

EVALUATION

of the

HAITI INTERIM SWINE REPOPULATION PROJECT

Project Number 521-0170

submitted to

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1. EXECUTIVE SUMMARY

1.1. Purpose of Evaluation

The purpose of this evaluation is to assess the overall progress to date of the Haiti Interim Swine Repopulation Project (ISRP) scheduled to terminate in September 1987.

An amendment to extend the project for approximately two years is currently under Mission review. The evaluation team is also to review, assess and develop a strategy in the activity's new and expanded next phase. The USAID Mission requested the team to specifically focus on extension and nutrition aspects in the next phase of the project.

1.2. Summary of Project Description

1.2.1 Purpose

The purpose of the ISR project is to produce and distribute improved breeding stock to Haitian farmers during the period immediately following the eradication of African Swine Fever (ASF).

The project was to expeditiously and as simply as possible:

1. Produce and distribute improved breeding stock to the Haitian farmer in as rapid and efficient a manner as is possible.
2. Place as small a burden as possible upon the Government of Haiti (GOH) public treasury resources, either in the short or long-term, through making as small an investment as possible, infrastructure and institution-building; and
3. Target the repopulation activity at the stratum of Haitian society, the peasant farmer, which has suffered the most from the eradication program and loss of his pigs.

An amendment to the ISRP was approved by USAID on August 31, 1984. The project paper amendment consisted of three elements:

1. An extension of the PACD by six months to March 31, 1986.
2. An amended and increased budget for the ongoing project to include a herd health element; and
3. The addition of a disease monitoring component to help assure the absence of African Swine Fever in Haiti during the life of the project.

The goal and purpose of the original project remain unchanged. A second amendment was approved by USAID on August 23, 1986. The purpose of the extension was to:

BEST AVAILABLE DOCUMENT

1. Extend the PACD by 18 months to September 30, 1987.
2. Increase funding of \$2.349 million to allow for expanded extension and health activities.

1.2.2 Duration of The Project

The current ISR project started on August 26, 1983 and is scheduled to terminate on September 30, 1987.

1.2.3 The Implementing Agency

The implementing agency is the Interamerican Institute for Cooperation in Agriculture (IICA) which provides technical assistance, procurement of equipment, supplies and labor and to provide other services required in the production and distribution of swine to small Haitian farmers.

USAID funded this project through a grant.

1.2.4 Historical Perspective

The ISRP began in 1983 following the country-wide eradication of pigs as a result of the spread of African Swine Fever into the country. The Interamerican Development Bank (IDB) was to finance a repopulation program for swine. Because of delays in financing the project, the U.S. Government was asked to fund an interim project until the IDB loan was approved.

The IDB loan was approved; however, efforts are currently underway to reformulate the project. USAID has continued to extend funding with additional amendments to the initial project. A third amendment is currently under review by the Mission.

1.3 Summary of Major Findings

Based on extensive field visits to sixty-nine Secondary Multiplication Centers (SMCs) and peasants who have received pigs from the SMCs, the team concurs on several major findings.

1. Feed supply and water availability are two critical factors affecting the performance of pigs.
2. Disease conditions were more frequently a result of diet and management than infectious agents.
3. The national swine population is of sufficient size and rapidly increasing to allow contagious disease agents to more easily spread throughout the herd and less likely to be contained in an isolated area of the country.
4. The IICA feed subsidy has helped the establishment and operation of the SMCs and the subsequent distribution of pigs to farmers. The IICA feed mill has been a valuable support in fulfilling these tasks.

5. Individual pigs that had been dispersed to peasants were in better nutritional and health status than pigs in SMCs that had problems with feed.
6. Pigs are adapting to local conditions and are approaching a homeostasis with the environment. In field interviews, 77 percent of all respondents and 66 percent of the peasants said the new pig had adapted.
7. The pig is a strong factor in the household and the peasant sees value in the new pig. On the basis of peasant interviews and observations by the team, it is concluded that the new pig reaches maturity sooner, is more productive and larger than the former Creole pigs.
8. The new genetic potential establishes a good base for a sound national swine program.
9. Economic analysis of SMCs and peasant operations found that SMCs currently have a net loss of approximately \$1,000 per year compared to peasants with a one sow operation having a net return to labor and management of \$130 per year.
10. The extension component has been valuable to the overall success of the project. Greater efforts are needed to tailor specific and appropriate information to the needs and capabilities of the peasant.
11. Peasants are receptive learners of management techniques for pigs and want information on other livestock as well.
12. SMCs that have financial support from sponsor groups can sustain and continue multiplication of piglets for peasants and have a viable commercial operation.
13. Currently the faster maturity and larger sized new pig confronts the peasant with new marketing difficulties not experienced with the Creole pig. Marketing adjustments will be required especially on how long and at what weight the pig should be maintained. Extension will be a key factor in educating peasants on marketing techniques.
14. Little market information on supply and demand for pigs and pork has been gathered in a systematic manner. Lack of this knowledge will make it difficult to develop appropriate marketing strategies for assisting the peasants or to advise on impacts of imports which are currently disrupting the efforts to repopulate the pig herd.

1.4. Summary of Recommendations

The evaluation team believes that its recommendations should be framed in a way to give guidance knowing that this project may be extended

for its third amendment but is closing down. The recommendations are meant to serve as a guideline for how activities can be structured during the remaining time to leave a firm foundation for peasants and SMCs to sustain improved swine husbandry practices. A time chart is presented to indicate how the activities should be scheduled (Figure 12.2).

1.4.1 Project Design and Administration

It is important to fulfill some of the recommendations set out in the Mid-Project Evaluation done in November, 1985. Project administration needs to improve coordination between the MOA, USAID and IICA. Direct channels of authority need to assure that policy decisions are implemented in the field. Improvements in the swine industry can only be sustained if the relevant Ministries and appropriate personnel are involved in the Project.

The team recommends that work plans be prepared on a semi-annual basis so that progress can be monitored and revision of objectives made as needed. After individual work plans are filed with the Project Coordinator, a project work plan is then completed and reviewed with the IICA field representative/Project Director.

It is further recommended that project bulletins and information be copied and distributed to the appropriate offices in the Ministry of Agriculture.

1.4.2 Extension and Other Issues

Extension personnel should be encouraged to continue their high level of activity. An additional extension assistant should be employed and involvement of Peace Corps volunteers should be increased. Focus of extension activities must center on providing increased training and backstopping for the peasant farmer via the SMCs.

Three IICA Haitian extensionists should be sent out of the country for advanced academic degrees and the entire extension staff should receive in-country training on extension/teaching techniques. Annual work plans and reports from extension component should be required and built into the project documentation system.

Established extension materials must be subjected to intensive review which involves users. User-friendly versions of bulletins must be developed for peasant farmer groups. Arrangements should be made with relevant agency/institution, for example CDRH, to serve as depository and distributor of materials after project is terminated.

Training of peasant farmers via a system developed with SMCs in training positions must be devised, planned and implemented. Timely issues of importance to peasants must be identified and alternative solutions developed through field research.

Women should be targeted as members of the beneficiary group to receive training and information related to pig production, management, and marketing.

1.4.3 Animal Production and Nutrition

All viable SMCs should be in full operation and corrective actions taken to resolve problems in management, breeding, water and feed. Maximum use of local available feed is recommended.

Data collection of basic biological and economical parameters should be started as soon as possible with six selected efficient SMCs (three in the South and three in the Southwest) and with six average size SMCs (as control) in the same areas. The economist recommended could gather data on cost/benefit information and perform feasibility studies.

Simple feeding and demonstration trials should be simultaneously started at the central piggeries of IRD in Les Cayes and CODEVA in La Vallée.

Feeding trials should be oriented to use local feed resources to a maximum and introduce a few other alternatives. Feeding trials in gestation and lactation periods must be emphasized. The project nutritionist should have the responsibility to implement these activities.

The IICA feed subsidy should be discontinued and the IICA feed mill should be progressively transferred to UNAPEL, which seems to be the appropriate institution to continue this work. A 6 months trial period is recommended to observe if UNAPEL has the capacity to supervise feed mill operations.

Wheat shorts and rice bran will never solve the feed problem and therefore, it is suggested that the SDR and USAID discuss the possibility of importing feed sorghum for swine and poultry. Importing soy meal might be another solution.

1.4.4 Animal Health

ISRP must acknowledge that swine being raised outside the realm of the project are in close association with Project swine and are of equal importance to the individual peasant farmer regardless of their origin. Consequently, a national swine herd now exists which is ever expanding in size and very susceptible to disease. With this in mind, it is recommended that extension services be directed toward all peasant swine farmers with focus upon prevention and early detection of diseases. Emphasis should also be placed on good management, proper diet, and judicious use of veterinary drugs as they relate to animal health.

UNAPEL is currently in the process of establishing a network of pharmacies for distribution of veterinary pharmaceuticals to peasant farmers. ISRP personnel should assist and nurture UNAPEL's efforts so as to increase the chances of success and sustainability of this network. In addition, extension materials should be developed to more fully educate the peasant farmers about the appropriate use, handling, and storage of veterinary pharmaceuticals.

Better communication between ISRP, MOA and the private sector is a necessity. Animal health information and issues concerning the national swine herd should be discussed and formulated by the groups. Perhaps the most valuable institution to all three sectors would be a fully functional and reliable National Veterinary Diagnostic Laboratory. Once established, the implementation of a program to monitor animal health nationwide is conceivable. An organized transfer of ISRP swine health data and technologies from ISRP to MOA should take place in the near future. Continuing efforts should be made to assist them with the development of a national animal health monitoring system.

1.4.5 Marketing and Policy

The recommendations for marketing presented in this evaluation are based on the recommendations made in the 1985 Mid-Term Evaluation that market analysis be undertaken that will be the basis for designing livestock policies and marketing strategies for pigs and pork.

The marketing recommendations are divided into two areas: macro- and micro-analyses. The focus will be to design strategies that will assist pig producers and at the same time comprehend and assess the opportunities present in the market.

The market research that needs to be given attention are: feed supply and its impact on production, the impact of pork imports on the domestic industry and the role of commercial producers on peasant production. Major constraints are present in the marketing system for sale, processing, marketing and retailing of pork in Haiti. Several constraints are present.

At the peasant level, an economic study is required on production and marketing systems that are appropriate for the improved breed of pigs being produced. If extension is going to be effective, it must have effective technological packages (production and marketing) to extend to farmers. Economic study of local production of feedstuffs for pigs will need to be performed to assess the opportunities in the farming system of peasants. This recommendation was stressed in the last evaluation.

1.5. Summary of Major Lessons Learned

After investigating all significant aspects of the ISRP project, the evaluation team believes that there are several points which may help in planning and implementing other similar projects.

1. Pigs, unlike ruminants, have a rapid reproduction cycle. In the case of this project the rapid population growth placed pressure on the existing infrastructures of markets, veterinary services and the feed supply. It is advised that when livestock production projects start, other relevant components like marketing be initiated at the same time.
2. It is important that livestock projects be firmly imbedded within the relevant Government ministry so that a long-term

sustained effort can be achieved. Institutional and manpower development are certainly difficult tasks to undertake, but sustained development cannot take place without a degree of coordination.

3. Success of an information and production project such as this one is dependent on local leadership. Cultural constraints within the leadership are such that information is not shared among all participants. Project leadership needs to be sensitive to these cultural differences. For that reason, incentives are needed in developing and implementing an effective extension service.
4. Pigs have a unique place in the household economy of rural Haitians. In this regard, pigs can be an "agent of change" which can have a multiplicative effect on improved animal husbandry and community and personal improvements. However, these pigs are seen as being different and requiring more inputs and care. Consequently, peasants are vulnerable to being exploited because of lack of knowledge about a possession in which they place a lot of hope for the future.
5. Successful livestock development projects require a systematic process of collection, analysis and dissemination of basic animal performance and marketing data from the outset of the project. The information is necessary for feedback to assist management to adjust to changes in the project. This will also allow for forecasting to anticipate constraints which may affect the project.
6. The most limiting factor in many livestock development projects is trained manpower. This is particularly true in the case of undertaking a national animal health monitoring system. A manpower assessment needs to be made to insure that adequate local people can be educated early in the project to fill positions later in the project.

1.5. Development Impact

1. The pig is an "agent of change" that can induce other ancillary development activities.
2. The impact of the improved pig has had secondary effects on improving the management of other livestock held by peasants.
3. There has been a general greater awareness about pigs with the increased use of facilities, veterinary and feed inputs.
4. Concern exists however that peasants will be exploited because of peasants' lack of awareness of appropriate use of medicine and feeds.

1.7. Methodologies Used in Evaluation

The evaluation team conducted an assessment of the Haitian Intensive Swine Repopulation using project documents and making site visits. A list of pertinent documents is provided in Table 10.

Besides documents, members of the evaluation team travelled extensively within Haiti to survey recipients of pigs from the project. The following survey frame was designed and carried out.

1. Concentrations of pigs distributed to Secondary Multiplication Centers (SMC) were identified from IICA maps and computer printouts. A survey schedule was designed for members of the team to visit areas with heavy concentrations of pigs.
2. After arriving in a region, SMC's were identified and visited by team members and IICA extension staff.
3. The SMC manager or other staff were interviewed using a formal questionnaire.
4. After conclusion of the interview, individual team members with project staff interviewed farmers who had received pigs from the project.
5. Where possible, team members visited markets or other facilities to discuss aspects of the pig repopulation program.

A list of survey sites of SMC's and farmers is provided in Table 11.

1.7.1 Composition of Evaluation Team

The following persons served on the evaluation in specialty areas for specified time periods:

NAME	SPECIALTY	TIME PERIOD
Guillermo Gomez	Animal Nutritionist/Production Raleigh, North Carolina	5/27-6/13
Jean R. Kearns	Rural Anthropologist Tucson, Arizona	6/3-6/25
Harriet Paul	Rural Development Specialist Tallahassee, Florida	5/27-6/7
Richard Pacer	Animal Health Specialist Tampa, Florida	5/31-6/20

Each team member had specific tasks to undertake besides evaluation of topics related to the whole team. Guillermo Gomez was requested to look at alternative feeding systems for pigs within the current animal production system. Jean Kearns examined education materials and training seminars conducted by project staff. Harriet Paul assessed key issues of Government and private sector developments impacting on the swine industry as well as impact on producers. Richard Pacer evaluated the animal health component of the project. Gregory Sullivan conducted an economic analysis of the project. He also served as the team leader.

1.8. Comment on the Scope of Work

A copy of the team's scope of work is found in Appendix 13. The team was asked to evaluate the current ISR project as well as provide strategies for USAID/Haiti to consider in the proposed next stage of this project.

2. Findings, Assessment, Lessons Learned, and Recommendations

2.1. Goals of the Project

The central goal around which this project was designed and implemented was as follows:

To raise the standard of living of the poor Haitian farmers who were most affected by the ASF epidemic.

The evaluation team found in interviews with farmers that they recognized the potential for a "better" life as the pigs adapt to local conditions, feed constraints are lessened and the number of pigs owned by the farmer increases. It was also observed that improvements relative to pig raising but not solely part of that activity were being made within farm families. Newly dug wells, increased sanitation, and development of latrines were among some of the indicators observed in the field which relate to living standards of the farmers.

The team concluded that the original goal to raise the standard of living based solely upon increased numbers of pigs pumped into the farmer group is presumptuous and therefore non-realistic. The larger number of pigs without other appropriate infrastructure is an inadequate technique for raising standard of living.

2.2. Objectives and Outputs of the Project

In this section, project objectives and outputs contained in the Project Paper are reviewed via findings and assessment.

2.2.1. Objective: To repopulate the Haitian pig breeding stock.

The evaluation team found that the project has repopulated the country via SRCs with a swine variety which has an improved genetic potential. In the process, many limitations and constraints have occurred as the herd expanded rapidly. As a result, the population has outstripped available resources.

The team assessment is that (1) repopulation is being achieved at a rapid rate and (2) the repopulation rate has led to problems in feed, marketing, animal health status and extension services.

2.2.2. Objective: To improve the Haitian pig breeding stock.

Findings relative to this objective concluded that pigs of superior genetic potential compared to creole pigs have been distributed by the project.

On the basis of observations and field generated data, the team assessment was that the project has fulfilled this objective. Pigs appear to be adapting and moving into homeostasis with local conditions.

2.2.3. Output: Pigs distributed to farmers

Due to the difficulty of getting verifiable information, the project did a sampling of 170 SMCs for 2022 farrowings. This sample gives us the rates of production per SMC in the project and with other pertinent information available in the project's data bank, we can conservatively estimate that to date 50,000 farming households have benefited from the project.

The team assessment of the project's progress relative to this output is that the distribution has been good. However, the continuing benefits to the poor farmer will depend on the level of management they are able to achieve and the continuation of extension activities.

2.2.4. Output: The establishment of breeding centers

To date, the project has fostered the establishment of 44 SMCs which serve as breeding centers housing 1 to 44 adult animals.

Assessment of progress relative to this output is that the project has exceeded the number of regional breeding centers as originally envisioned in the project paper. The degree of success of SMCs largely depends upon SMC management selection and continuing financial support from a donor.

2.3. Assessment of Evaluation of the Interim Phase of the ISRD

In the evaluation team's scope of work, the team was directed to "Assess whether the recommendations from the last evaluation were implemented and produced the expected results?". Clearly, the team's charge was to assess progress and not to evaluate the quality of the recommendations per se. The team fulfilled its responsibilities but the reader is cautioned to exercise judgement when reviewing the original recommendations. This evaluation team believes that some of those recommendations were outside the scope of the project and therefore unrealistic.

Assessment of the Interim Phase Evaluation is presented in Table 11.2 of this report. Detailed assessments relative to each recommendation are contained in that Table.

2.4. Assessment of the Initial Environmental Examination

The negative determination recommended in the project paper proved to be valid. No significant impacts were identified during project implementation.

2.5. Evaluation of Expenditures of Project Inputs

The team found that the ISRP has done an excellent job in accounting for and auditing project expenditures. The project accounts are updated weekly by the IICA financial officer. Rate of expenditures has been on track. The following input categories were assessed:

Inputs	Assessment
- international personnel (9)	- all were hired
- local personnel (9)	- all were hired
- local feed development	- project has made contracts for land rental to grow new varieties. A nutritionist is working on development of local feed supplies.
- medicine	- has been stored in IICA head office and medicines are in process of being transferred on credit to UNAPEL. UNAPEL will take charge when project terminates.
- supplies	- purchased as specified
- equipment	- computers, feedmill and vehicles were bought according to the budget. Budget was reduced from \$195,000 to \$151,800.
- evaluation and audit	- this line item was increased from the budgeted \$30,000 to \$43,000.
- operating costs	- funds are being used in an expeditious manner and according to schedule.
- sixteen months of feed	- total expenditures to May 1987 have been \$667,563. Sales of feed was \$400,355. The amount of the subsidy to date is \$227,566.
- feedmill rent and maintenance	- the feedmill rent and maintenance has been increased from \$50,000 to \$95,000 and the funds for local personnel was increased from \$235,000 to \$318,000.

The team concluded that the Project has been administered in an efficient manner and deserves recognition for providing timely support to field personnel with required inputs to conduct this extensive national program.

2.6. Evaluation of the Organization and Efficiency of the IICA Project Office

Each team member had the opportunity to visit and discuss all aspects of the project with all the staff members. Project staff were asked for their confidential opinions about the support of the project office for conducting their work. The project office was given excellent ratings in its performance, efficiency, and consideration for each field worker. The team concluded that this goal of a well organized and efficient office is being achieved.

2.7. Assessment of the Effectiveness of the Project Coordinating Committee (PSC).

The team found that attempts are being made at the higher administrative level (PSC), but policy is not being enacted in the field. Communication is frequent within the PSC. (Please refer to Table 11.2, IV for details). The team encourages the PSC to continue the dialogue between IICA, USAID, and the MOA.

2.8. Lessons Learner

After investigating significant aspects of the ISRP, the evaluation team believes that there are several points which may help in planning and implementing other similar projects.

