened on broad cost-benefit criteria. Areas for assistance can also be prioritised. With regard to the latter, we suggest that CITA's new management give fresh consideration to earlier suggestions, e.g. those made by Jimenez and Alvarado. Among other benefits, this will help CITA earn more and enhance its self-financing capability.

For CITA to broaden its range of services might require it to link up with other University departments or other institutions outside the University. Such

institutional links are not an easy endeavour, but the recent arrangement with CNP suggest that such possibilities exist.

3. Research can be enhanced with a stronger problem-solving approach

Research can be strengthened through better prioritisation of research targets, greater inter-disciplinarity through the project cycle and stronger relationships with client companies. As the experience with fish products shows, part of the solution lies in greater involvement of people with business and economics backgrounds.

4. CITA should build on its strength in short-course organisation

CITA has a reputation for presenting high quality courses for the food industry. They should continue to offer a varied programme to the food industry, in particular, in the areas in which this project has strengthened the Institute.

Appendix I: Figures 1 and 2 Graphs presenting the improvement of the standard of work carried out by the assisted SME's of the Costa Rican meat sector between 1993 and 1997. Data is also presented for the meat sector as a whole for the same period.

Figure 1: Scores (% performance) depicting progress of the Meat Sector versus the assisted Small and Medium Enterprises (SMEs/Pymes) - left hand column: Improvement of the assisted SMEs(Pymes) - right hand column. Raw materials, Process and Product.