1. Pigs, unlike ruminant livestock, have a rapid reproduction cycle. In the case of this project, the rapid population growth placed pressure on the existing infrastructures of markets, veterinary services and the feed supply. It is advised that when livestock production projects start other relevant components like marketing be initiated at the same time.
2. It is important that livestock projects be firmly imbedded within the relevant Government ministry so that a long term sustained effort can be achieved. Institutional/ manpower development are certainly difficult tasks to undertake, but sustained development cannot take place without a degree of coordination.
3. Success of an information and production project such as this one is dependent on local leadership. Cultural constraints within the leadership are such that information is not shared among all participants. Project leadership needs to be sensitive to these cultural differences. For that reason, incentives are needed in developing and implementing an effective extension service.

4. Pigs have a unique place in the household economy of rural Haitians. In this regard, pigs can be an "agent of change" which can have a multiplicative effect by improving animal husbandry and thereby affecting the quality of life of communities and individuals. However, these pigs are seen as being different and requiring more input and care. Consequently, peasants are vulnerable to being exploited because of lack of knowledge about a process in which they place a lot of hope for the future.
5. Successful livestock development projects require a systematic process of collection, analysis and dissemination of basic animal performance and marketing data from the outset of the project. The information is necessary for feedback to assist management to adjust to changes in the project. This will also allow for forecasting to anticipate constraints which may affect the project.
6. The most limiting factor in many livestock development projects is trained manpower. This is particularly true in the case of establishing a national animal health monitoring system. A manpower assessment study should be conducted to ensure that an adequate number of local people can be educated early in the process to fill positions later in the project or in subsequent activities.

8.8. Recommendations

Based upon findings, the evaluation team makes recommendations included in Sections 6, 7, 8 and 9 of this Evaluation. Obviously, some of the recommendations made herein are relevant for the existing Life Of Project (LOP) while others are recommended for action during the proposed extension period.

3. OVERVIEW OF THE EVALUATION

3.1 Objectives of the Evaluation

The termination date of the Interim Swine Repopulation Project (ISRP) is scheduled for September 30, 1987. This project is currently under consideration for extension. An evaluation is necessary to assess progress as it relates to the original project paper and what actions have been taken based on the mid-term evaluation conducted in November, 1985.

The evaluation team was asked to conduct an in-depth evaluation to identify and assess this activity's accomplishments, progress, problem areas, constraints, and recommend strategies for future activities. Special emphasis was to be placed on the role of the Secondary Multiplication Centers as well as nutrition and extension components which are to be primary considerations in the following expanded phase of the project.

3.2 Composition of the Evaluation Team

The evaluation team was composed of five professionals representing different disciplines. The goal of the team was to work in an interdisciplinary manner so that information would be shared equally and team discussions would yield a rich interpretation of the problems and provide some cooperative strategies for consideration by the project. The professional fields represented were animal production and nutrition, veterinary medicine, sociology, anthropology, and agricultural economics. All the team members had experience in livestock development and had either worked or visited Haiti prior to this assignment.

The following persons served on the evaluation team for specified time periods:

Name	Specialty	Time Period
Guillermo Gomez	Animal Nutritionist/Production	5/27 - 6/19
Jean Ruley Kearns	Rural Anthropologist	6/3 - 6/25
Harriet Paul	Rural Development Specialist	5/27 - 6/7
Richard Pacer	Animal Health Specialist	5/31 - 6/20
Gregory Sullivan	Agricultural Economist	5/27 - 6/20

3.3 Methodology for the Evaluation

All team members received project documents before arriving in Haiti. Upon arriving in Haiti, more project documents were distributed to the team for review. The team, assessing the magnitude of the scope of the project as well as political factors surrounding the swine project, decided to take a rigorous approach in documenting findings. An interview schedule was developed within two days after arrival to be used to systematically collect information at the SFC and peasant level of production. This process also provided a method which team members could utilize to gather information on individual scopes of

work which reflected disciplinary approaches. Furthermore, the data generated via the interviews would provide a benchmark on operations in the field as those data did not exist prior to this evaluation.

After pretest of the interview schedule at two sites adjacent to Port-au-Prince, the team travelled in the field for nine days surveying sixty-nine SMCs and peasants who had received pigs from these SMCs. In some cases, the team randomly selected SMCs in an area and traveled with project staff to interview persons at the SMC while at other times project staff selected SMCs for visits. The resulting cross-section of SMCs represented large and small sizes, various techniques of management and both well operated and poorly operated units. In several cases, the team visited SMCs that had decentralized because of the shortage of feed. In these cases individual team members visited peasants who had received SMC sows.

The team visited 53 SMCs and 42 peasants who had received pigs from the SMCs. The distribution of SMCs by regions of the country was:

South (Leogane, Jacmel, Les Cayes, Fond des Negres)	- 30 sites
Central (Port-au Prince, Cul de Sac, Arcahaie)	- 8 sites
North (Gros Morne, Port au Paix, Cap Haitien, Gonaives, and Ft. Liberte)	- 15 sites

The Central Plateau (which contained five SMCs) was not included because travel from Cap Haitien to Anse-aux-Loupes was impossible due to collapse of bridge across a major river in the area. The list of the SMCs visited and their location in Haiti is found in Figure 2.1.

Besides field visits to SMCs, members of the team had discussions with project staff, Ministry of Agriculture officials, and private sector companies involved in the production, input supply, processing and marketing of pigs and pork. The team made every effort to meet and discuss with as many people as possible to understand the constraints and potentials of the swine industry in Haiti.

4. BACKGROUND INFORMATION

4.1 The Role of the Pig in the Livestock Economy

Before the African Swine Fever (ASF) epidemic, the national herd was approximately 1.2 million head of pigs generating annually between 12 and 24 thousand metric tons of pork for the domestic market. Pork consumed was the red meat locally preferred and was within the price range of all consumers. It is estimated that approximately 90 percent of the households in Haiti owned a pig.

The local creole pig was small and had a low rate of growth and fertility. The creole pig at slaughter weight was approximately 150 pounds and it took two years to reach this weight. The pig was adapted to a management system of tying to a cord or free range during certain seasons of the year. Because of the small size of the pig it could easily be slaughtered and consumed in a short time period without much difficulty. From research conducted on the rural economy of Haiti, researchers have documented that pigs were a savings account for peasants to be used in a time of difficulty. The black creole pig also was used in local religious ceremonies.

4.2 Historical Perspective of the Interim Swine Repopulation Project

The introduction of ASF in 1976 from the Dominican Republic set off an epidemic that totally changed the way pigs were kept and raised in Haiti. The eradication program, which was completed in 1983, affected all Haitians, rich and poor alike. Due to the delay in the implementation of the Inter-American Development Bank's (IDB) repopulation project (to be funded through a loan), USAID was asked to provide an Interim Swine Repopulation Project. The USAID Project has always been an interim project, meant to bridge the gap between the eradication program and the start of the IDB swine repopulation project. The USAID Interim Swine Repopulation Project (ISRP) was begun in 1983, and has been extended twice to date through project amendments. The ISRP's prime objective has been to repopulate the swine herd as rapidly as possible with the target group being the poor peasant.

4.2.1 Multiplication of Pigs in Haiti by IICA/USAID Project

The ISRP was confronted with a dilemma in locating a site that would be suitable and available immediately to serve as the swine breeding center. Therefore, since the only empty swine facility available in Haiti, with a capacity to house 450 sows, 50 boars, and their offspring, was SAMPOL, USAID/Haiti decided to lease these facilities to establish the nucleus breeding center in Port-au-Prince. The project's rationale was to efficiently produce the maximum number of F1 crossed pigs at the breeding center and distribute them to selected Secondary Multiplication Centers (SMC's) operated by Private Voluntary Organizations. The SMC's were to expand the swine breeding program with the breeding stock received from the breeding center and distribute free of charge the first litter of pigs to the Haitian farmers in the SMC's immediate area of influence.

The rationale for utilizing this system of breeding and distribution was:

- The project was to be an interim breeding program to bridge the gap between the end of the eradication and the start of the ISB project.
- The interim program was limited in financial resources. Therefore these resources had to be maximized by purchasing a base breeding herd and retaining the maximum number of offspring.
- It was neither practical nor financially feasible to purchase great quantities of pigs, import them, and distribute them immediately to the Haitian farmer.
- The project was constrained in time and financing, to build swine rearing facilities, and to concentrate on institution building. Therefore, all efforts were to focus on producing the maximum number of pigs.
- The breeding program was designed in a step down process to accomplish the following:
 - To manage and acclimate the initial breeding herd to the Haitian environment. The birth of the first offspring (F1) at the breeding center under Haitian environment would start the acclimatization process.
 - The F1 generation was placed in SMCs that would expose, breed and produce the F2 generation under a more realistic Haitian environment. This would further acclimate the F2 generation before confronting the true Haitian environment in the hands of the farmers.
 - The SMC network would produce the multiplicative effect desired in producing numbers of acclimated pigs for the Haitian farmer in a cost effective manner with limited financial resources.

The Close-Out of HAYPDS

The ISRP completed its first phase and produced 10,000 total F1 crossed pigs that were distributed via the SMC network. This accomplished, the ISRP had to focus its efforts in support of the SMCs. Therefore, the ISRP had to phase-out the production of pigs at the HAYPDS breeding center. The close-out operation was conducted in the following manner:

- The breeding of sows was ended 6 months before the scheduled close-out date.
- The farrowing of sows ended 2 months before the scheduled close-out date.
- The distribution of F1 breeding stock continued through the close-out date.
- All non-productive, culled sows and boars were sold to local meat processing plants.
- All remaining productive sows and boars were distributed amongst the better SMCs.
- The above SMCs culled their non-productive sows to make room for the rest of ISRP breeding stock.

4.2.2. Distribution of Pigs to Peasants

The distribution of pigs to the Haitian farmer was delayed 6 months due to the late arrival of the breeding herd. The first SMCs received the first F1 crossed pigs late in 1984 and early 1985. It took the first SMCs the entire year of 1985 to grow, breed, farrow, wean, and distribute the first F2 crossed pigs to the farmers. However, once the distribution system was initiated late in 1985 the distribution of pigs to farmers was on a weekly schedule.

The SMCs were under contract with the ISRP to distribute all females of the first litter free of charge to the farmers in their area. These farmers then had to return a piglet from their first litter (in kind) as payment for the piglet they had received. The recipient farmers like the SMCs were required to receive basic training in swine management from the SMC that provided the pigs. The SMCs had received training themselves by the ISRP technicians as a requirement of their contract with the ISRP. Initially, the recipient farmers were required to provide the minimum infrastructure and a piggery constructed of local material. The farmer was to feed the pig local feed by-products in combination with a mixed feed supplement via the SMC network.

The distribution of subsequent litters, beyond the first contracted litter, by the SMC assumed different arrangements between the SMCs and the farmers. Some pigs were sold at different prices but most pigs were paid for in kind with the return of a female pig or a pair to the SMC. The SMC in turn would place the "returned" pigs with other farmers, to keep the distribution cycle operating.

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4.2.3 Expansion of Pigs by the Private Sector

The private sector imported healthy (non-SPP) pigs from the U.S. These pigs were not closely monitored by MOA nor the ISRP. However, it was learned that their method of distribution varied from direct sales to consignment of a sow and litter to a farmer who cared for the sow until she farrowed. The farmer would then receive a piglet or a pair (male and female) from the litter as payment. The sow was returned to the owner who weaned and sold piglets, bred the sow and consigned her to another farmer.

4.2.4 Activities of the Ministry of Agriculture

The sentinel pigs were left with one farmer or group of farmers when the sentinelization program was completed in Dec. 1984. It was estimated that 1500 pigs survived from the original 1500 sows and 500 boars used for the sentinelization program. Each sentinel site consisted of 4 sows and 1 boar. The termination of the sentinelization program left the farmers or consignees with a burden that many were not prepared to manage. This was due to: 1) the termination of technical assistance, feed and medicine subsidies; 2) the termination of the monthly allowance paid the consignee for the care of the pigs; and 3) the uncertainty of a clear title of ownership to the pigs. As a result many farmers further distributed the sows to other farmers, many of whom were outside their community. This separation of the sentinel herd impeded the normal and timely breeding of the sows, and therefore, the proper utilization of the sentinel pigs was not maximized. Approximately 18 months later MOA used the sentinel pigs together with 50 sows and their offsprings from the ISRP to initiate their own system of SPCs. Thus, the MOA accomplished, via their SPCs which is a system similar to the SPCs.

4.2.5 Animal Health and Veterinary Services

The role of Animal health was and has been misconstrued within the context and objectives of the Interim Swine Project, whose sole purpose was to produce as many pigs possible in the shortest possible time. Therefore the only animal health responsibility was to those pigs within the ISRP. At the same time United States Department of Agriculture/Animal Plant Health Inspection Service/Veterinary Services (USDA/APHIS-VS) was concerned, and rightly so, with the overall, country wide animal health surveillance and monitoring. However, this activity as present by USDA/APHIS-VS was not within the scope of the ISRP. Nonetheless, the ISRP did make allowance for some surveillance activities by funding an animal health component within the scope of the ISRP. However, this activity was kept separate from the ISRP animal health activity.

The USDA/APHIS-VS surveillance and monitoring activities while planned to be coordinated with those of the MOA, did not fully materialize due to financial constraints. Neither USAID/Haiti nor USDA/APHIS-VS had the necessary funding to assist the MOA in reinforcing this activity within the Department of the National Veterinary Services.

4.2.6 The Role of the IDB Swine Production Project

This project has been, from the beginning, misconstrued in the belief that its design included a strong component in animal health. This is not the case. The IDB's project, since its design, then and now, is primarily oriented toward swine production, transfer of technology, and animal health. The animal health component within the IDB's project was always meant to be a program of preventive veterinary medicine and not a national animal health project.

USAID/Haiti agreed to fund a small component of animal health surveillance and monitoring in the belief that the IDB project would eventually continue this activity under the animal health component of their project.

The IDB project was officially approved since April 1984 but has, to date, not been implemented. The reason for this delay rests with two major issues, which are:

- a) The IDB project was delayed due to the MDR not complying with normal IDB Conditions Precedent required before project implementation. This delay was extended to the point that the Interim Swine Repopulation Project took the lead in swine repopulation. This reduced the emphasis of the IDB swine production component as originally designed.
- b) Based on the above the MDR has officially requested a reformulation of the IDB project so being in tune with today's present reality. International working committees have been established between the international donor organizations to assist the MDR.

4.2.7 The ISRP Role in Animal Health

The original document for the ISRP had neither an animal health program developed for MAMPDS facilities nor the Secondary Multiplication Centers. It soon became obvious to the executing agency that without a preventive animal health program, the efforts of the production phase could be severely jeopardized and all benefits lost at the first outbreak of disease. Therefore, a program of preventive medicine including vaccinations, deparasitization and general health monitoring of the ISRP herd was installed. This program only involved the project's herd and not the private sector or GSD herds.

In phase II, the importance of animal health became evident and was included as one of its three objectives. The tremendous success of the ISRP can be partly attributed to the successful implementation of

the animal health program. As the population continues to grow, the importance of an animal health program increases geometrically. The potential danger of not having a functional national animal health program could be devastating.

5. PROJECT DESCRIPTION

5.1 The Pig Repopulation Program

African Swine Fever (ASF) entered Haiti sometime in 1973 and spread throughout the country. It became necessary to eradicate the pigs in Haiti to control the spread of the disease to other countries in the Caribbean and to the United States. The complete eradication of pigs in Haiti was devastating to a country that relied on an industry that was fragmented and dispersed among the rural population wherein a large percentage owned pigs. Pigs have been characterized as being the peasant's asset that was used as security and a source of cash in times of difficulty. (It is interesting to note that after the eradication of pigs the peasant's bank became the ownership of goats but is apparently quickly reverting to pigs as the repopulation generates significant numbers).

Livestock is a major asset for the peasants of Haiti and replacement of this valuable asset after the eradication became an important consideration. An opportunity is also present to introduce improved genetic breeding stock and technology packages which could make the peasant better off than before ASF when the stock was a slow producing and maturing pig and was adapted to the local environment.

5.2 Project's Goal

Because a large percentage of peasants are dispersed across all regions of the country significant numbers were affected. It becomes all important to return to the peasant that which serves as a primary investment to save and increase his income. To this end the following goals were established for the 1980:

1. Raise standard of living of the poor Haitian farmers who were most affected by the ASF epidemic,
2. Improvement in the health status of peasants, and
3. Increase in peasant income.

5.3 Project's Purpose

The primary purpose of the project was to distribute pigs to the poor Haitian peasant who lost pigs because of the ASF epidemic. The major objectives were to:

1. repopulate the Haitian pig breeding stock, and
2. improve the Haitian pig breeding stock.

The indicators which would verify that these objectives were reached is the following:

1. an extension service program be fully functioning, and

2. that better quality pigs would fetch higher prices on the local market.

The project was to be implemented so that the objectives would be realized with a minimum of recurrent costs to the Government of Haiti.

5.4 Project Outputs

The following outputs are expected from the project:

1. approximately 4,500 pigs be distributed to SMCs which will then benefit 50,000 farm families over a period of two years.
2. between 55 - 70 regional, secondary breeding centers be fully functioning as swine demonstration sites.

5.5 Project Inputs

Inputs were funded by USAID and indirectly by the Private Voluntary Organizations (PVO). USAID was to provide the following:

1. 452 high-quality breeding pigs imported
2. technical assistance
3. vehicles
4. 4,000 tons of feed
5. lease of BREXCO facility

5.6 Additional Amendments to the Initial Project

It became necessary to increase the initial budget funding by \$300,000 in August, 1984. The supplemental funding was for the following components:

1. acquisition of necessary staff for swine production and animal health components,
2. continuation of the breeding facility lease and
3. provision of support to USDA via IICA for the continuation of ASF surveillance of the sentinel pigs and the eradication of ASF in the feral pig population.

In June of 1985, USAID provided \$2.3 million for continuation of the project because of lack of progress in implementation of the national swine industry development project funded by the Inter-American Development Bank (IDB). The original project was expanded to include the following activities:

1. production at the Secondary Multiplication Centers (SMCs) centering on technology transfer and herd management,
2. feed production, distribution and improvement from local sources.
3. veterinary services to SMCs.

6. SWINE PRODUCTION AND FEEDING

Prepared by: Guillermo GOMEZ

6.1 Introduction

This section will present findings and recommendations concerning three major components of the ISRP: housing facilities for pigs; breeding and management; nutrition and feeding. Most of the information presented was gathered through an extensive field survey undertaken by the evaluation team. A total of 57 Secondary Multiplication Centers (SMCs), which represent 18% of the total number of SMCs, were visited. Near most of the SMCs, several farmers who had received pigs and are raising them were also surveyed. Additional information was obtained from a few large commercial pig operations as well as from commercial feedmills.

6.2 Housing Facilities

The observations made throughout the survey indicate a wide range of styles and models of housing facilities for pigs, especially at the SMC level. One of the most important aspects related to housing for pigs in the tropics is the dissipation of high ambient temperatures which affects animal performance and the need for water supply.

The following is a summary of the most relevant findings related to housing facilities for pigs:

- a. Water supply is one of the most generalized limiting factors, both as a nutrient (drinking water) and for cleaning the piggeries notably in the smaller (5-10 sows) SMCs and in piggeries of peasant farmers. Unfortunately, water is also a scarce utility for people living in areas near the pig units.
- b. Piggeries built with thatched roofs and walls made of palm boards, wooden boards, or tree branches appear to be better ventilated than those built with tin roofs and walls of concrete blocks.
- c. Farrowing crates or sheds, are more often found in the larger (20 or more sows) SMCs, help to reduce the loss of baby pigs due to crushing.
- d. Poor quality of concrete floors of piggeries at the level of peasant farmers and small SMCs appears to be a common problem.

The following are recommendations concerning housing facilities:

- a. Sources of clean water for pigs and piggeries must be uncovered, tapped and maintained. Cooperation between Project Director, MOA and other field supervisors and potable water project directors, personnel is strongly recommended.

5. Cheap but efficient guardrails must be installed in farrowing pens/sheds to prevent crushing of baby pigs by the sows.

6.3 Breeding and Management

6.3.1 Assessment of Performance of Imported Breeds

In order to assess the performance of imported breeds during the initial part of the Project that took place at the HAMPCO facilities, the monthly reports comprising the period from June 1984 until May 1988 have been reviewed. Because of the nature of the breeding program (crossbreeding) and the form in which the information is presented in the reports, it is impossible to evaluate the performance of individual breeds at HAMPCO. The following is a summary of the pertinent cumulative information:

PARAMETER	AVERAGE
Bear fertility rate (Number of pregnant sows/number of sows bred x 100)	60%
Farrowing rate	77%
<u>Litter Performance</u>	
Number of pigs born per litter	10
Number of pigs per litter at 7 days	9
Number of pigs weaned per litter, 8 weeks	8
Baby pig mortality to weaning	20%

Based on this limited information, imported animals had an overall good performance under the conditions of the HAMPCO facilities as compared to regular standards. It is unfortunate, however, that some additional important information such as litter weight at weaning was not taken at all; a small sample, such as 10% of all litters, would have provided valuable data to better evaluate the imported breeds. The crosses of Yorkshire sows with either Hampshire or Duroc boars have given good results in Haiti as in several other tropical countries.

6.3.2 Breeding of Pigs at SMOs

Most of the SMOs appear to be following approved practices at breeding time, especially in relation to the age of gilts at breeding (around 8 months). However, there are no reports on other parameters,

such as the number of matings at estrus, the frequency of matings, the fertility rate and the time elapsed between weaning and next estrus. Some of these parameters, notably the latter two, have economic importance in swine production and at least a representative sample of the SMCs should be controlled in order to obtain data required for feasibility studies.

The ratio of the number of sows per boar under approved management practices is around 15 to 1. The following information was obtained from 55 out of the 67 SMCs visited.

NUMBER OF SOWS/BOAR	FREQUENCY
1 to 3 (no boar)	5 (6%)
1 to 5	25 (38%)
6 to 10	27 (42%)
11 to 15	6 (12%)

Eighty percent of the SMCs have a ratio of one boar for 1 to 10 sows. Although there are some justifications (accelerate pigs distribution to farmer) for this low ratio of sows to boar, this factor has also economic importance since the cost of having and maintaining a boar will be prorated among a relatively small number of litters.

The litter size at farrowing at the SMCs where there were lactating sows at the moment of the evaluation was of the order of around 10 pigs born per litter, however, the variability among litters is considerable.

At present there is no breeding plan outlined for the future activities of the SMCs, despite the recommendation of the previous 1985 Evaluation of the Project. The introduction of black boars, and perhaps of the Chinese breed, as part of the breeding program for the next two years should be implemented.

6.3.3 Breeding of Pigs at Peasant Piggeries

At the level of the peasant it is even more difficult to evaluate breeding programs since the farmer has only one sow and most often does not have a boar. Although the number of lactating sows at the farmer level was limited, it appears that the prolific characteristic of the initial Yorkshire breed is still being observed at the peasant farmer level. Some of the problems found are basically a consequence of feeding problems, although in several cases sows and litters raised by peasant farmers looked better than those of some SMCs.

6.3.4. Management Practices

This section will present an overview of the SMCs and the peasant farmers' management practices. Most SMC management operations have been restricted to periods of gestation and lactation. After that time, weaned pigs are distributed to farmers. In several cases, feed restrictions have forced some SMCs to decentralize, meaning that adult sows were passed on to the farmers around those SMCs. The following table summarizes, with brief comments, the most important observations related to swine management, and includes some aspects of feeding management.

MANAGEMENT PRACTICE	COMMENTS
<u>Gestation</u>	
Feeding management: sows are usually fed twice per day. Amount of feed varies according to resources available. Large SMCs using IICA feed are given around 6 lb/day/sow. Small SMCs have reduced level to 1/2 or 1/3 and supply local feed (mangoes, leaves, sweet potato, etc).	Water is a critical factor for this period, as well as quality of feed. Amount of feed does not necessarily compensate for quality of feed. Farmers tend to keep sow tethered to a tree.
<u>Farrowing</u>	
Care at farrowing generally includes: tying, cutting and disinfecting the umbilical cord; clipping "needle teeth", and in some cases ear notching for pig identification. A broad use of oxytocin injections to sows was observed. Average number of pigs born per litter is around 10.	Farmers are usually charged \$20 by persons performing farrowing care. Excepting disinfection of umbilical cord, other tasks are not required. Use oxytocin only when needed.
<u>Prevention of Pig Anemia</u>	
2 Iron injections are a generalized practice, due to the rigid training on this matter. Number of iron injections depends on litter management.	Farmers are charged for this injection. Oral iron solutions should be tried. One injection appears to be sufficient in most cases.

Lactation Feeding

Lactating sows are generally fed better during this period. Supplementary feed for baby pigs is not a general practice. Water is also a considerable problem in several areas.

Feeding crisis seriously affects performance during this critical period.

Weaning Performance

Baby pig mortality generally occurs during first week after farrowing and is of the order of 20-30%. Drowning is major cause of pig losses, but nutritional-health problems are increasing. Weaning age is generally between 5 to 8 weeks, and litter size at weaning is around 7 pigs. Large variability observed.

Weaning performance is the most important parameter of pig production and is affected by several factors (feeding, breeding, management, health). Number as well as weight of weaned pigs are important. Little work has been done by the Project on weaning weights.

Castration

This practice is not yet well established. Some do it after weaning, others, perhaps the majority, do it during lactation, but no consistent trend has been observed.

This practice should be done as early as possible and will become important as SMCs may have to fatten castrates..

5.3.5 Recommendations

Although some recommendations have been suggested throughout the above description of findings on breeding and management, the following three major activities should be emphasized during the remainder period of the Project.

- 1) Adapt the breeding and management operations of swine units to the local conditions (human and physical) of the SMCs and peasant farmers, so as to obtain the best performance possible with the available resources.
- 2) Data base from selected SMCs and peasant farmers, especially in areas with potential for swine production, should be gathered, and analyzed so as to provide reliable information that would allow real biological and economical evaluation. This type

of information would be very useful to prepare feasibility studies based on real facts rather than on theoretical assumptions.

- 3) A breeding program with the possible introduction of Chinese boars as well as other black boars should be initiated with selected SDCs. This will allow the project to conduct performance and also document this information for future swine production in Haiti.

6.4 Nutrition and Feeding

It is estimated that feeding costs account for approximately 70-80% of the total costs of pig production. Therefore, feeding constitutes the most important factor to be considered in planning swine development projects. Although the ICR Project was implemented primarily to reevaluate Haiti with pigs, it soon became evident that the production aspects were not fully considered during project design. The Project has done a considerable amount of work to find solutions for the feeding problems, but other factors have put additional constraints on the present activities of the Project.

The aforementioned factors are dependent on political and economic considerations that are outside the Project, but need to be seriously considered. Due to the complexity of this situation, this section will try to summarize the findings on present status of pig feed and will propose activities in the areas of nutrition and feeding designed to start identifying solutions to address the feeding problem.

6.4.1 Available Feed Resources

Because of the limitation of local feed resources, the feeding program of the Project has been based on the use of a wheat shorts based diet obtained at the Haitian flour mill (La Mouterie Nationale) as a result of milling imported wheat.

Corn is the main cereal grain produced in Haiti and is mostly consumed by humans and only a small proportion is used for animal feed, mainly poultry. Large poultry producers import feed corn. Sorghum has a secondary importance and it is used to some extent for poultry and pig feeding.

Sugarcane molasses seems to be available but little use has been observed at the piggeries, although commercial feedmills are using it. The production of edible tubers and roots seems to be widespread and primarily consumed by humans. The farmer uses fruits, mangoes, waste bananas, breadfruit, forage, sweet potatoes leaves, and kitchen residues for pig feed.

In summary, Haiti does not have sufficient production of grains to sustain an economical and efficient commercial swine production.

Agricultural by-products are available to some extent, but their quality, including that of wheat shorts, is so variable that it cannot warrant a standard, good quality ration. This situation is further aggravated by the lack of locally produced protein feeds like soybean meal, cottonseed meal, fish meal, etc. The main protein source used in rations is imported soybean meal and until recently, soybeans were imported for oil extraction and the resulting soybean meal was obtained locally. Protein, mineral, vitamin premixes are also imported.

5.4.2 The Problem of Wheat Shorts Availability

The availability of wheat shorts seems to be dependent on its production at the Minoterie and its price through the channels of distribution. Apparently, the price of wheat shorts declined from U.S. \$2.55 (12.75 G) to U.S. \$2.00 per 100 lbs sac in February 1967. However, from November 1965 to February 1967, the production of wheat shorts at the Minoterie decreased from 3,550 sacs/day to 1,550 sacs/day (50%). Therefore, it appears that although the nominal price of wheat shorts slightly decreased the actual amount produced at the mill decreased considerably.

On the other hand, the price of wheat shorts at the distribution markets is 5 to 6 times higher (US\$12.00/100 lbs) than that paid at the Minoterie (US\$2.00-2.55 per 100 lbs). These markets are only 17 km away from the Minoterie. Furthermore the manager of one commercial feedmill and a commercial pig producer complained that despite the fact that they have quotas of wheat shorts assigned to them, they are not able to receive their allocation.

Finally, in addition to these problems, the quality of wheat shorts is quite variable. Sand and coffee chills are the first to be observed more frequently and mixed with the wheat shorts.

The problem is very complex and requires firm Government policies in order to assure an adequate supply of wheat shorts to pig producers.

5.4.2 Feed Manufacturing System of the ISX Project

In order to provide an adequate feed supply, mainly for the growing number of SMCs, the Project established a feedmill in Port-au-Prince in July 1965 and started selling mixed feed to the SMCs, with a 50% subsidy, for a total period of 15 months. This time period was determined in order to allow sufficient time for the SMCs to obtain the weaned piglets and the first litter, starting with a 2-month-old gilt.

5.4.3.1 Feed mill Operation

The project feed mill is operating in a rented warehouse at the industrial park in Port-au-Prince. The main equipment consists of two feed mixers, each with a capacity of 2 metric tons and a mill. Due to the wheat shorts problem, the feed mill has progressively reduced its volume of operation from December 86 until March 87. The monthly amount mixed was 325, 425, and 263 MT/month, respectively.

As judged by the visit to the feed mill on May 27 1987, the storage capacity of the feed mill was used at approximately 25 to 30% of its total capacity. According to the information received, the feed mill is able to produce 30 MT/day, which appears higher than expected. Assuming that this would be correct, the total mixing capacity with a regular shift of 8 hours per day, will be 720 to 864 MT/month working either 5 or 6 days/week. These calculations suggest that by mixing 250 MT/month, the feed mill is being used at approximately one third of its total capacity.

The way the feed mill manages its trade is very confusing and difficult to understand. This difficulty is aggravated by the use of 100 lbs bags which are filled with only 90 lbs of feed. It is strongly recommended that this system be simplified and improved or replaced.

5.4.3.2 Ration Formulations

The author is aware of the difficulty of preparing a good balanced feed with ingredients such as wheat shorts and rice bran. Wheat shorts should have a maximum fiber content of 7%, whereas the analysis of Maldivian wheat shorts is between 6 to 11%. Rice bran has even more fiber (13%). Actually, the wheat short samples analyzed should be considered as wheat bran rather than shorts. Therefore, a diet based on wheat shorts and rice bran as the only energy sources may be balanced on paper, but will produce poor animal performance.

The following conclusions can be drawn from the information received on ration formulations:

- a) Too many rations are prepared according to the availability ingredients. Rations designate (numbers and/or letters) and change, making it difficult to know for what species of animal the rations are for.
- b) Presentation of diet composition is sufficiently clear when expressed as percentages, but confusing when the actual amounts of ingredients mixed are presented, due to the 50 lb bags.
- c) The printed composition of emergency ration (ER-7) based a 30% rice bran, 60% wheat shorts and 10% Carnation supplement, clearly indicates that this ration is deficient in energy, to the extent that it only supplies 75% of the energy required. Several other nutrients are also below the required level, but the most relevant one is the energy deficiency. Although the animals would be expected to consume more of this ration, they do not necessarily do so.

because of poor palatability. Quantity does not necessarily compensate poor quality.

- d) Some of the rations include small but expensive amounts of feed additives such as antibiotics, mold inhibitor (Kem carb), arsenilic acid, and nitrofurans

(furanoliconal) which have proved to improve rate of growth and/or feed utilization. However, they are normally used with properly balanced diets and it does not seem that they would be recommended with the IICA rations. At least a simple comparison should be tried before including them on a regular basis.

- e) The best and most effective way of evaluating the quality of the ration is by evaluating the condition of the animals and their performance. Rations are not the only factor involved but apparently some of the poor conditions of gestating sows and especially the effect on lactation at some SMOs appear to be partially due to poor ration quality. Vitamin injections to these animals may alleviate, but not correct the overall energy deficiency of the rations.

5.4.3.3 Commercial Feed Mills

The feed mills SONORA (Societe de Nutrition Animale, S.N.A.) and PURINA (General Feed and Supply, S.A.) were visited and the following are the most relevant aspects discussed with the professionals in charge of these feed mills:

- a) Despite the fact that SONORA receives part of the wheat shorts from the Minoterie, the feed mill is operating at one third of its total capacity. The limiting factor appears to be the lack of sufficient feed demand. SONORA has 5 storage silos and 13 to 14 selling points throughout the country.
- b) SONORA prices as of June 15, 1987 for balanced pig feed, varies from \$10.50 per 100 lbs bag containing 16% protein growing feed, \$12.50/bag for lactating feed, \$16.00 and \$14.70/bag for baby pigs (pre-wean, 15% protein and wean, 17% protein). SONORA also sells a 21 or 24% protein concentrate, to be diluted with local feeds, at \$17.00 and \$17.50/bag.
- c) PURINA is also operating at one third of its full capacity and has problems in obtaining its quota of wheat shorts from the Minoterie.
- d) The firm importing and selling the Carnation products does not operate a feed mill. Protein supplements or concentrates (protein, minerals, vitamins) as well as veterinary products are sold by this firm. IICA feed mill buys and uses the Carnation concentrate

In summary, the two largest commercial as well as the IICA feed mills

are working at one third of their total capacity. Despite this fact the GON is apparently planning to install with IDB loan monies seven mills around the country. Except at SOULAY, the main problem is the acquisition of wheat shorts in sufficient quantities, and good quality. It was also mentioned that when the Miroterrie does not have wheat shorts available, it offers to replace them with imported rice bran at a price of 10.75 per 100 lbs. The quality of this rice bran may be better than the local one, but the price is too high.

6.4.4 Alternate Feed Resources

The author reviewed the proposal for alternate feed resources and has extensively discussed the subject with the Project Nutritionist. Based on the fact that Haiti does not produce significant amounts of protein feeds, the proposal emphasizes the work with alternative sources such as rapeseed bean (fodder), chialanora, etc., and to a lesser extent with energy feeds such as sugarcane juice, molasses, sweet potatoes, cassava, etc. Although the focus of the proposal is correct, the time frame remaining under the Project is too limited to undertake all the agronomic trials and comparisons required to test new crops. On the other hand, soybean meal (SMY) can be used in swine rations. In a 15% protein ration based on feed grains the amount of SMY will vary between 10 and 15% of the ration, and in the case of roots (cassava) or tubers (sweet potatoes), may need to go as high as 25 to 30%, due to the very low protein content of these feeds. Cereal grains can go up to 65-80% of the rations and roots or tubers up to 60-85%.

Since a great deal of local feeds (fruits, mangoes, breadfruit, banana peels, etc.) have also a low protein content, it is pertinent to try to reduce the amount of protein needed. This is even more important considering that commercial protein supplements are not widely based on SMY.

Based on the above explanations, it is proposed that feeding trials emphasize the maximum use of local feed resources, either energy sources or protein feeds so as to reduce the amount of balanced feed needed. Feeding trials should be oriented to solve nutritional problems during the most critical periods of the life-cycle of the pig such as gestation and lactation. Agronomic trials should be very limited in order not to detract from the time needed for control of feeding trials.

The work related to the alternate feed resources should be closely connected to the collection of data, and the types of local feed resources to be evaluated will depend a great deal on the information collected in each of the two regions to be processed. It is therefore convenient to explain first the proposal for cost/benefit study.

6.4.5 Recommendations on Feeding and Nutrition

- The importation of feed soybean could be a temporary solution to improve the quality of the rations which are based mainly on wheat shorts and rice bran.

- Quality of rations should be evaluated with animal performance. The use of feed additives should be evaluated with animals before generalizing their use in balance rations.
- UNAPPAL should operate the IICR feedmill on a trial period for 4 to 6 months before a final decision is taken on this matter. UNAPPAL seems to be an appropriate Institution to administer this operation.
- Feeding trials should emphasize the maximum use of local feed resources in order to reduce the amount of balanced feed, especially during the gestation and lactation period.

6.5 Proposal for Future Activities

6.5.1 Cost/Benefit Studies

The following is a summarized presentation of the considerations and suggestions for the cost/benefit studies:

1) Considerations

- a) The Project needs to concentrate its efforts and activities in areas which have potential for swine production. From the distribution of the swine population and from the team's observations throughout the different agricultural districts, the departments of the West and the South have two-thirds of the present swine population of Haiti.
- b) Households with one sow, have very limited individual potential to significantly contribute to national swine production because of human (illiteracy) and physical limiting factors (size of household, fertility and restriction of arable land, little capital, limited feed resources, etc.). However, there is an appreciable amount of work to be done to help these farmers by promoting and implementing group or community activities. The Organization Communautaire Paysanne (OCP), cooperatives such as IFO and COBEVA, and Private Voluntary Organizations (PVO) are examples. The Project experience with the SMO network has provided further evidence of this need. The interest for pigs shown by the farmers was very impressive.
- c) Unfortunately there is a lack of basic economic information of swine production units. From the observations of 67 SMOs throughout the country, it appears that several larger SMOs, (20 or more sows) with adequate financial support have failed. On the other hand SMOs with a number of sows around 5-10, seem to be economically feasible. One of the important factors of these viable units is the leadership and dedication of the managers of these operations. The identification and selection of "efficient" SMOs are vital for the

success of the data collection required for cost/benefit studies. Furthermore, some type of incentive, in addition to the logistical support, must be implemented for them. Managers of efficient SMCs could be the best extensionists for the peasant farmer.

2) Suggestions and Proposals

- a) The purpose of the studies will be to assess the economic productivity of efficient SMCs as possible viable entrepreneurial operations and compare them with average SMCs in the same areas. Observations on other important factors such as land available for increasing food and feed resources, accessibility of the SMCs and of the markets, marketing situation, etc., should be registered.
- b) It is suggested that 6 SMCs (3 efficient and 3 average) in the West and a similar number in the South be selected. Preferably the SMCs to be selected should be part of IRI and CODEVA, but it is not compulsory. The Project should explain the purpose of the study and obtain a formal agreement with each SMC. The Project should avoid the introduction of major technical changes, unless absolutely necessary, and rather record the way these successful or average managers operate their swine units, and help them assess their costs of production.
- c) From the animal productivity point of view, the following data should be collected:
 - Initial and monthly inventory of animals.
 - Condition of boar and of sows at breeding, gestation, farrowing, and at weaning.
 - Time elapsed from weaning to next breeding.
 - Number of piglets born, and if possible, weight of litter after farrowing.
 - Number and weight of piglets at weaning.
 - Record of feeding program used to ascertain the amount of feed fed to pigs.
 - Record of other supplies (iron injections, vaccines, medicines, etc.) used during normal operation.
 - Register, on a regular basis, the actual or estimated costs of feed and other supplies used. Similarly, labor cost should be included as well as the estimated cost of the SMC facilities.
 - Register death or sale of pigs.

- Register all aspects related to animal health.