Source: Quality Group, CITA

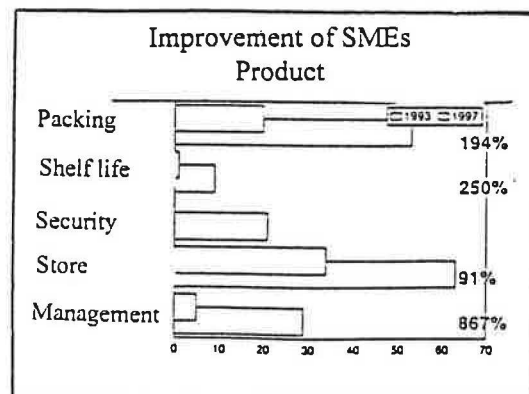
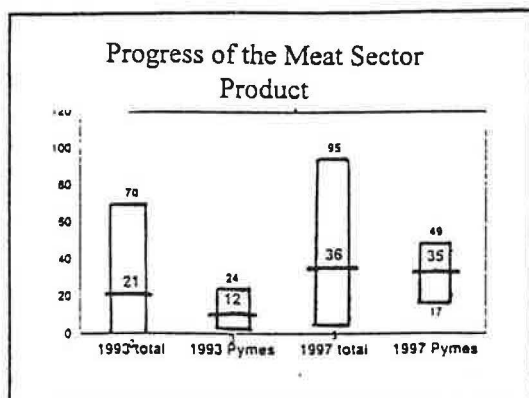
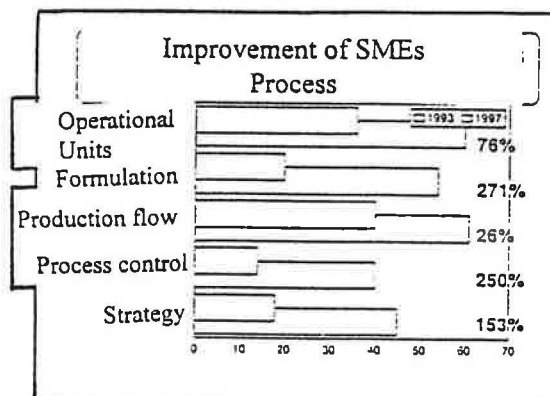
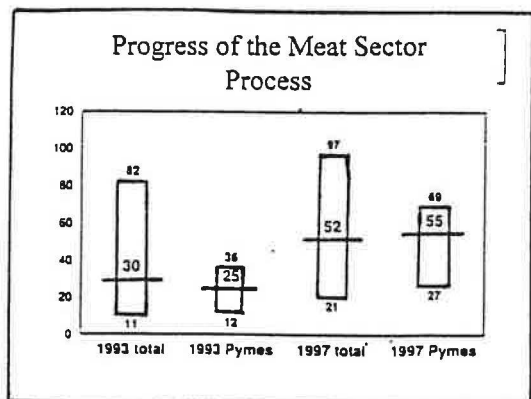
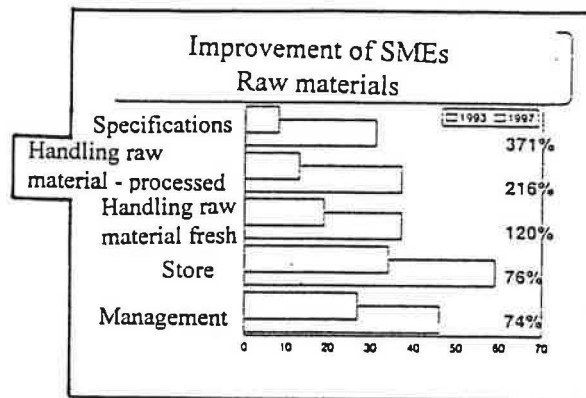
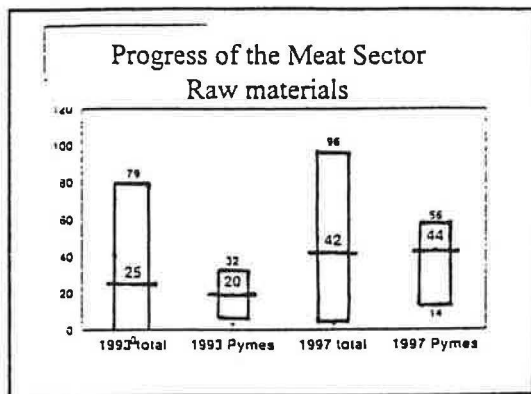
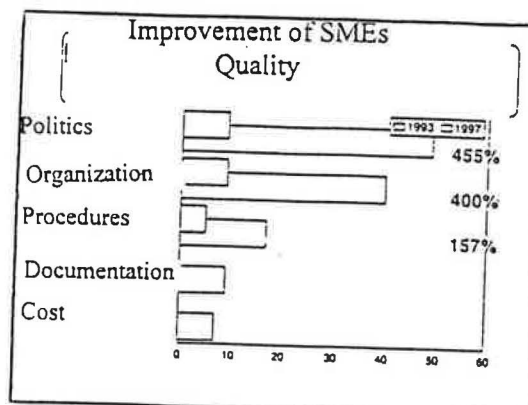
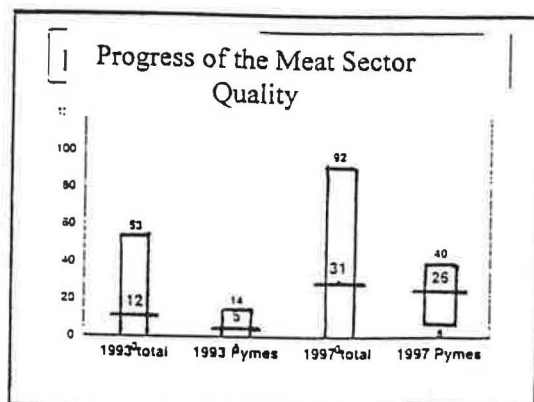
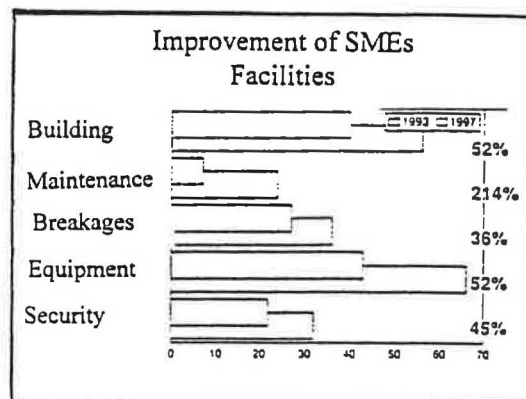
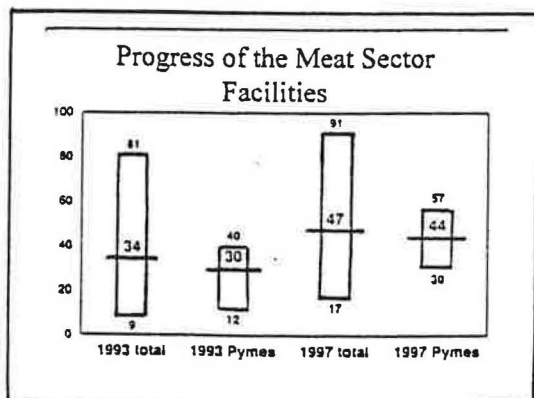
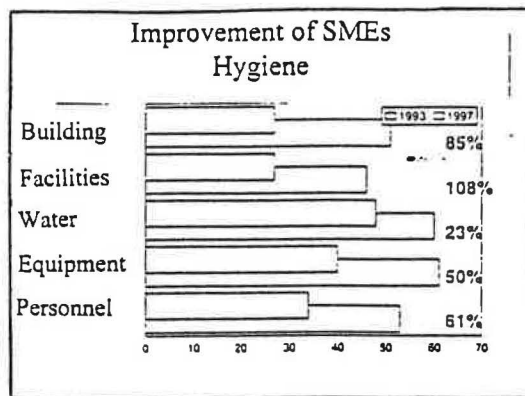
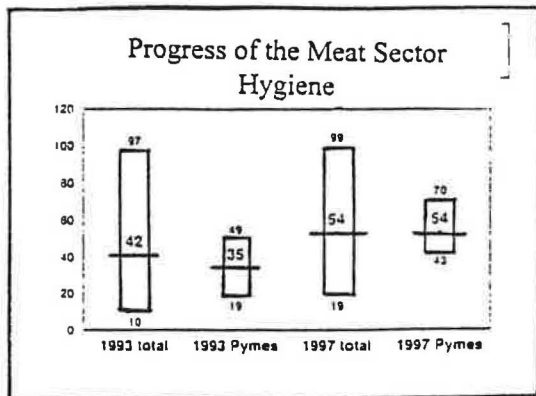