- d) Since most of the SMCs have been distributing 75% of the weaned female piglets and also selling most of the castrates, the activities on the growing-fattening (weaning to market weight) period have been very limited. Therefore, some decision has to be taken by the manager as to the need of keeping weaned pigs to be fattened.
- e) The regular and continuous supervision and follow up of these units is very important and all efforts should be made to establish a Project team consisting of an economist, nutritionist, and extensionist. One veterinarian will be required to assist the team as needed.

Because of time limitation and the need to determine a detailed plan of work, it is not possible at present to offer information on budget requirements. It is most important, however, that the economist be connected with this work from the beginning.

6.5.2 Proposal for Feeding Trials and Demonstration Units

Complementing the data collection for cost/benefit studies, the team proposes to undertake, simultaneously, activities in the area of practical and simple feeding trials in order to search for practical solutions to the feeding problem. It is proposed that an agreement should be reached between the Project and both IRD and CODEVA, so that the nutritionist could implement feeding trials at the central pig operations of these institutions, located at Les Cayes and La Vallée, respectively. While the unit at IRD needs little adaptation for this type of work, that of CODEVA requires more repairs to restore the facilities to adequate conditions.

Feeding trials should be mainly focused during the gestation and lactation periods. For gestation and lactation feeding trials, it is suggested that observations also include weaning performance (number and weight of pigs). All feeding trials must have an economic evaluation. In order to keep it simple, these trials should use 5 sows for a control group and 5 for the evaluation of changes in the feeding system. The actual size of each group will depend on the availability of animals. Each sow will constitute a replication and a simple statistical comparison, such as a "t" test should be used.

The Project nutritionist will prepare a detailed plan of work with clear instructions to the technicians who will be under his supervision. It is proposed that a full-time assistant and a laborer be hired by the Project for each location. Simple equipment such as a platform balance to weigh adult pigs and a small milk-type scale should be acquired. Ingredients for feed preparation should be bought as needed and mixing can be done with shovels on a concrete floor in the feed storage rooms.

The work of feeding trials should be complemented with the testing of management practices to improve productivity. Once again, emphasis

should be put on management of litters during lactation in order to assure good performance at weaning. Guard rails or similar devices in farrowing pens should be tried to reduce death due to crushing. Management of baby pigs requires special attention.

Feeding trial demonstrations and testing of improved adapted management practices must be closely connected with the extension activities of the Project so that an adapted and improved technology can be extended to other SMCs in the area. The efficient SMC undertaking the cost/benefit studies should try some of this technology. Once tested at these SMCs, the managers could proceed to expand and adapt the package to the conditions of farmers associated with each SMC. Logistic support and incentives for some managers will be essential at this level. The Team that will be working at the demonstration units should examine the results to be obtained at the SMCs and farmer level in order to make appropriate adjustments of the plan of work at the demonstration unit.

A detailed plan of activities and an estimated budget with more precise information should be prepared, after an agreement is reached with IRD and CODEVA. However, in order to give an idea of the budget requirements, the Project nutritionist and the evaluation team have worked out an approximate estimate of the total cost that would be involved for a period of 18 months. The proposal is based on a revolving fund to be established for expenses required by the Project at each site. Based on these calculations, it is estimated that by the end of the work, the Project should have spent around \$10,000 to sustain these activities in both places.

6.6 Summary of Findings

- Performance of improved breeds imported by the Project has been good at all levels of production (HAMPCO, SMCs, and peasant farmers). This genetic potential constitutes a good base for a sound national swine program. Litter performance, as judged by the number of pigs born and weaned, is one of the most important factors improved by imported breeds when compared with performance of previous Creole pigs.
- Feeding is the most important constraint for expanding pig production in Haiti, due to restricted availability of adequate local feeds. In several areas, water supply is an additional limiting factor.
- The most critical feed problem is the dependence of swine production to basically one main feed: wheat shorts, which depends exclusively on wheat imports. The poor quality and the recent problems of availability of wheat shorts demonstrate their limitations. The other locally available ingredient is rice bran: a poorer quality feed. Nutritional problems due to poor quality of rations based on wheat shorts are already evident, especially with gestating and lactating sows.

- The Project has developed an efficient extension network to disseminate approved swine production practices at the SMCs and at the farmer level. However, in some subjects, training has overlooked the adaptation of management operations to the local conditions, where limitations do not allow improved management practices to be carried out.
- The distribution of pigs to SMCs and farmers has surpassed initial objectives, however, there is a lack of a breeding program to preserve and obtain the best possible performance of the improved breeding stock.
- The Project feed subsidy has helped the establishment and operation of the SMCs and the subsequent distribution of pigs to farmers. The Project feed mill has been a valuable support in fulfilling these tasks.

6.7 Summary of Recommendations

Considering the possible extension of Project activities for an additional 24 months, after September 1987, the following are the recommendations for work to be performed in the areas of production and nutrition:

- Collection of basic biological and economical data should be gathered from six selected, efficient, SMCs (3 in the South and 3 in the west) and should be compared with an equivalent number of average SMCs in the same areas. The Project should work with organizations such as IRD and CODEVA. This data collection work will be performed throughout the year. This work implies a coordinated team approach between project nutritionist, economist, extensionist, and veterinarian. Extensionists in these areas along with managers of selected SMCs will expand the work to farmers receiving pigs from these SMCs. The SMC managers must receive an adequate incentive to perform these tasks. The Project needs to hire an economist or obtain collaboration from local institutions having these capabilities. Data collected must be continuously evaluated. The result of this work will be a cost/benefit analysis of swine production in the selected areas which will be very useful for feasibility studies oriented toward regional swine development plans.
- Complementing the aforementioned recommendation, the Project should obtain an agreement with IRD and CODEVA to use their facilities at Les Cayes and La Vallée, respectively, to use them as demonstration units and to undertake simple feeding trials. Feeding trials will be oriented to use local feed resources to maximum and to introduce a few other alternatives, and emphasis must be placed on the gestation and lactation periods. In addition, these facilities will serve for testing a few adapted management practices which must progressively be tried and evaluated. Progress reports of activities should be presented every three months not only to the personnel of the Project but also to SMCs and farmers involved in this work.
- The Project should assist UNAPEL to start undertaking the management and operations of the Project feed mill. The Project should assess the capability of UNAPEL to undertake the feed mill operations during a 6 month trial period.

- The feed problem does not have an immediate solution, and wheat shorts or rice bran cannot sustain an efficient swine production. Therefore, it is recommended that the GOH and USAID study the feasibility of importing a limited amount of feed sorghum to provide a partial solution.

7. IMPACT OF PIGS ON RURAL DEVELOPMENT

Prepared by: Jean Rulley Kearns

7.1. Introduction

For purposes of clarity, information in this section is divided among the following topical headings: 1) Training/Extension 2) Peasant farmers 3) Women participants, and 4) Specific swine issues.

Within each of these subsections, information and observations are presented so as to conform to requirements contained in the evaluation scope of work as well as other related topics which the author considered relevant. Each subsection contains a review of information relative to topic and recommendations based on project records and reports, observations in the field, and interviews. The single most significant input in the evaluation process was the interviews which consisted of meetings with project related personnel, primary and secondary beneficiaries, as well as other persons knowledgeable about Haiti.

7.2. Training/Extension

Amendment number II of the Interim Swine Repopulation Project Paper contains a section devoted to extension activities within the detailed project description section. That section reads as follows:

"The purpose of the extension team is to transfer technology in order to maximize the swine reproduction rate. The team would train primarily the SMCS, made up of farm facilities and private voluntary organizations. The specific training topics include feed and water for swine management; temperature effects on swine; parasite and disease control; simple veterinary care; post-natal care of piglets; breeding; housing; and swine marketing.

The extension Coordinator at project Headquarters in Port-au-Prince will coordinate the extension team. His team will be composed of extension agents, each responsible for one of five regions in the country. They will also assist in the creation of regional pharmaceutical centers and regional feedmills to be owned and operated by associations of SMCs".

It is within the context of the second amendment that the project extension component is presently evaluated.

7.2.1. Staff/Courses/Methodology

The extension staff is composed of seven persons; five of whom are titled as Extensionist-Assistant Veterinarians. One of the remaining two carries the title of Extension Team Leader while the other is identified as SMC Coordinator. A review of personnel records reveals that four of the seven extensionists hold academic degrees, one holds an associate degree, one holds two diplomas and the remaining one attended a U.S. College. Three of the extensionists participated professionally in the PEPPADEP project, six had work experience on other projects or in other agencies and approximately half of the group had work experience in other countries.

The variety of background training and experience of the extensionists was a positive asset to the project. Individual members of the group had training or experience in the following areas: Management of cooperatives, alternative energy sources, management, exotic swine diseases, swine production, and nutrition as well as others. Additional project on-the-job training has been provided in the areas of animal health, nutrition, and practical animal management.

In addition to the seven Project extensionists, the project has acquired and trained various Peace Corps personnel to function as extensionists in the field. This has been an excellent use of available resources and should be encouraged in the final phase of the Project.

An important arm of the extension staff are five Extension Assistants whose jobs include assisting with special problems. These Assistants are located in Port-au-Prince, work as full time members of the project and receive training with the project. Without vehicles or motorcycles, the assistants use mass transit to reach the field and work through special problems which have been identified by the Extensionists, who also direct the remedial activities. The Extension Assistants have been with the project since July 1988 and are essentially "trouble shooters" for SMC activities. All have had HAMPCO training and one has approximately 1000 farrowings in his past work experience.

Frankly, these Extension Assistants provide a solid financial bargain for the project since the individual monthly pay of \$250 - \$350 plus transportation represents total cost for one full time field worker ready on an on-call basis. These workers are not paid per diem.

It has not been a routine practice for members of the extension team to file annual work plans. However, the 1987 evaluation/summary submitted by individual members contained sections which

referred to the upcoming final months of the project. For purposes of project documentation and support of future activities requiring institutional memory, it is necessary for each extension team member to prepare and file a work plan as well as an annual report. For purposes of MBG (management by objective) which provides direct input into personnel evaluations, this pre and post documentation is essential. Such documentation should not be lengthy but rather should, in a concise manner, present goals with actual indicators for progress evaluation. Without such forward thinking, it is difficult to measure progress in a logical time-line.

In the absence of formalized work plans, the individual extensionists field activities plan for April - September 1987 was acquired via review of the 1987 evaluation/summaries. This information reveals the broad understanding of the current situation by the extensionists and indicates areas in need of immediate attention if the Project were to terminate at its presently scheduled time.

Training methods utilized by the extensionists have stressed the "hands on" approach. This practical technique should be continued as it appears effective when dealing with learners who are generally uneducated and who find abstract directions relatively difficult to assimilate.

In-service training for extensionists appeared to be somewhat lacking in the areas of extension teaching techniques. Obviously, these techniques may have been imparted as part of the technical training but it is difficult to ascertain this. Since this team did not witness any extensionists in a "formal" training session, it is impossible to evaluate the effectiveness of the teaching methodology utilized.

Teaching techniques will become increasingly important as the focus of training moves to emphasize the peasant farmer. Unique skills must be developed to provide modeling behavior and specific locally adaptable techniques for field demonstrators must be fine-tuned.

7.2.2. Training/Extension Recipients

The total number of participants trained in formation courses is somewhat difficult to obtain since reportings of these data are contained in various documents. A January 1986 project report contains a listing of formations delivered from November 1984 through January 1986. The total number of participants cited was

2301 while the total number of formations was 272. The description of courses delivered during that time was as follows:

- #2- 1/2 day training on basic treatment/care of pigs, feeding, cleaning, watering, and observation.
- #3- 4 days training on detection of heat, breeding and record keeping.
- #4- 4 days training on farrowing preparation and procedures, post farrowing and weaning procedures

The number of participants serviced in training sessions during the fifteen-month period from November 1964 through January 1966 totaled an average of 153.4 persons trained each month. Considering the logistical problems involved in such a delivery system, this achievement is outstanding and clearly meets the spirit of objectives as set forth in Amendment II.

The total number of formations held during the first four months of 1967 was 173 for a total cost of \$30,001.17 or \$167.60 per session. The total number of participants in these sessions totaled 2961. The cost per participant was \$10.06 which appears reasonable. Comparison of ISRP formation costs with usual training costs at non-Haitian sites further emphasizes this financial bargain.

7.2.3. Extension Materials

Neither the Project Paper nor subsequent amendments explicitly note a requirement for the development of extension materials. The present project determined that in order to systematize information, assure accuracy and consistency of direction, and provide information when and where it was needed, the necessity of extension materials was obvious. Project staff have developed 54 Creole language extension bulletins since November 1964. The bulletins ranged in length from one page to several pages.

During this evaluation, the following 41 Creole language extension bulletins were reviewed: numbers 20 - 24, 31 - 37, 39, 63 - 67, 105 - 108, 123 - 131, 133, 135, 136, 139, 140, 145, 147, 150 - 153. Generally, the reviewed bulletins could be characterized as: (1) those with no illustrations which require reading capability (2) those with some illustrations which require reading ability, and (3) those with enough illustrations that they may be understood (with some limited help from a reader) by illiterate persons. Of the 41 bulletins reviewed approximately 24 were within category (1), 15 in category (2), and 2 were within category (3).

Since the extension bulletins were designed for SMC leadership, the preparation of information relying heavily on the written word as opposed to drawings is understandable and apparently appropriate for the literate audience. The present publications appear to be useful and cover a wide range of topics relevant to the field work. They were inexpensively produced and the project should be encouraged to continue cheap production methods. The practice of printing on single side of each page should be encouraged. For purposes of display by users and clarity in the duplication process, printing on one side of the page is an excellent procedure.

The earlier bulletins in the series were produced in French, but as Project personnel recognized the broader literacy capability in Creole, a switch in languages was made to Creole. Since Creole is the more widely understood language, subsequent bulletins should continue to be produced in Creole. It is to the credit of project personnel that they recognized the need to change and did so in a timely manner.

The bulletin distribution list includes not only Project related SMCs but also participants in the ADS II project, the Foster Parents Plan in Jacmel, the Ministere de l'Agriculture, des Ressources Naturelles et du Developpement Rural as well as others. Records of bulletins distributed since October 1966 indicate a monthly average of 11,750. In addition, for monitoring purposes, the project developed a computer based system to confirm the number of bulletins published and distributed on a monthly basis.

The least popular bulletin appears to be the one on sorghums (#40) with a monthly average distribution of 30 while the most popular with monthly averages of 400, are the ones on energy sources of feed (#A2/HT 8639C129) local feeds (#71), protein plants as feed (#AE/HT 87008C135), sorghums (#51), weighing a pig without a scale (#37), and planting amaranth (#123). Distribution spread appears to meet the requirements contained in Project Paper Amendment II.

At this point, the present bulletins should be reviewed so as to ascertain relevancy and continued usability. The suggested timing of such a review is appropriate as the bulletins have been in use long enough by the target group so that critical input can be acquired. The review must be completed before the end of the Project to insure that documents left in-country will be usable for a significant length of time. It is critical that the review include input from the target audience. Specifically, literate members of SMCs who have utilized bulletins should be

canvassed for input. The review should focus on individual bulletins, one by one, seeking input on the following questions:

- (a) Can the publication be utilized without further interpretation from extensionist? Can the publication stand independently and be understood? Are all directions contained in the publication?
- (b) Are illustrations clear? Do they convey positive and/or culturally acceptable meaning?
- (c) Is the size of the bulletin appropriate? Should bulletin be of smaller size which will fit into a pocket? Should bulletins be stapled together in a book form?
- (d) Are there negative meanings or confusion in the writing and/or illustration of the publications? Are terms understood by readers?

An agency or location which could be designated as depository/distribution center for project developed documents should be identified and transfer arrangements addressed at least six months prior to end of the project. Consideration should be given to the MDA extension service or the CDRH as possibilities. A twelve month supply of bulletins should be provided to the agency designated as the distribution center if possible.

The present bulletins are a positive addition to the knowledge base of the SMCs. Generally, they appear to be acceptable with one possible culturally based exception. Bulletin #35, entitled "Sa Nou Gen Pou Nou Fe Le Gen Diare Kay fi Kochon", shows an indoor toilet and a pot in the illustrations. Since the indoor toilet is practically or totally unknown among the beneficiary population, the advisability of utilizing such a convenience in the illustration is questionable. The utilization of the pot may also be questionable from a cultural viewpoint since farmer peasants in the south frequently put a pot in the rafters of the piggery as a voodoo protection against "bad people who may come to hurt the pigs". While the effort to include illustrations is to be encouraged, such possible cultural implications should be reviewed with user input as part of an information seeking loop as illustrated on next page.

IICA PROJECT OFFICE

EXTENSION FIELD WORKERS

BENEFICIARY POPULATION (PRIMARY AND SECONDARY)

7.2.4. Recommendations

The following recommendations relate to the training/extension components of the Project. Detailed background information can be found earlier in this report section. These recommendations are in the areas of personnel, teaching/extension materials, and beneficiary spread.

Personnel

1. The present number of project extensionists should be maintained. One more Extension Assistant should be added to the Project. The present level of Peace Corps personnel should be augmented with as many additional persons as is feasible. If the Project is extended, all extension personnel should be required to file annual work plans as well as annual reports so as to provide evidence of achievement of objectives and assure timely progression towards Project goals.
2. The work of this Project has certainly indicated the effectiveness of an extension delivery system. Central to such a system is the availability of technicians knowledgeable about local conditions and trained in extension techniques. The Haitian extensionists currently employed in the Project possess sufficient academic backgrounds, excellent capabilities and display skills necessary to become an important part of future extension program in Haiti.

Since one essential resource usually lacking in developing countries is trained professionals, it is important to build that cadre of professionals. Therefore, it is recommended that serious consideration be given to providing the opportunity to the three Haitian field extensionists for advanced degree training as soon as feasible. Possibilities for substitutes in their absence include seconding MOA extensionists to the project while providing them with in-service training. In addition, some of the Assistant Extensionists with additional special training and regular supervision could perform some of the tasks formerly performed by the extensionists.

3. Short term in-country training should be provided for the entire extension staff. Such training should focus upon informal extension teaching/training techniques. Techniques which have been found to be effective in other similar environments (illiterate audience, lack of communication, infrastructure, etc) should be tested on local groups and synthesized for optimum possibility of success. Techniques which may be explored include mobile puppet shows, demonstration techniques, utilization of music, video taping, team teaching, and peer tutoring. Characteristics such as age, gender, and local customs of different audiences should be considered when developing specific teaching tools.

Teaching/Extension Materials

1. Present extension bulletins should be subjected to criteria based review and distribution to literate audiences continued. Review should be completed before September 1967 and should follow guidelines which relate to utilization, size, acceptability, clarity, and relevancy as noted elsewhere (7.2.3) in this report.
2. The focus of attention relative to publications should immediately shift to the preparation of bulletins for illiterate persons who are involved in pig care, production, consumption, and/or marketing. Such publications must rely heavily upon simple illustrations with limited written text, provide complete information, show procedures in readily understood logical steps, and be inexpensive to duplicate. As an example of the type of bulletins to which this recommendation refers, the reader is directed to Extension Bulletin #73 entitled Poul which was written by Drew Kutschenreuter, SRP Extension Leader.

The development of publications for peasant farmers should rely upon technical information developed in areas of preventive animal health, simplified pig housing, optimum feeding within constraints, and economics relative to the peasant operation. The possibility of radio spots which extend and/or explain the concepts of care and management of pigs should be explored and utilized if at all feasible.

In addition to extending information via bulletins and radio, colorful posters should be designed to further clarify basic techniques. Observations in peasant homes indicate that such posters would be displayed widely. Commercial companies should be approached with requests for assistance in underwriting such posters. Of course, care must be taken to present solid technology rather than commercial interests.

The development of delivery packages for peasant farmers should be begun as soon as possible. If the project is extended, these packages should be completed and field tested by January 1966.

Beneficiary Spread

1. The project should immediately focus upon delivery of information to the peasant farmers. In the available time left in the present Project, the logical tasks may include an increased utilization of SMC management as trainers of peasants, continuing the "hands on" techniques developed earlier in the Project.