Figure 2: Scores (% performance) depicting progress of the Meat Sector versus the assisted Small and Medium Enterprises (SMEs/Pymes) - left hand column: Improvement of the assisted SMEs(Pymes) - right hand column. Hygiene, Facilities and Quality.

Source: Quality Group, CITA



Appendix 2: List of Reports

R2151(R) Support for Agro-Industry in Central America; Report on an initial mission. September 1994 Jonathan Coulter.

R2176(R) Report on a visit to the Centro de Investigaciones en tecnologia de Alimentos, Costa Rica, to provide Technical Assistance in the areas of Food Safety and Quality Assurance. 25 September - 16 October 1994 Linda Nicolaides.

R2177(R) Support for Agro-Industries in Central America; planning visit to assist CITA with inputs on Food Sensory evaluation and chemical analysis. 1 - 8 October 1994 David Baker.

Marketing Consultancy Report on visit to CITA, Costa Rica. 28 November - 12 December 1994 Jack Hamilton.

Use of shrimp by-catch in surimi manufacture. January 1995 Tim Bostock.

Report on study tour to the UK to attend courses related to Understanding skills related to Quantitative Research. April 1995 Carmen Ivankovich.

Report on study tour to the UK for four members of CITA staff in the areas of Quality management and HACCP, Chemical Analysis and Laboratory Accreditation and Food Law and Information Technology. April - May 1995. Eugenie Rivera, Luis Jimenez, Monica Lois and Ronald Gonzalez.

Report on a visit to Costa Rica to Assess potential for collaborative work on quality management in the horticultural sector. July 1995 John Cropley.

R2290(R) Project Leaders's Progress Report: Technical Assistance for development and strengthening of the Agro-Industrial sector of Central America and the Caribbean Basin. 11 - 13 September 1995. Jonathan Coulter.

R2347(R) Report on a visit to CITA, Costa Rica to provide technical assistance in the areas of Food Safety, Quality management and Good Laboratory Practice. 24 - 1 December 1996 Linda Nicolaides.

Report on the training/consultancy visit to the Centro de Investigaciones en Tecnologia de alimentos (CITA), University of Costa Rica, San Jose, Costa Rica. 25 November - 3 December 1996 David Galsworthy.

Report on a study tour to the UK in the area of Marketing. May 1997 Fernando Aguilar.

Report on a study tour to obtain working experience of the Hazard Analysis Critical Control Point (HACCP) concept in the UK Fisheries and Meat Industries. July 1997 Eugenie Rivera, Eliana Mora and Luis Jimenez.

R2230(R) Report on a visit to CITA, Costa Rica to present a workshop on the implementation of the Hazard Analysis Critical Control Point concept (HACCP). 9 - 22 October 1997 Linda Nicolaides and John Gymer.