However, if the Project is extended the following sequence is strongly suggested as an initial planning device (the reader is directed to Figure 7.2.4.A on the next page for suggested time frame):

- a. Complete a significant percentage of training materials for peasant audience during first three months of Project third phase.
- b. Determine incentive program which is both attractive to the SMC trainers who will train peasants and feasible in terms of Project resources.
- c. Immediately select 10 to 20 people within SMCs who perform outstanding management jobs and develop program for training them to train peasants.

- d. Initiate program to track the SMC trainers,
- e. Monitor teaching activities,
- f. Continue backstopping for teachers, initiate final review of materials, and upgrade aspects of program (final six months of Phase III).

The role of the extensionists during the process described above is to continue to generate and sharpen bulletins, backstop trainers, monitor teaching, and help individuals develop accurate information and skills.

3. Peasant Farmers

The focus in this section is upon the peasant farmer as beneficiary of project activities.

7.3.1. Constraints and Demands

Constraints perceived by farmers as obstacles to swine production identified via personal interviews included the following:

1. The high cost and limited supply of feed;
2. Marketing problems due to lower pig prices and lack of buyers because of relatively expensive and scarce feeds;
3. Water sources which are sometimes a great distance from the piggery and require labor intensive water hauling;
4. The scarcity and expense of medicine;
5. General limited resources for purchasing building supplies.

The above listed constraints are presented in order of frequency. The interviewed farmers and SMCs voiced these constraints in response to interview questions about problems in swine raising. It is important to note that the constraint relative to the cost and scarcity of swine feed was noted by interviewees in all but one or two interviews. The farmers point out that it is difficult to sell a pig to another breeder because the other breeder anticipates difficulties in obtaining feed. Additionally, in informal discussions with approximately 40 farmers in the Redone market and other farmers in the Blockaus

market, feed problems were identified as major constraints in swine production. These farmers noted that they combine commercial with local feeds to extend the imported feed supply.

Heat relative to swine has been identified as a problem in some areas. As a result, farmers have begun to explore the possibility of water well establishment, water storage, and possible water harvesting opportunities.

One critical indicator of how well or poorly the "new" pig has been accepted by the SMC farmers and peasant farmers is whether they desire more pigs. During the interviews, the SMCs and peasant farmers were questioned as to whether they desired more pigs. The responses were as follows:

	Positive Response	Negative Response
SMCs	24	25
Peasant Farmers	28	6

A positive response indicated that the interviewee wanted more pigs than they currently had. There were no restrictions built into the question but the implication was that more pigs would be more of the same kind of pig. Generally interviewees did not qualify their positive responses. However negative responses from peasants were usually further explained with reference to feed and in SMC negative responses attention centered upon feed and present pig stock reproduction rate or number of pigs presently in the SMC piggery.

The interviews did not include a large number of peasants and, therefore, the responses may not be of statistical significance. However, the responses should may be viewed as an indication. Among the peasants, the positive responses outnumbered the negative responses by more than four to one. From this limited sample, the desire for more pigs appears more dependent upon adequate feed sources rather than desire for a different kind of pig, i.e. the Creole pig.

7.3.2. Reaction to Project

On the basis of team interviews and informal discussion with peasants, it is reasonable to assume that the peasant farmer is positive about the activities of the project. Peasant perceptions relative to the value of the new pig in section 7.5.1

of this report, and his/her account of how the new pig adapts to local conditions as reported in section 7.5.3., also support the peasants' relatively positive feelings about the pig and support of the project. In informal discussions, the peasant farmer frequently referred to new techniques learned as a result of the project.

The spread effects of the project are referred to in various sections of this report but they are of sufficient importance that reference will be made to them again. The acquisition of knowledge of new technology by the farmer has been observed, in an outward sense, in a number of newly constructed wells for a ready water source, the addition of latrines to the farm compound, the use of pig manure on garden crops, and the explanation of child health issues by references such as "Children need clean water just like pigs". This latter statement was used in a district health demonstration to clarify some of the causes of infant diarrhea.

7.3.3. Relevant Project Design Elements

The design of this Project promoted the assumption that due to Project activities, the peasant farmer was to have four to eight times more pork to sell or eat than in the past. Frankly, it appears virtually impossible for a Project such as this one to reach such a goal within the LOP. Constraints outside the scope of the Project have precluded such an achievement and timing does not allow for the necessary changes to let marketing and breeding factors begin to compensate for the lack of pigs in the farmer families to such a degree as to meet the Project design objective.

Part of the management required of the SMCs by project leadership involved record keeping of piggery activities. During the interviews conducted by the evaluation team, 61 responded affirmatively to the inquiry "Do you keep records?" whereas 18 (23%) replied in the negative, twelve of the 61 affirmative responders were peasant farmers, while of the 18 negative responders, 9 were peasant farmers, most of whom indicated that they kept records "in their heads". Four of the SMCs negative responses were further clarified when the responders indicated that the piggery record were kept by the sponsor.

On several occasions during the interview sessions, the respondents proudly displayed their record notebooks. The record keeping procedure appeared to be clearly understood by SMC management. The possibility of utilizing these records for future decision making also appeared to be part of the understanding of the management group. Hopefully, extension personnel

will continue to reinforce the usefulness of record keeping for future decision making and planning. Further demonstrations of exactly how records can help in planning should be carried out.

Without pre-project data to support a comparison between the amount of record keeping prior to the ISRP and after the implementation of the project, it is difficult to make a statement of cause and effect. However, the obvious pride shown by the interviewees when they displayed the records indicates that this was not a typical nor usual practice. The skills learned in the process of systematic record keeping can be expected to extend beyond the present project into other management areas.

7.3.4. Recommendations

1. The peasant should become the target beneficiaries from this point in the project. SMCs should be assisted and encouraged in a concrete manner to provide training and help to the peasant farmers. Spread effects of project activities should be encouraged and possible inroads in areas of pig manure for crops, human health practices, care of other livestock and general management practices should be explored as possible peripheral additions to the peasant farmer extension package.
2. Assistance must be provided to the peasant relative to common management problems in piggeries. These problems include, but are not limited to, the following: inadequate drinking water, pen sanitation, deteriorating condition of pens, inadequate care of newborn pigs, poorly designed troughs, general management issues, greasy pig disease, and diarrhea.

7.4. Women Project Participants

This project may be categorized as an integrated project in terms of women's participation. The advantage of an integrated project is that women can fully participate in resource utilization and benefit from the high priority such projects traditionally receive. In this situation, the determination of the level of participation relates to proportion of women in the pool of eligibles and does not depend upon focused WID issue attention.

Disadvantages related to the integrated project approach include the necessity to include women as a defined part of target beneficiaries at the design stage. If the percentage of women in the target group is sufficiently small or if the women's roles are of such a low status that they are not relevant in the decision making loop then women may be overlooked in project activities. Generally when women who occupy a relatively low status in the community compete with men for scarce project resources the outcome does not meet the criteria of equality.

7.4.1. Participation of Women

A review of the training sessions (formations) held at HAMPCO from 31-3-85 to 16-5-86 indicated a total of 238 attendees. Of that total 225 were men and 13 participants were women. The women participants were from two SMCs. The profile of female attendees was as follows:

Date of formation	Number of Women	SMC
24-1-86	1	UNICORS
10-1-86	1	CROIX-PERES
6-12-85	3	UNICORS
30-8-85	3	UNICORS
11-6-85	1	UNICORS
12-4-85	4	UNICORS

Thus, the percentage of women attendees in the HAMPCO training sessions totaled 5.7%. The lack of a significant percentage of women attendees at the HAMPCO center may be a function of custom further modified by location, number of male attendees, subject matter, and timing which precludes women's participation in such sessions. Custom considerations include a variety of elements such as class, ethnic group membership, and community expectations as well as others. Additionally, the lack of women attendees may relate to the lack of women in management roles which would provide training opportunities.

Project records from the January to May 1987 period indicate a total of 2381 participants in the formations. Male participants numbered 1951 (82%) and female participants numbered 1019 (34%) of the total attendees. Individual training session topics included farrowing, heat detection/breeding, feed, breeding, general topics, vaccinations, castration, building farrowing rates, diarrhea prevention, basic management, nutrition, prolapse treatment, balancing rations, local medicine, care of nursing mother and other general issues.

In SMC interviews, the involvement of women was characterized as "women and children take care of livestock and men take care of the garden and field crops". Since women play a critical role in all aspects of agricultural production and especially in swine production the need to provide technical training for women agriculturists is obvious.

Further support for the recommendation to provide more training for women may be acquired from the 1985 desk review conducted by AID's center for Development Resources and Evaluation. The review involved a sample of 101 field projects out of 416 AID projects in which project documentation included references to women. The AID preliminary study of agricultural projects

concluded that "when women's participation was high, project success tended to be moderate or low." The results were not identified in causal terms, however the report does highlight a need to consider a project's entire target group as well as the dynamics of the local farming system.

The Project leadership is very proud of the UNICORS group, which is an SMC made up of women, both individually and in groups. Clearly, women are completely involved in the work of the SMC, however it is unclear how much of the decision making at the higher management level is being done by women. It appears that male leadership assumes most of that responsibility. This matter is not part of the responsibility of this project and the comments above should not be interpreted to indicate criticism of the project.

7.4.2. Recommendations

1. The project should target women beneficiaries in an informal effective manner so as to help women acquire pigs and become part of decision making learning loop.
2. Project leadership is urged, within its communications network, to encourage the present leadership in UNICORS to begin to bring women into the management decision making loop as it is absolutely necessary that indigenous leadership be developed. Whenever possible, women should be brought into decision making discussions assigned leadership roles, and assume increased responsibilities while present UNICORS leadership begins to take a less dominant role. Very simply, leaders learn more effectively by being leaders than by observing.

7.5. Specific Swine Issues

In this section, the focus is upon issues which relate to the swine as part of the Haitian culture and the beneficiary population.

7.5.1.

Numerous project and non-project papers have described the role of the pig in Haitian society. There is no need to repeat the discussion in this paper and the reader is referred to the project paper for an overall description which continues to be accurate representation. For purposes of this evaluation, the characteristics noted by the interviewees will be highlighted. A selection of exact or nearly exact responses which illustrate

perceptions about the role of pigs in the family, as expressed by the interviewees, are included below:

"If the rain does not fall and the land is dry, with a pig at least you have hope".

"Pigs mean money. More money means you can have more pigs."

"Pigs are a good investment. Pigs mean money to people."

"You can borrow money if you have a pig."

"Life is better with pigs. We don't have more money yet but we will in the future."

"I like the pig God gave me."

"Selling pigs means we can build a new house."

"The pig is life. If you have two or three pigs then life is better. Pigs contribute to making life better. You can buy land, send children to school, and build a house if you have a pig."

"Pig is a bank. Put money in pigs and your money will grow."

"The pig is a bank book."

One of the most descriptive statements came from an elderly male farmer who said: "If you have a pig, you can go to sleep with five cents and wake up with money if your pig farrows and you can sell. The pig is family protection." Rural residents recount the situation when a young man asks his sweetheart's father for her hand in marriage and the father's first question is "How many pigs do you have?"

Clearly, the pig continues to occupy the status as described in Metraux's classic 1951 description of the significance of livestock in Haitian rural economy. The original project design assumption relative to the pig as a primary savings deposit, protein source and revenue generator appears to continue to be valid.

Since some concern has recently been expressed in public writings about the color and acceptability of the imported or new project pig, the evaluation team included questions in the interview schedule seeking to ascertain Haitian preference. When asked about color preferences, 32 (33%) interviewees said they had no preference, 30 (37%) noted black as their preference, 14

(17%) identified the "new" pigs as their choice, and the remaining five interviewees listed black and white, red or gray and white as their preferences. A total of 81 responses was gathered on this topic.

Even though the data in the preceding paragraph indicate that black is not the overwhelming color selection, one must exercise caution when interpreting these responses. Clearly, the farm family underwent a period of stress after the pig eradication and now that they have pigs a significant number may be reluctant to express desire for any pig besides the one in their pen. The feeling that the present pigs may be taken away if they state another preference may impact upon the interviewee response. However, even with this caution in mind it is significant to note that in subsequent discussions with the SMCs and farmers, the characteristics of the "new pig" were obviously appreciated. Many interviewees commented on the larger size of the project pigs, relatively quick growth and increased number of piglets (as compared to Creole pigs). They expressed special appreciation for the relatively quickly maturing "new" pig as that meant earlier piglets with resulting earlier possible market possibilities.

Black as a color preference was frequently qualified by the statement, "Black pigs are better to market as people want to buy creole pigs". In informal discussions with SMC management the voodoo use of the black pig was also mentioned. In a couple of instances, SMC managers noted that peasants preferred black pigs but would take anything they could get. This latter attitude is probably fairly accurate of the pragmatic peasant farmer who has learned to adapt to what is rather than dream of what can be.

It is worthy to note that the selective cross breeding which has occurred in the project has generated stock which will ultimately result in a new Haitian pig with characteristics of the three imported breeds. It is estimated that many pigs in succeeding generations will be partially or wholly black due to the Hampshire breed input.

7.5.2. Beneficiary Population and Distribution Issues

Haiti's smallest farmers were identified by the Project Paper as the project beneficiaries. The Project has reached a significant number of this population segment via secondary multiplication centers (SMCs). In addition to distributing pigs to farm families, the project has provided training, veterinarian assistance, feed subsidies, and other related supports for the SMCs and the farmer.

Critical to the beneficiary population has been the question of distribution of pigs and information. In the worst scenario it was envisioned that only wealthy land owners would acquire the pigs and related services. Project leadership has been very aware of the possibility of attempts to circumvent even the best of plans and have accomplished the difficult feat of concentrating upon the peasant farmer needs and targeting project activities for that sector. There is no evidence to support the statement that wealthy land owners are direct beneficiaries in this project.

In order to probe the question of equitable distribution, the team included questions in the interviews about the person's perception as to whether the distribution was fair or unfair. It is significant to note that none of the interviewees characterized the distribution in any other way than fair. In order to lend reality to the statement the exact or nearly exact words by the interviewees in response to this issue were as follows:

"Having pigs will benefit the whole group."

"There was a fair distribution of pigs. Life will get better as our pigs develop."

"Distribution of pigs was fair. I am glad I got one".

"They required us to have a pig house, be organized and know how to care for pigs and then they distributed that way".

"Distribution was fair. Life is better with pigs".

"Pigs went to farmers who work".

"We have no complaints. Families with children got the pigs first".

"Distribution was hard but fair. We have had no complaints".

7.5.3. Survival Rate and Adaptability

A factor of primary importance in the ISRP has centered upon the pigs survival rate. This statistic helps determine the rate of repopulation and also is an important indicator to project primary and secondary beneficiaries of the benefits of the imported pig stock.

Interviews with farmers were relatively scanty on data relative to survival rates so for purposes of identifying trends all of the data received in the field interviews are treated as a single total. The total of piglets (born) identified in the interviews was 818 while the number of deaths was set at 228. Since 27 of the 81 sows identified in the interviews had not yet weaned these piglets, the weaning figure was not used in this discussion.

The mortality rate based on the above-noted interviews, was 20% which is a surprisingly respectable showing when one considers the lack of previous experience both SMCs and farmers had with larger litter size and the resulting care necessary during farrowing. The reasons presented by the interviewees relative to the causes of piglet deaths included the following:

- (1) The piglets were born small;
- (2) The piglets were weaned too early;
- (3) The sow crushed the piglets;
- (4) The piglets had diarrhea.

IICA farrowing records which covered the period from December, 1964 to May 1966 shows a total of 2,022 females farrowed with 17,778 piglets born. The number of dead was recorded as 901 which represented 5.06% mortality rate with 9.24 average number of piglets per farrowing and the average weaning rate was 8.2. This lower percentage of deaths as compared to the field interviews is reasonable to expect since the IICA data reflected statistics from SMCs which receive extension and veterinary services. Another IICA report entitled Farrowing /Weaning Report which covered the period from December 1964 to May 1966 shows a total of 3685 piglets born with 457 deaths which translates into a 4.7% mortality rate or a 9.08 average piglets born per farrowing and the average weaning rate was 6.7. It is important to note that in more highly developed countries a weaning rate of 8.0 is considered within the "good" range and reflects a well managed operation.

One question on the interview schedule requested the respondent to indicate whether he/she felt that the imported pig was adapting to local conditions. Of the 54 responses to this inquiry 45 (83%) responded in the affirmative and 9 (17%) responses were negative. It is significant to note that of the negative responses five were from peasant farmers. This number represents one third of peasants who answered this question and

this relatively limited input may indicate that the group of growers who are most likely to rear and care for the pigs in the "traditional" way find it more difficult for the animal to adapt to those local conditions. However, before such a conclusion can be made it is important to note that of the positive responses, 10 were from peasant farmers. These ten represented two-thirds of total peasant farmer responses.

Before one can generalize upon the above noted responses, attention must be paid to the overwhelming identification by interview respondents of feed as the most important problem relative to the care of swine. Evidently the respondents made a division in this response between problems and adaptability. Several respondents qualified their responses about local conditions by illustrating with examples of how imported pigs will eat whatever is available.

When questioned more closely, specific farmers pointed out that in order to get a pig prepared to walk to market they put the pig on an "exercise program". This was a practical way to prepare the pig for a walk to market which may require two or more hours of time. In addition, farmers described how piggery side boards are set up in such a way as to allow piglets to roam about outside the piggery. By getting the piglets onto the soil early, it is possible to eliminate the need for the second iron injection given to piglets.

Several single pig owners had built simple piggeries utilizing largely locally available products and regularly took the pig out of the enclosure for grazing in the shade of a tree.

Further adjustments needed for project pigs to adapt to the typical Haitian peasant farming system include the following:

- (1) Research on locally available feed sources must be completed so as to develop information on feeding crops which can be fed to pigs as well as option amounts and preferred mixes for good growth and reproduction.
- (2) The research results noted in (1) above should be field tested in farmer's pens and recommended procedures should be demonstrated to area farmers.
- (3) Local feed information should be presented via a technical package which can be easily understood by the farmer. Extension methodology should be utilized to extend this information to primary and secondary beneficiaries.
- (4) Simple housing recommendations should be developed using research analysis as a basis and the resulting information

should be developed into a technology package and utilized by extension workers to help farmers. Factors to be considered in the technology package should include use of local supplies, ventilation, cleanability, water source, surrounding grazing areas and other relevant factors.

- (5) The farmers are actually aware of the pig's need for a daily supply of water. Many environmental conditions contribute to the difficulty the farmer faces in supplying that water. Therefore, a simplified technical package detailing water harvesting and water storage techniques should be developed and presented to SMC management for further disbursement to farmers.

7.5.4. Recommendations

1. Project should explore possible spin-off of activities such as fuel sources from waste materials which may involve SMC development after termination of Project.
2. Knowledge of increased local foodstuffs must be developed while at the same time field testing must be conducted which will provide guidance to farmers as to optimum amounts of various locally produced foodstuffs to be fed to pigs. Verified information on food sources and recommended amounts should be conveyed to the SMCs and farmers in a variety of information sources such as extension bulletins, posters, radio, and other relevant avenues.

7.6. Summary of Findings/Recommendations

The peasant farmer group continues to experience stress resulting from the swine eradication program. The present project provides the only hope, in many cases, for the poorest peasant to regain resources which were lost when the Creole pigs were killed. The well being, both economically and socially, of the peasant family is so closely allied with the pig, whether present or absent, that a philosophy of non-involvement could result in an accelerated decline of the fragile environment in which the culture is preserved.

Since the pig is such an inherent part of Haitian peasant life, there is some evidence that human health projects may benefit from increased awareness of requirements for the raising of the new pigs.

Project extension activities have been effective in helping individuals and groups learn techniques to cope with a formerly unknown type of pig. Generally, the "new" pig has been accepted by beneficiaries and is adapting to local conditions but constraints, chief of which is feed, do

exist. The immediate challenge for the project is to acquire solidly based information which may modify constraints and to distribute this information to beneficiaries in the most meaningful manner.

The focus of project activities must begin immediately to turn to the peasant farmer. The Secondary Multiplication Centers should be involved in extending timely, locally adaptable information to peasant farmers.

Informal networking which will result in more women being involved in leadership roles and ownership of pigs must be addressed. Cultural acceptance must be the guiding underlying principal in this activity.

Backstopping and support for the SMCs have produced benefits in the individual communities. The development of the SMCs has meant, in many cases, the establishment of cooperating community groups which did not previously exist. Strengthening of SMCs in the final phase of the Project may provide the only possibility for community action in many areas. Methods to stimulate SMC management to develop fine tuned management techniques should be explored by project personnel. It is important to involve SMC leadership in the next phase of the Project. If the Project is to be extended the leaders should be notified of work goals during the upcoming period, and specific cooperation activities should be requested.

The present Project should explore interface possibilities with the upcoming IDB Project which is to have an extension component. Since the present Project has training capability, extension materials, and experienced extensionists, the ideal approach would be for the IDB Project to incorporate the present extension component in such a way that the activities continue after the USAID/IICA project is terminated. Several alternative approaches may be possible in such an interface. For example, (1) IICA personnel may be employed part time under the IDB Project and part time under the ISR project to fully integrate the activities, (2) ISRP personnel could be utilized by the IDB in planning and training involved in the extension component, (3) the ISR Project may be utilized by the IDB Project as a pilot project to provide guidance for IDB Project planning, and (4) combinations of (1), (2), (3) may be possible.

The bottom line is that the ISR Project has developed many capabilities which could significantly help the upcoming IDB Project. IDB Project should be designed to complement ISRP's extension activities and hopefully assume responsibility.

8. ECONOMIC ANALYSIS OF THE INTERIM SWINE REPOPULATION PROJECT

Prepared by: Gregory Sullivan

8.1 Overview of the Situation

The task of this section is to evaluate the economic impact of complete eradication of an animal resource and the subsequent repopulation of animal numbers over a short period of time. Swine production, unlike cattle or small ruminant production, can rapidly increase in animal numbers. The impact of a change in factors of production can be felt quicker than for other livestock.

It should also be emphasized that the purpose of the ISRP is to repopulate the pig inventory of peasants to increase their income. Several issues need to be considered because of an abnormal situation of liquidation and their repopulation of the pigs. First, the initial owners of pigs will experience the windfall gains in having a product in which demand outstrips available supply. As animal numbers increase and market clearing forces come into play, windfall profits will be dissipated. Eventually economic profits will be zero.

Second, equity issues will arise in who will be recipients of the first distribution of pigs. In the case of the ISRP, the objective was to target low income peasants who had suffered greatly by the eradication of pigs. However, market access was not limited to the ISRP. The Ministry of Agriculture established O.C.P.'s which received pigs from the sentinel herd placed in the field to monitor for the presence of ASF. Furthermore, because of the great demand for pigs, private sector firms established commercial operations. Currently there are five to ten such operations in Haiti.

These three production entities expanded herd numbers independently and more rapidly than anyone expected. Although no accurate estimate of herd numbers is present, several independent sources place the national herd at around 250,000. The level of pork production is such that the larger cross-bred pigs produce carcasses that are heavier than the creole pig that was eradicated because of ASF. A marketing problem has evolved because the market is saturated at the current level of demand because of the squeeze on the price margin because of the cost of the primary input of bagged feed and the large quantities of imports that are simultaneously flooding the market.

The swine industry in Haiti is buffeted by structural changes in the industry because of factor price relationships affecting production as well as producer profitability. Broader issues are present which involve macroeconomic policies as regard imports of pork and other substitute protein products e.g. poultry. Both of these aspects will be addressed in this Section.

8.2 Data Available for Project Monitoring

This project has successfully implemented a computer system that assists in project monitoring. Information on animal production is inputted on a regular basis, and data about animal numbers at SMCs is available.

If money and manpower would be available in the future, production data at selected SMCs would enrich the data base. Growth rates, weaning weights and litter sizes weaned would provide technical coefficients for examining production strategies.

Haiti is a country that lacks a reliable data base on marketing information such as prices, production, slaughtering and consumption data. As pigs are repopulated in Haiti, it would be valuable to begin to obtain these data to plan, project and implement necessary marketing plans.

The project has done an excellent job with its highly motivated and capable staff to set the foundation for sustaining improved swine husbandry in Haiti.

8.3 Economic Analysis of Pig Raising in Haiti

Since the inception of the ISRP project, repopulation of the pig industry has gone more rapidly than expected. The impact has been that the constraints which were made in the Project Paper have been realized. The impact is that some SMC's which were to be viable economic entities have had to be disbanded. The primary reason is the shortage of complete bagged feed for their animals.

The IICA project made a decision to recommend that SMCs "decentralize" their operations and disperse their breeding stock to peasants and in turn return the peasant returns to the Center a set number of females and males. The actual contract between the SMC and the peasant can vary.

8.3.1. Pig Raising at the SMC Level

Sixty-seven SMCs were visited in a period of two weeks in all the major areas where pigs have been distributed by the IICA/USAID project. Data was collected in a systematic manner using a questionnaire. Questions on costs of production and marketing were asked of the SMC manager.

8.3.1.1. Costs of Operating SMCs

Data was collected on costs of production at the SMCs (Table 11.3). The largest fixed capital cost incurred was the construction of the piggery. The average cost of the sample of SMCs was \$3,000; however, there was wide variability in sizes and construction materials seen.

In some areas, SMCs are vacant because of "decentralization" of the piggery. The shortage of feed has forced SMCs to disperse sows to the peasants to care for. IICA encouraged this strategy because of their projection in shortfalls of feed. In fact, incentives were given to decentralize by increasing quotas of feed to an SMC by 25 percent.

The impact of feed shortage is quickly changing the role of SMCs in the multiplication effort. In some areas facilities are idle, especially at UNICOR's sites in the southwest, which has 44 piggeries costing \$2,500 each now idle. In a few cases, individual farmers have brought their pigs back into the SMC building to use the idle facility. The team did observe that condition of sows that had been given to peasants was better than those that had remained in the same SMC because of available feed and management.

Pigs were found to be very destructive on housing facilities. In general, many piggeries are in disrepair. The large size of the pig causes constant damage and these repairs are expensive. The average maintenance expense is \$22 per month. In many cases, sows are in pens that have no doors or have broken concrete floors. Several sows and boars are being restrained on a cord in the pen.

The cost and availability of feed are of major concern by almost all SMC personnel interviewed. The data that could be collected indicates that SMCs spend \$199 per month on feed. The average cost was \$19 per sow per month for SMCs able to give figures on feed expenses.

Fifty-three of the sixty-seven SMCs interviewed gave figures on staff employed at the SMCs. Full-time employees at the SMCs averaged 1-8 people per month and 1.4 part-time employees. The labor allocation appears to be high at the SMCs. Average cost per month is approximately \$83 per employee. Only six managers reported their salaries, and they are not included in the figures.

Slightly less than 50 percent of the SMCs responding to the question on debt replied that they owed money on the operation. The amount of the debt varied greatly and the average was \$753.

8.3.1.2. Budget Analysis of Selected SMCs

Costs and returns of a representative SMC are presented in Table 11.4. Based on field survey data total annual costs are estimated to be \$ 6,072. The total revenue from selling castrates and females is estimated to be \$ 5,000. The representative SMC is estimated to have a loss of \$ 1,072 per year. A similar analysis was conducted by Giovanni Caprio of USAID/Haiti. He estimated a net loss of \$ 1,392 annually to the SMC. The lower estimate is reflective of a feeding adjustment by switching to more local feed than was used eighteen months ago when more bagged feed was available.

8.3.1.3. Marketing Activities of SMCs

SMC managers were asked about marketing of their pigs. Of 45 respondents 32 (71%) said they had sold pigs since starting the facility. Castrates and piglets were the predominant type sold (Table 11.5). The average price for piglets was \$52, which represents a decrease of 50% from prices reported before the feed crisis. Farmers complained they could not sell piglets because others could not get feed for them.

Large castrates were reported sold for an average of \$216 per head. Visits to markets and discussions with Project staff indicate that the range is from \$180 - \$250 for a 250 pound slaughter hog. Small castrates around 70 - 100 pounds were selling for an average of \$59. There were not many large castrates being housed in the SMCs visited. It could be that feed shortage has caused them to sell off these pigs.

SMC managers were asked if they have marketing problems. Seventy-seven percent of managers responding said they were experiencing difficulty in selling their pigs. The major reason given was shortage of feed (41%) with depressed market conditions representing the rest.

8.3.1.4. Distribution of Pigs by the SMCs

Information was collected on distribution of weaned piglets by SMCs to peasants. Thirty-two SMCs out of sixty-nine provided the information (Table 11.6). Reports on distributions are not required of SMCs by IICA.

For selected SMCs, the average number of pigs distributed was 76.7, with a wide variability in numbers. If there are 440 SMCs operating presently, the number of Haitian households which have received pigs is approximately 34,000. This estimate is much lower than what is projected by the project. However, if one expands the numbers of average number of piglets distributed per month since start of receiving pigs, then, the number of households impacted increases to approximately 47,500. Both projections are based on recorded distributions by SMCs, and it is assumed that each piglet went to one household. It should be added that the survey found that piglets were distributed to a group of individuals in which the spread effect would be much greater. The lowest projected estimate by IICA is that 44,101 households were impacted. The implication of this finding is that repopulation has not reached the targeted levels of households set in by the Project Paper.

8.3.1.5 Overall Evaluation of the SMC Concept and its Future Role

The SMC produced both positive and negative results. The SMC in general provided good distribution of piglets to the target group of low-income peasant farmers. However, as the prices of feed went up and feed became scarce, SMCs began to have problems. SMCs were locked into giving away piglets to peasants which became an economic hardship as feed prices went up.

The initial criteria to become an SMC were fine; however, as time progressed, requirements were not always appropriate. The piggeries quickly went into disrepair, requiring large expenditures on maintenance. The Project did suggest low-cost materials, but many SMCs decided to invest in more expensive buildings. Smaller SMCs would have been more appropriate, and giving away only the first litter would have been better. Some SMCs indebted themselves by giving too many pigs away to peasants. SMCs did not perform up to expectations mainly for management reasons. Guardians who did most of the work were underpaid (\$20 per month) and had no incentives for increased production (The guardian did not share in the piglets being given away). Some SMCs were not on solid ground financially and when feed problems started, these SMCs were the first to decentralize.

Approximately 10 percent of the SMCs did not live up to their contracts in distribution of pigs which is a low number given the temptation to sell piglets at \$100 per animal. However, the SMCs did put pigs in the hands of poor farmers who had pigs before ASF.

It is true that recipients were asked to perform community projects before receiving pigs. In one area, a recipient had to:

- build a latrine
- build a piggery
- give 25 hours of community labor
- read and write their names
- and give 3 females and 1 male from the first four farrowings.

There was a waiting list of farmers wanting to receive a pig at this particular SMC in the Northeast. If the farmer wanted a second pig, then 25 additional hours of community service were required.

In general, peasants were required to at least build a facility, but there was no requirement to purchase bagged feed.

An evident lack of motivation by SMC staff to improve management was also observed among SMC extensionists. Over time, SMC staff often lost interest in maintaining the operations. It was only in the area of veterinary services that extension was done systematically and that is because veterinary extensionists received payment. In some cases, the peasant was exploited by high fees, e.g. a farrowing for \$20.

Several changes in the program design occurred during the project:

Feed Subsidy

At the start of the Project, a 50% subsidy was given and feed was available to SMCs in unlimited quantities at the price of \$2.50. The Project paid an additional \$2.50 as a subsidy to the SMC. By March 1986 only 5 SMCs were off subsidies. At the end of January 1987, 50 percent of SMCs were off subsidies, equivalent to 2,658 sows. It was found that most SMCs could not succeed without a subsidy. (Reference economic analysis by G. Caprio USAID/Haiti). SMCs could not continue to give away pigs.

Wheat shorts disappeared and the cost of rations increased by 250 percent. The project had a \$35,000 allowance for the subsidy which supplied 250 MT/month, of feed for only 50% of the base herd.

Regional Feedmill

During this same period, the plan to establish regional feedmills was dropped from the project because the possible participants CODEVA, IRD and UNICORS were in debt to the bank on their loan for feed. The Convention Baptist, which had a feedmill in place in Cap Haitien since 1985, had not been able to start operation for over two years.

Decentralization

Because of the shortage of feed and the financial problems experienced by SMCs, decentralization from the piggerie was an effective redesign strategy for the project. Pigs looked as though they were performing better than if they had been in the piggerie. The feed shortage problem has placed enormous pressure on the daily operation of SMCs. SMC with large numbers of sows, over 10, will have difficulty maintaining their operation unless they have good financial support and capable management. The condition of SMCs varied on both accounts. The sponsoring non-governmental organizations (NGO's) of the piggerie was in-charge of providing credit, extension and deciding the distribution of the piglets. It was obvious some SMCs that had sows should be decentralized. In general, SMCs served only as a multiplication center without sufficient or substantial transfer of technical information to peasants. Only in the case of a strong central cooperative, e.g. CODEVA, UNICORS or IRD, are effective extension programs being carried out.

6.3.2 Pig Raising at the Peasant Level

Thirty-seven peasants were interviewed who had received pigs from the SMCs that the team visited. Average costs of production are itemized in Table 11.7. The estimate is that four hours per day of family labor is being devoted to pigs by household members. The estimate is very high for a livestock activity such as pigs; but pigs are new again for the peasant, who places high expectations on them. It is interesting to

note that over 50 percent of the peasants said they had not incurred a debt to have their pigs. This was approximately equivalent to the debt ratio of SMCs.

8.3.2.1 Economics of Pig Raising at the Peasant Level

Costs and returns information collected during the field surveys is presented in Table 11.8. The costs incurred by peasants were lower because they used local materials for their buildings. Total costs for a one sow operation is estimated to be \$489 which includes depreciation on their facility.

If the sow farrows 1.7 times per year and the farmer sells 10 piglets per year (having to give back one male and a female) the net returns to labor and management are estimated to be \$136 per year. Pig raising is profitable at the peasant level even though the live piglet price has dropped 50 percent since the feed crisis. It is projected that the price for weaned piglets will drop to \$25 in 1989.

8.3.2.2 Marketing Activities by Peasants

Peasants who have had pigs for appreciable periods of time are beginning to market their pigs (Table 11.9). Thirty-three percent of the peasants interviewed said they had marketed their pigs.

Average prices were asked for types of pigs sold. Price reported had declined since before the feed problem. It is interesting to note that peasants had not sold any of their pigs in the market. Demand seems sufficient for buyers to come to the piggery although prices have declined.

However, peasants said they were experiencing problems in selling their pigs. The majority said that market demand was the greatest problem.

8.3.2.3 Economics of Pig Raising for the Peasant

Peasants on the average had one sow or a gilt they were raising to breed. Assuming that the peasant had a sow, the average net return per sow is estimated at \$136 per year, assuming a farrowing 1.7 times per year and a weaned litter size of 7. The greatest expense mentioned by peasants was feed, at \$267 per year. It seems that local feed is being substituted for bagged feed by peasants. It is uncertain if producers are really spending that much money on feed or just saying what they wanted us to believe. An estimate of the trade-sensitivity analysis of the economics of SMC and peasant operations should be conducted.

The implication is that pig-raising is still profitable for the peasant although net returns will decline as more pigs are produced. It was observed that management of pigs was generally better performed by peasants than by the SMCs that the team visited. A representative farm budget for a peasant operation based on information from Drew Kutscherreuter, IICA Extension Coordinator, is presented in Table 11.11 The internal rate of

return of the operation is over 50% to make the stream of present value of benefits equal to zero.

It should be noted that the majority of peasants interviewed said they could take care of fewer numbers of pigs than before ASF. This points to the peasant's ability to calculate how much this pig will require in terms of management and inputs and that fewer pigs will be required.

8.4. Feed Situation and Outlook

8.4.1. The Project's Feed Program

The feed supply problem has worsened in the past several months due to the lack of wheat shorts. The majority of respondents in the field survey complained that feed was difficult to obtain at an affordable price.

The IICA project has sought to design a feed supply program that met the need of the peasant pig raiser. A fifty percent feed subsidy on a bag of complete feed was provided. As the cost of raw materials including wheat shorts has gone up, fewer bags of feed from the program have been available to SMCs. The Project staff, realizing this shortage, recommended that SMCs decentralize their operations and give sows to peasants.

The feedmill operation is in the process of being transferred to UNAPEL which is an organization representing NGOs in Haiti that have been involved in establishment of SMCs. UNAPEL receives its allocation of wheat shorts and rice bran from the Minoterie. The raw materials are delivered to the project's feedmill where raw materials are mixed with premix concentrate in the proportion of 60% wheat shorts, 20% rice bran and 10% premix. The project charges \$2 per bag for mixing. UNAPEL then sells a bag of feed to member SMCs at \$5.75 F.O.B. the plant site. UNAPEL makes \$33.33 per short ton.

8.4.2 Other Sources of Animal Feed

Other commercial sources of animal feed for pigs are available in Haiti; however, the cost is higher than feed from the project. In visits to Purina and Soruan, it was learned that both facilities are operating at far less than full-capacity. Prices quoted by both facilities were in a range of \$10 - \$15 per bag of mixed feed. Both company managers expressed concern about availability of wheat shorts.

In recent months, large amounts of flour have entered the country which has been one factor affecting the amount of wheat shorts available from the Minoterie. At the same time, demand by pig owners for wheat shorts has increased dramatically.

8.4.3 Opportunities for Local Feed Production

The project has taken great efforts to examine alternative feed sources for SMCs. Cuttings of Ramie obtained from the Dominican

Republic have been given to SMOS to establish near their piggeries. The crop is performing well and SMC laborers are cutting and feeding the Ramie to their pigs. If wide spread impact is going to be felt, then further economic analysis is needed on cropping systems and how this variety and others can be adopted by peasants.

It is worth mentioning that USAID is planning a hillside strategy to include a large project in the Les Cayes region. This is also an important area for swine production and hopefully efforts will be made to incorporate pigs in cropping strategies planned for this area.

8.5 Macroeconomic Factors Affecting the Swine Industry

After the outbreak of African Swine Fever, pork was not available in Haiti in large quantities. During the period since the eradication, pork imports have increased tremendously. These imports have not decreased substantially since herd numbers have begun to increase. Data provided in Table 11.12 indicate that for the first quarter of this year, official imports were approximately 2.7 million pounds which is equivalent to 13,500 pigs (Table 11.13). The major importer of pork parts has been FAMEPAK based on data in Table 11.11. Compared to monthly imports of around 11 containers in December, 1986. The tonnage imported is increasing even though more pigs are available in Haiti.

Pork is one of seven commodities that requires an import license. The tax on pork is reported to be 40 percent of the C.I.F. value. There is concern that licenses are being given easily and are being revised by a group of importers. The impact is that probably much more pork is entering Haiti than what is reported in Tables 11.10 and 11.11.

Import taxes have changed, which has also affected the amount of imports entering the country. The 1979 law was that imports were taxed at 100 percent of the C.I.F. value. For example, a container of \$40,000 priced at 35 cents/pound was levied a \$14,000 tax. As of 1986, many licenses on imports of commodities were eliminated and only a 20% tax was imposed on pork. The same container in 1987 is taxed only \$2,800. The reduction of the import tax has made it easier for importers to bring in pork and pass the tax on the consumers. It must be emphasized that imports are adversely affecting the emerging swine industry in Haiti.

8.5.1 Estimates of Pork Demand in Haiti

Precise figures on disappearance and consumption of pork in Haiti are not available. However, the estimate that has been quoted is 25,000 MT.

25,000 MT Disappearance of Pork Prior to ASF epidemic

Breed	Average Carcass Wt.	Carcasses to satisfy Demand
Creole	90 lbs	625,000
Creole	100 lbs	500,000
Imported	140 lbs	357,000

Assuming an average carcass weight of less than 100 pounds, over 500,000 head per year were slaughtered from the domestic herd. The expected heavier carcasses of the imported breed means that fewer pigs will be required to satisfy local consumption needs than compared to the pre-ASF period. If we assume a national average of six weaned pigs per litter, then approximately 60,000 sows will satisfy this demand for pork in Haiti.

Projections using secondary data from IICA suggest that approximately 20,000 sows will be producing piglets by September 1988. A similar number of sows will be supplied by the private sector as well as from the sentinel herd. This base herd of 60,000 sows will produce an offtake of 360,000 animals, equivalent to the offtake before ASF.

The important conclusion is that the herd is expanding rapidly and that marketing problems are already existent. The live weight price for hogs is below the pre-ASF level. The need is clearly apparent that marketing strategies are needed to cope with increased feed problems and increasing herd numbers.

Several factors need to be noted which could lower this estimate of sows required: (1) The level of imports into Haiti, directly impacts the supply required from the domestic herd; (2) the amount of domestic production and imports of other substitute protein products; and (3) the degree to which consumption patterns changed during the period when imports were not available.

8.6. Benefit Cost Analysis of the Project

Based on information on the estimated income from peasant operation in Table 11.11, the benefits from the project are measured (Table 11.14). Estimated number of households impacted are derived from sows (4,500) placed in SMCs by the project. The household projection is

illustrated in figure 12.3. The cost of the proposed amendment No. 3 is budgeted at approximately \$1 million. The internal rate of return needed to make the discounted benefits is over 50%.

8.7 Marketing Strategies for Pigs Raised by Peasants

Appropriate marketing strategies for peasants raising pigs needs to focus on opening up marketing alternatives where constraints in the system occur. Problems that will need to be addressed are:

- 1) Thin rural markets where demand is not sufficient for local offtake.
- 2) Lack of market information on seasonal supply and demand for feeder pigs, slaughter hogs or breeding stock.
- 3) Adjusting production systems to meet specific market requirements - liveweight, fat cover, age, etc.
- 4) Lack of an adequate number of buyers willing to speculate and move pigs to other areas for providing further value to the animals.

To meet marketing constraints, the following set of strategies are suggested (Please see figure section of report for work plan and time frame for these activities):

1. Develop Feeder Pig Markets

Regions of Haiti have a comparative advantage during certain seasons of the year to feed pigs on local feed better than others. It was observed in the far Southwest around Port-Salut that not enough feed is available during the dry season. However, not far to the East the watershed of Les Cayes has more rainfall and available feedstuffs. Weaned piglets could be sold from finishing to heavier weights during certain seasons of the year.

The opportunities for implementing such a marketing channel are that (1) two strong organizations UNICORS in the Southwest and IRD in Les Cayes could cooperate on setting up such a system; (2) one of the better abattoirs outside of Port-of-Prince being used by FAMESPAK currently could be integrated into the slaughter and processing activities; and (3) the transportation system is good from Port-au-Prince to Les Cayes.

2. Small Scale Meat Processing, Technology and Marketing

Because the imported pig produces more weight per dressed carcass, new marketing options have to be implemented along with the improved management which is taking place. With more meat having to be disposed at slaughter, processing for preservation will be required. The creole pig produced a fattier product which was processed into griot or was salted and preserved.

The leaner carcasses at optimum slaughter weight 200 lbs, will have less fat and more muscle which opens options for further processing of pork products. There are different consumer markets that could be targeted.

It is proposed to establish small-scale processing centers in selected areas. The objective would be to create a more competitive environment in regions identified as having potential for marketing opportunities for marketing access for the products. This scheme is similar to one being developed under the Interamerican Development Bank. Credit would be extended to purchase the animals and process them for sale.

The advantage of this proposal compared to number 3 listed below is that rural employment would be generated and pork would be a valued-added product for the community. The limitations are that more expertise in food technology, food safety, and management would have to be required.

3. Country-Buying Stations: Contract Marketing for Slaughter Hogs

The two major meat processing facilities are located in Port-au-Prince. Both companies are processors of domestic pigs as well as importers of pork from the US. A marketing strategy that could be developed is to initiate a marketing program whereby each firm would be encouraged to set-up buying stations for slaughter hogs. These installations would have set criteria for types of pigs desired. Premiums and discounts would be received for animals not meeting the specifications.

As an incentive to these companies for participating, a license could be issued for importation of pork with a favorable tax reduction, provided. The objective would be to encourage domestic slaughter and at the same time relieve any bottlenecks of pigs stacked-up in the marketing system. This strategy could encourage development of grades and standards by peasants and hopefully begin to educate producers when the proper time is to sell slaughter hogs. The issuance of the import license to these companies could allow for smoothing out the variation in pork supply because of seasonal effects.

8.8. Marketing Recommendations

It is apparent that marketing of pigs and pork is becoming a concern of both peasant and commercial pig operators. Efforts are needed to begin to formulate appropriate and rational marketing programs that will insure an orderly market for pigs and pork products. The following recommendations are presented, and are directed at two levels: (1) micro-level and (2) macro-level programs. (See work plan, Figure section of report).

8.8.1. Micro-Level Programs

1. It is important to look at cost/benefit comparisons of various production and marketing alternatives for pigs raised by peasants. If marketing options are going to be designed, they must observe key parameters of what breeding, growing and finishing operations are viable at the peasant level. These production/marketing options will vary by agro-economic areas in Haiti. Efforts should be concentrated where pig numbers are already high in the South and Southwest regions. These regions coincide with the areas targeted by the evaluation team animal nutritionist for studies on local feeding trials. Objective is to design technological package.
2. Basic, necessary socio-economic field data needs to be collected in conjunction with project nutritionists doing local feeding trials. Data would look at economics of alternative cropping systems. This activity should be tied in with the initiation of the Targeted Watershed Project in Les Cayes. Objective is to design technological package. Table 11.14 is an illustration of the kind of data needed for benefit/cost studies.
3. Studies need to be conducted on the operation of the livestock marketing system to look at price margins, buying procedures in the country-side, the role of credit by market agents and price differences by region and season for different type and sex of pigs and other livestock. This information would be useful in implementing the general recommendations outlined in Section 8.7.
4. Design, test and implement an extension pig marketing program based on field data collected. Training of extensionists will be conducted with subsequent programs for peasant. Extension information will be introduced in conjunction with a test marketing project. e.g. feeder pig markets or country-buying stations. Extension program will focus on when and how to best market pigs.

8.6.2. Macro-Level Market Research

The development of the swine industry in Haiti is also dependent on larger issues of a policy nature. The impact of imports is being felt dramatically on a fledgling swine industry. Yet no rational plan or sound economic analysis has been done to guide the policy-makers or inform the industry. In the U.S., trade associations and Government agencies provide this type of research. The following is proposed: A strong need is present to begin a series of "white papers" on the pork industry. These studies could be carried out by the Ministry of Agriculture with support from the Agricultural Producers Association (APA). Assistance could be provided by short-term consultants or agricultural economists at the Agricultural University. The following topic areas are proposed:

- Feed supply and demand
- The impact of imports
- Establishment of the framework for collection of livestock market information.
- Competition in the commercial meat processing industry.
- Competitive analysis between peasants and commercial swine producers.

9. ANIMAL HEALTH

Prepared by: Richard Pacer

9.1 Introduction

From November 1981 to December 1983, I was actively involved in the African Swine Fever Eradication Program, which led to the destruction of the Haitian Creole pig and preliminary repopulation with approximately 2000 sentinel pigs. During the past 3 weeks, I have witnessed evidence of tremendous accomplishment since 1983 as a result of the Interim Swine Repopulation Project (ISRP). Witnessing the ownership of pigs by peasants throughout Haiti once again as a result of ISRP fills me with happiness and peace of mind. The individuals involved in this successful project are commended for a job well done.

In light of the tremendous amount of work that has been performed, I am concerned about the continued expansion and accompanying management, nutrition, and health needs, and disease surveillance of not only the IICA swine herd, but the national swine herd as a whole, i.e., IICA, SOH, and private sectors. At this point, the Haitians can triumph and be proud of having one of the least disease ridden swine herds in the world. However, the real goal now is to maintain this health status knowing full well that the herd is fully susceptible to common infectious swine diseases such as transmissible gastroenteritis, pseudorabies, and erysipelas which plague swine herds in more highly industrial countries. With these issues in mind, I would now like to focus upon animal health and ISRP.

9.2 Veterinary Services Performed at Secondary Multiplication Centers

9.2.1 Health Status of Swine at SMCs

A total of 67 Secondary Multiplication Centers (SMCs) was visited by members of the evaluation team. In general, the fleshiness of the swine housed at these SMCs was moderate to heavy and the majority appeared to be in good to fair health. In those cases where adult pigs were thin and in poor health, poor management and malnutrition were more often the culprits than infectious disease. The former 2 factors also contributed significantly to death of piglets. Of 45 SMCs reporting death of piglets from sows which were randomly selected upon visit by team members, 24 or 53% attributed the deaths to weakness or being crushed by the sows, as compared with 8 or 18% who reported diarrhea to be the cause. Stillbirths were reported as frequent as diarrhea in piglets and may have resulted from any one of the above 3 factors.

9.2.2 Availability of Veterinarians

Health services were initially provided to swine at the SMCs solely by veterinarians employed by IICA. The overwhelming and unexpected response by private voluntary organizations to meet ISRP criteria for establishment of an SMC intensified the need for additional project

veterinarians to provide preventive health care measures, i.e. vaccinations, deworming, etc., and emergency treatments to the rapidly expanding IICA swine herd. As illustrated by figure 12.2 within the first 8 months of placement of swine in the countryside the number of SMCs increased from 13 in December 1984 to 228 by the end of July 1985. Due to the overwhelming work requirements of the two field veterinarians, a third field veterinarian was employed by the Project and services were also sought from 3 Christian Veterinary Mission (CVM) veterinarians located in Haiti.

Currently, ISR is critically understaffed by field veterinarians if they are expected to continue the services rendered earlier in the Project. Only two field vets remain employed by ISRP. Dr. Amos Barfield continues to visit the SMCs in the North in a somewhat timely manner. Dr. Paul Rudenberg, who is located in Port-au-Prince, is capable of visiting only a fraction of the remaining 360 SMCs. Fortunately, the Project Coordinator, Dr. Bob Amelingmeier, is also a veterinarian who understands the inherent dangers of having this few veterinarians overseeing health care and disease surveillance in the Project herd.

3.2.3 Training of Extensionists

The training of Project extensionists in basic veterinary preventative health care practices, procedures, and disease identification by Dr. Ronald Melendez, proved to be invaluable. In April 1988, the number of SMCs reached nearly 400 (see figure 12.2) and the extensionists were called upon to administer scheduled vaccinations and treatments, and to conduct disease surveillance in light of the shortage of veterinarians. Fortunately, a knowledgeable and well-trained ISRP extensionist now exists in each of the 7 regions and functions as the hands, eyes, and ears of the veterinarian with regard to health care and disease surveillance of the IICA swine herd. Even though they are capable of identifying up to 90% of the disease problems in the IICA swine herd, one must keep in mind that they are only able to visit their sites approximately once every two months.

3.2.4 Work Schedules and Diagnosis of Disease

The work schedule for each of the vets consisted of a computer printout of the SMCs listing the appropriate dates to visit each of the SMCs within his/her jurisdiction and the type of preventative health measures to administer, i.e., vaccination against erysipelas, leptospirosis, E. coli, vitamin injections, etc. These work schedules were well structured and appropriate, and the events were fully accomplished with the assistance of the extensionists. In addition to this pre-scheduled calendar of visits, each vet was responsible for performing clinical exams, and emergency treatments and surgeries at the SMCs.

A form was available to systematically record types of diseases observed; however, few vets utilized it. The information from these forms was entered on a computer disk to start a database of disease

conditions present at the SMCs. This database provides information on types of diseases, but is of little value to determine prevalence of disease. The importance and value of completion of the SMC Medical Record form should have been emphasized and mandatory as part of each veterinarian's scope of work.

The number of SMCs visited per week per veterinarian varied depending on accessibility of the site, the distance from the veterinarian's home, and the amount of other responsibilities. In general, between 15 - 20 SMCs were visited per week by each veterinarian. The frequency of repeat visits to each SMC varied from once every 2-3 weeks to once every 6-10 weeks up until April 1, 1987 depending upon the area of the country. Upon interviewing SMC managers and guardians during the past 2 weeks, some reported that it has been more than 6 months since an ISRP veterinarian last visited.

9.3 Veterinary Services to Non-Project Swine

9.3.1 Health Status and Value

Although the evaluation team was not specifically asked to assess management, nutrition, and health status of swine raised apart from the SMC network, a few comments are made in light of the fact that these animals were often raised on the same or nearby premises to SMC related swine. The value and importance of these swine to peasant farmers was akin to that of ISRP swine. As a result of having less or no access to balanced swine rations, these swine were sometimes observed in poorer overall condition and health status. However, others were observed doing equally well and perhaps more fully adapted to local feedstuffs than ISRP pigs. Although these swine were more commonly raised on a cord, this was not always the case; some were housed in individual piggeries similar to those built by peasants who received pigs from the SMCs. I am reasonably confident that management and health care practices as a result of extension work performed at the SMCs also carried over to swine farmers not directly involved in ISRP.

9.3.2 Communication Between ISRP and MARNDR Veterinarians

While close association and communication among ISRP and non-project swine was observed, unfortunately the same cannot be said with regard to the working relations and communication between ISRP veterinarians and MARNDR veterinarians responsible for overseeing their health. I was informed of only one occasion during the past 4 years when collaboration between these two groups took place. This involved a suspect case of anthrax in the south peninsula, and the outcome was more of a truce than a mutual diagnosis.

9.4 Veterinary Medicines and supplies

9.4.1 Acceptance of Veterinary Medicines and Supplies

The ISRP has increased the peasant farmers' awareness and acceptance of veterinary medicines and procedures as they relate to swine husbandry. Several individual peasants who received pigs from SMCs affirmed their use of veterinary medicines to raise their pigs. These were most commonly administered at the time of farrowing and consisted of oxytocin, iron dextran, vitamins, and antidiarrheal drugs.

9.4.2 Need for Extension Services

Extension Services need to be provided to the peasants regarding judicious use and appropriate handling and storage of veterinary drugs. One must guard against the perception of antibiotics as "cure-alls". Their misuse can lead to the development of resistant strains of bacteria which consequently require treatment with less available and more expensive drugs. Primary emphasis needs to be placed on prevention of disease by identification of underlying cause of disease, such as poor management or nutritional deficiencies rather than use of veterinary drugs to treat clinically apparent disease.

Many incidents of self-proclaimed Haitian "veterinarians" were brought to the attention of the team. Oftentimes the education and practical experience in veterinary medicine of these individuals are minimal and less than adequate. Many are providing a disservice to the peasant swine farmers and charging outrageous prices. Their presence is damaging to the veterinary profession and may lead to the peasants' questioning of the merit of veterinary drugs.

9.4.3 Availability of Veterinary Medicines and Supplies

It is my understanding that peasants were provided veterinary medicines free of charge by ISRP vets and extensionists. Several peasants reported that the medicines they needed were not readily available locally and they oftentimes needed to travel long distances from the countryside to Port-au-Prince to obtain appropriate and effective drugs. Because veterinary medicines and supplies can assist peasants in producing healthier, more productive pigs, a practical and affordable means of delivery of these drugs to the peasants needs to be resolved.

9.4.4 ISRP and UNAPEL Pharmacies

Until mid-June 1987, ISRP maintained a depot of veterinary medicines and supplies to assist SMCs with a more direct purchase of them. Stock was ordered on a bimonthly basis. A good inventory of medicines and supplies was initially maintained, however, as the number of SMCs increased a fixed budget for medicines placed limitations on the supply.

In early June 1987, a central veterinary pharmacy was established in Port-au-Prince under the supervision of UNAPEL. This non-profit organization plans to distribute veterinary medicines and supplies to a network of regional pharmacies to all peasants at an affordable, fixed price. Tentative plans are to initially establish regional pharmacies in Gros Morne, Gonaives, Jacmel, Les Cayes, Chardonniere, and Port-au-Prince (a smaller, more accessible pharmacy than the central one).

3.5 National Veterinary Diagnostic Laboratory

The etiology of many disease conditions identified in ISRP pigs remain unknown due to the lack of an efficient and reliable veterinary diagnostic laboratory in Haiti. During the course of the Project, bacterial agents capable of causing disease in swine were occasionally identified by human diagnostic laboratories. Although their assistance and cooperation was much appreciated, the personnel in these labs were oftentimes neither equipped nor knowledgeable enough to adequately diagnose diseases of swine or other animals.

A national veterinary diagnostic laboratory is a necessity to diagnose domestic and foreign animal diseases in Haiti in a reliable and timely manner. Such a laboratory would be a direct benefit to private and government sponsored livestock production projects, as well as an indirect benefit to individual farmers as a result of earlier recognition of potentially devastating animal diseases.

Amendment #1 to the Interim Swine Repopulation Project Paper states (page 15) "that Haitian staff have been trained and the required equipment and materials are available for the diagnosis of several viral, bacterial, mycotic, and parasitic disease conditions in swine." Whatever resources were available at the time of this document either no longer exist or are no longer functional or reliable. A national laboratory capable of providing a diagnosis of swine diseases as outlined in the above described paper is desperately needed in Haiti. However, I do not believe that assistance from outside sources is worthy of pursuit or an appropriate expenditure of funds until the Haitian Ministry of Agriculture is willing to take an active and leading role in its establishment and sustenance.

3.6 National Animal Disease Surveillance and Control

Currently the swine population in Haiti is of sufficient size (estimated at 100,000-150,000), and rapidly increasing by disease contagious disease agents to more easily spread throughout the national swine herd and less likely to be contained in any one area of the country. Because of the lack of adequate surveillance of ports of entry, the opportunity

occurrence of a national epidemic similar to African Swine Fever in 1979-80 are ever increasing. In addition, there is evidence that the lack of an organized and meaningful surveillance of domestic swine diseases is already allowing for local spread of disease. Team members observed a suspect bacterial disease of yet unknown etiology in young pigs of the IICA herd. This agent is thought to be contagious and has a similar clinical manifestation as exudative epidermitis. To date little has been done to control its spread.

A practical, short-term solution to resolve the lack of a national animal health monitoring system may be utilization of the present two ISRP field veterinarians to organize an interim system. They could coordinate and supervise the activities of ISRP extensionists and MOA veterinary technicians educated at Damien who would actually carry out surveillance activities in the field. In addition, the two ISRP vets would be responsible for the investigation of suspect foreign animal diseases. The possible role and assistance of CVM veterinarians should not be overlooked. These individuals are oftentimes more adaptable and willing to assist in lesser developed countries than other foreign veterinarians.

A preliminary orientation for newcomers and periodic (eg. monthly or bimonthly) meetings for all surveillance personnel would be scheduled to keep them abreast of the health status of animals throughout Haiti. The field surveillance personnel involved in the proposed national animal health monitoring system would need to be equipped with a minimal amount of resources to be functional i.e., a diagnostic kit for collection of samples, a list of available human diagnostic laboratories, a list of relevant agencies to contact in the case of an animal disease emergency, such as IICA and MOA. In addition, a salary, stipend, or another type of incentive would be required to function properly and to maintain interest of these individuals.

The above described surveillance system would only serve for an interim period. The long term goal would be a national animal health monitoring system coordinated and supervised by Haitian personnel.

3.7 Recommendations

1. ISRP should not view their swine as separate and apart from privately owned swine and swine resulting from the ASF Eradication Program with regard to management, nutrition, and health care needs. These swine are as important to the peasant farmer as project swine and are oftentimes raised on the same premises or in close proximity to ISRP swine.
2. ISRP veterinarians and extensionists should continue to inform and provide information to peasant farmers on animal health. Emphasis should be placed on the judicious use and appropriate handling and

storage of veterinary drugs, and assessment of the credibility of people administering them. In addition, more emphasis needs to be placed on good management and proper diet as they relate to overall prevention of disease.

3. ISRP should assist UNAPEL with the establishment of a workable and sustainable veterinary pharmaceutical network capable of providing veterinary medicines and supplies to the small peasant farmers at affordable prices and in convenient locations. ISRP should discontinue their distribution of veterinary medicines and supplies by September 1987.
4. Better communication should be established between ISRP, MOA, and the private sector. Swine health data and technologies developed and implemented during ISRP should be passed on to MOA in an organized and instructive manner.
5. Because a functional and reliable national veterinary diagnostic laboratory could assist in the monitoring of the ISRP swine, ISRP personnel should collaborate with MOA personnel to identify resources and means to establish and sustain an institution such as this.
6. The remaining two ISRP field veterinarians should coordinate and supervise extensionists and veterinary technicians in an interim surveillance system to monitor the health of the national swine herd while a more definitive and sustaining system is being developed by MOA personnel.
7. A written request to the Christian Veterinary Mission (CVM) should be made to address the need for CVM veterinarians to administer primary animal health care and to maintain disease surveillance in Haiti for ISRP and other livestock projects.
8. In order to meet future needs of a national animal health monitoring system, external funding should be obtained to finance academic training of Haitians in veterinary medicine and animal health, both domestically and abroad.

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ANNES TABLE 10.

DETAILED ESTIMATED EXPENSES FOR 18-MONTH
PERIOD AT TWO DEMONSTRATION UNITS (REVOLVING FUND)

ITEM	COST
Expenses	
Personnel	
2 Assistant-Nutrition \$350/Month x 18 Mo. x 2 Units	\$ 12,600
2 Laborers: \$100/Mo. x 18 Mo x 2 Units	3,600
Equipment	
1 Balance for large Animals \$700	
8 Balances, milk type x 70 = \$560	1,200
Shovels and small equipments \$540	
Housing Adaptation	
Total estimated Costs	5,000
Feed and Medicines	
2,158 bags of 100 lb each, at \$11.00/bag \$23,738	25,000
Medicines & Desinfectants 1,262	
Miscellaneous	
	1,000
TOTAL EXPENSES	\$ 49,000
Income	
Sale of 240 pigs of ~ 95 kg each at \$1.70/kg liveweight	\$ 38,700
TOTAL INCOME	\$ 38,700
Difference	\$ 10,300

60x

Table 11.1 Evaluation Matrix of the Haiti Interim Swine Repopulation Project, June, 1987

I. GOALS OF THE PROJECT	ACTUAL STATUS	EXPLANATORY NOTES	TEAM'S ASSESSMENT
1. Raise standard of living of the poor Haitian farmers who were most affected by the ASF epidemic	Those that have received pigs have a potential to raise their standard of living and they recognize this potential.	Project staff report that they emphasize total health systems for pigs and extend it to family health.	<p>Goal to raise standard of living based on increased numbers alone is presumptuous in isolation without oth appropriate infrastructure.</p> <p>Evidence that some improvements have been made, but they are apparently not broad based. The greatest impact has been with SMC's that have good management and support.</p> <p>Consumption of pork in the diet has not reached pre-ASF levels for the areas that have pigs due to the high cost of pork.</p>
	Some indication that awareness about human health issues are being transmitted.		

Table 11.1 (continued)

II. OBJECTIVES OF THE PROJECT	ACTUAL STATUS	EXPLANATORY NOTES	TEAM'S ASSESSMENT
1. To repopulate the Haitian pig breeding stock	The project has repopulated the country with a variety of improved, genetic potential.	Many limitations and constraints have occurred as the herd has expanded rapidly.	Repopulation is being achieved at a rapid rate.
		Rate of population due to improved swine husbandry practices has outstripped resources.	The rapid rate of repopulation has lead to problems in feed, marketing, health status and extension services.
2. To improve the Haitian pig breeding stock	Pigs of superior genetic potential compared to creole pigs have been distributed.	Production performance exceeds that of the creole pig, e.g. litter size, feed conversion and rate of growth. However, management and feed requirements are greater.	The project has achieved this objective. Based on survey findings pigs are adapting and moving into homeostatis with local conditions.

10/12

Table 11.1 (continue)

III. OUTPUTS OF THE PROJECT	ACTUAL STATUS	EXPLANATORY NOTES	TEAM'S ASSESSMENT
Pigs distributed to poor farmers	Project has distributed at least 40,000 pigs to farm families over a period of two years. Distribution of pigs has extended to all seven agric. districts.		In general the distribution of pigs by SMCs has been good. Benefits to the poor farmers will depend on the operation of the SMCs and the level of management and extension.
	In general, women have not been included in the target group to receive pigs.	UNICOR women have developed skills and management capability in raising pigs, but this has been an exception.	More women should be included in the beneficiary groups.
2. Establishment of breeding centers	SMCs have served as breeding centers housing from 1 to 44 adult animals. To date a total of 440 SMCs have been established.		Exceeded number of regional, breeding centers as per project paper (SS-70)
	Relatively few of the SMCs function as informal demonstration sites mainly related to the farrowing and initial care of piglets.		Project has done a good job tracking numbers of pigs at the SMCs but greater effort needs to be made to monitor distributions by SMCs to peasants. Cultural mores have limited the effectiveness of transfer of technology by SMC personnel to the peasant. Degree of success of SMC appears largely dependent upon management selection and financial support from a donor.

Table 11.2 Assessment of Recommendations Made in the Evaluation of the Interim Phase of the ISRP, November 18-26, 1985*

RECOMMENDATIONS (1985)	TEAM'S ASSESSMENT (1987)
I. Extension and Training:	
1. HAMPCO should be phased out by 9/30/86 (p.19).	1. Accomplished, HAMPCO phased out
2. Increase training at SMC level for peasants (p.26).	2. In process, project plans in place to undertake this. Team recommends continuation of work
3. Three IICA technicians added to project before July, 1986 (p.23).	3. Accomplished.
4. Train trainers at the SMCs (p.26).	4. Not accomplished, team recommends follow up on this task. See Ch end of evaluation report.
5. Help O.C.P.s with extension and veterinary services (p.20).	5. Not accomplished, MOA agreed to provide services to OCPs.
6. Knowledge acquired from cultural and economic studies should be part of training of extensionists, (p.25).	6. Not accomplished via outside consultative study. Project extensionists knowledge was used to input this information.
7. Extension technicians from GOH be utilized fully in the expanded project (p.23).	7. Not accomplished, team recommends that Project Coordinating Comm take a leadership role to implement this recommendation.
8. Acquire technical expertise of agronomist and economist and create effective network of extension specialists, (p.23)	8. Not accomplished, project lack expertise in production and social sciences. Team recommends strengthening manpower base by utilizing domestic academic institutions and foreign experts.
II. ANIMAL HEALTH	
1. Increase the number of veterinarians assigned to the IICA project to meet the needs of extension and animal health matters (p.12).	1. Partially accomplished, team recommends IICA hire veterinarian to oversee animal health of SMC and OCPs within the ISRP.

*note: page numbers after recommendations refer to citation in 1985 report

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2. Request the assistance of the Georgia wildlife specialist to trap, test and eliminate feral swine and stripped swine (p.12). | 2. Accomplished. |
| 3. Assign an International Coordinating Veterinarian to assist with establishment of an effective animal health program and to serve as a liaison with U.S. veterinary health officials (p.11-12). | 3. Partially accomplished, vet assigned to Haiti but effective animal health program not established. |
| 4. Educate and train additional Haitians in the field of veterinary medicine (p.26). | 4. Not accomplished, team recommends priority be given to training of Haitians in field of veterinary medicine. |
| 5. Establish a national veterinary diagnostic laboratory capable of diagnosing both infectious and nutritional diseases of swine (p.12). | 5. Not accomplished, team recommends establishment of national animal disease diagnostic laboratory immediately. |
| 6. Design a workable national animal health monitoring system (p. 11, 12, 26). | 6. Not accomplished, however, team feels implementation of such a system is questionable based on manpower, available resources, and initiative of MOA personnel in Haiti at this time. |
| 7. Design a workable emergency animal disease eradication organization which is organized, funded and maintained by the MOA (p. 11, 12, 26). | 7. Not accomplished, team questions feasibility without GOH involvement and adequate infrastructure |
| 8. Hire consultant exceptionally qualified in swine diseases to monitor the animal health program periodically during the next phase of the ISRP. (p. 12). | 8. Not accomplished, team advises that this recommendation is inappropriate in light of a lack of national health monitoring program. |

***NOTE:

Recommendations Nos. 5,6, and 7 are not included as project activities under the IICA Cooperative Agreement.

III. BREEDING AND FEED SUPPLY:

- | | |
|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. HAMPCO continue until June, 1986 and phase out by September, 1986. | 1. Accomplished. |
| 2. SMCs should take role of breeding replacement. | 2. SMCs have been effective in distribution of breeding stocks, but plans for future role of breeding replacement have not been formulated. |
| 3. Temporary feedmill facilities be constructed to support SMCs. | 3. Accomplished, team recommends feasibility study be done on this topic and national policy be established to provide adequate and affordable feed for peasant farmers. |
| 4. Establish feedmills at two or more SMCs areas: one in the South and other in the North. | 4. Not accomplished, team recommendation appears in #3 above. |
| 5. Farmers receive subsidized feed from project through SMC to at least first litter is ready to sell. | 5. Not accomplished, subsidiz feed has been provided to only. |
| 6. Locate and develop locally produced feed resources. | 6. Some activities are in progress. The team recommends more emphasis on feed resources that supply energy. |
| 7. Feasibility studies and analyses of cost/benefit ratio using locally produced feed resources. | 7. Not accomplished, team recommends that selected SMCs be targeted to gather this type of information. |

*****NOTE:**

Recommendation No. 5 is not included as project activities under the IICA Cooperative Agreement.

IV. ECONOMICS AND MARKETING

1. Level of pork production be kept in balance with available feed supply (p.24).
 2. Have a role for swine in the hillside farming systems project.
 3. Use F1 castrates from HAMPCO to generate funds for SMC's to assist peasants wanting pigs.
 4. Development of crops and cropping systems require the technical expertise of agronomist and economists and effective network of extension specialists.
 5. Study of country supply and demand situation for pork - competitive analysis commercial and peasant production.
 6. Marketing consultant be brought in early in extended project to prepare alternative marketing options. Market consultant would train extension specialists (p.25).
 7. Conduct cost/benefit studies at SMC and peasant level to evaluate production and marketing options.
1. Not accomplished, team recommends that appropriate marketing studies and strategies be undertaken.
 2. Premature recommendation.
 3. Not done.
 4. Not accomplished, team recommends a work plan integrating agronomy and nutrition for alternative cropping systems specifically for energy in feeds.
 5. Not accomplished, team recommends that competitive analysis between private sector and SMCs be conducted (See Ch. 6 and 8).
 6. Not accomplished, team recommends that marketing consultant utilize competitive analysis to plan alternative marketing options and train extension specialist (See Ch.8).
 7. Not accomplished, team recommends priority be give to studies at SMCs that identify viable system

*****NOTE:**

Recommendations Nos. 2, 5, and 7 are not included as project activities under the IICA Cooperative Agreement.

IV. COOPERATION AND COMMUNICATION

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Foster cooperation between IICA, USAID and MOA in coordinating and monitoring the expansion of the national swine herd. | 1. Partially accomplished. Being done at Project Coordinating Committee. |
| 2. OCP's and SMC's should have the same criteria for distribution of pigs. | 2. Not adhered to, 57 OCPs received pigs from ISRP whereas 251 OCPs exist. MOA assumed responsibility for the OCPs. |
| 3. An anthropologist consultant should assess the impact of households having pigs again and which are larger and produce 4 to 8 times as much pork. | 3. Not accomplished, team does not recommend anthropologist consultant at this time. |
| 4. GOH authority, responsibility and guidance be part of animal health component and carried out by auxiliary veterinarians presently working in the MOA (p.11). | 4. Not accomplished, MOA technicians not seconded to IICA project. For better coordination between MOA and project this recommendation should be addressed. |
| 5. International coordinating veterinarian must have confidence of GOH vets so they can have input and be informed (p.11). | 5. Not accomplished, ICV was in country approximately 18 months and left in December, 1985. |
| 6. International coordinating veterinarian must have active interrelationships of private, GOH, and IICA. MOU between IICA and USDA must be understood by all (p.12). | 6. Not accomplished, ICV was in country approx. 18 months and left in 19 |
| 7. Auxiliary veterinarians must work closely with three components and establish network (p.12). | 7. Not accomplished. |

*****NOTE:**

Recommendation No. 4 is not included as project activities under the IICA Cooperative Agreement.

8. PSC meetings should resolve issues and follow through should be handled by TAG. The Project Director and MOA will be required to communicate (give and take) (p.18).

8. Accomplished higher administrative level but does not happen at field level. Communication is frequent within PSC.

9. Good communication among USAID, IICA and MOA of GOM (p.27).

9. Project steering committee has been established.

Table 11.3 COSTS OF OPERATION SELECTED SMCs, JUNE 1987

ITEM	N	\$	Man/Mo
Average construction cost of piggery	40	3,000	
Maintenance of Facility(\$/Mo)	12	22	
Feed per Month	34	199	
Labor Allocation			
Full-Time-(Man/Mo)	53		1.8
Part-Time-(Man/Mo)	53		1.4
Labor Cost			
Full-Time-(\$/Mo)	43	53	
Part-Time-(\$/Mo)	3	30	
Manager (\$/Mo)	6	89	
Incurred Debt on Operation			
Yes	17		
No	21		
Amount of Debt Incurred	10	763	

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Table 11.4 Costs and Returns for Pigs at the SMC Level, June 1987

Representative SMC:

10 sows and 2 boars
 farrowing rate = 1.7
 weaning rate + 7/litter
 50% female and 50% male
 production: (10 sows*1.7*7piglets)= 119

Variable Costs:

feed (199*12).....	2,388
maintenance on facility.....	264
medicine.....	259
labor.....	2,064
interest (none sponsor gives grant).....	0

Fixed Costs:

Depreciation on building.....	600
interest on debt (none, money was a gift)	

Total Costs: 6,072

Total Revenue:

Sale of castrates (50 -4 * 50).....	2,800
sales of subsequent litter after first female...	1,200

Total Revenue 4,000

Profit/Loss (-2,072)

Table 11.5 Marketing Activities at Selected SMCs, June 1987

QUESTIONS	N	YES	NO	AV. PRICE
Types of Pigs sold:				
Piglets		17		52
Gilts		6		60
Castrates:		23		
Large				215
Small				59
Sow		1		
Do you have problems in marketing your pigs?	33	27	5	
Reasons for Marketing Problems:				
Shortage of Feed	11			
Market Saturated	5			
Price too Low	4			
Imports of Pork	3			
Buyers don't have cash	2			
Can't Sell at Home	1			
No Definite Reason	1			

Source: Field Interviews for the Interim Swine Repopulation Project,

Table 11.6 Distribution of Piglets by Selected SMCs Visited, June, 1987

Date Pigs Received	Number of Sows	Piglets Distributed	Piglets/Sow	Piglets/Months
4/86	9	24	2.7	1.7
8/85	11	42	3.8	1.8
12/85	14	49	3.5	2.7
2/86	15	61	4.1	3.8
12/84	16	289	18.1	9.6
5/86	5	18	3.6	1.4
12/84	4	35	8.8	1.2
12/85	4	27	6.8	1.5
11/86	30	135	4.5	7.1
7/85	4	60	15.0	2.6
3/86	9	22	2.4	1.5
4/86	5	46	9.2	3.3
3/85	2	13	6.5	.5
5/86	1	0	0	0
5/86	1	0	0	0
5/86	1	7	7.0	.5
5/86	4	31	7.8	2.4
5/86	24	0	0	0
1/86	19	72	3.8	4.2
10/85	19	265	14.0	8.3
1/85	19	132	6.9	14.7
3/85	18	308	17.1	11.4
11/85	19	30	1.6	1.5
6/85	32	128	4.0	5.3
12/84	17	76	4.5	2.5
7/86	14	150	10.7	13.6
12/84	3	65	21.7	2.2
3/86	10	5	.5	-
8/85	9	140	15.6	6.4
5/85	20	127	6.4	5.1
1/85	9	46	5.1	1.9
6/85	9	50	5.6	2.0
AVERAGE	11.8	76.7	6.9	3.6

Source: Field survey for the Interim Swine Repopulation

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Table 11.7 Costs of Production of Selected Peasants' Pig Operations Who Received Pigs from SMCs, JUNE 1987

ITEM	N	\$
Average Construction Cost of Piggerie	28	446
Maintenance of Facility (\$/Month)	4	6.25
Feed per Month	20	22.30
Labor Allocation		
Family Labor (p.d.)	31	1.9
Total Family Hours per day (hr/day)	23	4.0
Incurred Debt on Operation	25	
Yes	11	
No	14	

Table 11.8 Costs and Returns for Swine Production by the Peasants Who Returns Piglets to the SMC Based on Field Survey Data, June 1987

Variable Cost:

Feed.....	267.5
Maintenance.....	75.0
Medicine.....	72.0

Fixed Costs

Depreciation.....	75.0
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Total Costs:.....	489.0
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Revenue:

one sow has 1.7 farrowing per year of 7 per litter weaned producing 12 piglets for sale (6 males - 1 distributed) = 5*50	250.0
(6 females- 1 distributed)=5*75	375.0

625.0

Net Return to Labor and Mgt. 136.0

Source: Field Survey, ISRP, June 1987

Table 11.9 Marketing Activities of Selected Peasants Who Have Received Pigs, June 1987

QUESTIONS	N	YES	NO	AV. PRICE
Peasants that Have Marketed	24	8	16	
Types of Pigs Sold	8			
Piglets		3		53
Gilts		2		80
Castrates:				
Large		1		220
Small		1		80
Place Where you Sold	8			
Village	4			
Home	4			
Do you Have Problems in Mar- keting your Pigs?	13	9	4	
Reasons for Marketing Problems:				
Lack of Feed	3			
Market Demand	7			

Source: Field Survey, ISRP, June 1987

Table 11.10 Cost Relationship Between Full Feed Comprised of Bagged Fe With Different Level of Substitution of Local Feed

Percent of Bagged Feed %	Percent of Local Feed %	Cost of Bagged Feed \$	Cost of Local Feed \$	Total Cost of Feed \$
0	100	0.0	83.00	83.00
10	90	24.00	74.00	98.00
20	80	50.00	66.00	116.00
30	70	75.00	58.00	133.00
40	60	100.00	50.00	150.00
50	50	124.00	42.00	168.00
60	40	150.00	33.00	188.00
70	30	174.00	25.00	199.00
80	20	200.00	16.00	200.00
90	10	224.00	8.00	232.00
100	0	249.00	0.0	249.00

Note: Table was constructed based on discussions with Drew Kutschenreuter, chief of the Extension Team of IICA. It was estimated that local feed is 20% DM and bagged feed is 90% DM.; therefore it takes 4.5 the amount of local feed to equal bagged feed.

Table 11.11 Representative Farm Budget for a Peasant Operation
Based on Information from IICA Staff, June 1987

Year:	1	2	3	4	5	6	7	8	9
Costs:									
Building	72.59	0	0	0	0	0	0	0	0
gilt	50.00	0	0	0	0	0	0	0	0
labor	0	0	0	0	0	0	0	0	0
feed	96.00	249	249	249	249	249	249	249	249
medicine	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86
Maintenance	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Sub-total	229.45	259.8	259.8	259.8	259.8	259.8	259.8	259.8	259.8
Sales	0	400.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0
Net Returns	0	140.2	190.2	190.2	190.2	190.2	190.2	190.2	190.2
Discounted Net Benefits(10%)	-229.45	127.4	157.1	142.8	129.9	118.1	107.2	97.6	88.8
Net Present Value	= 820.05								
Internal Rate of Return over 50%									

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Table 11.12 Importation of Pork into Haiti, January - March, 1987

MONTH	POUNDS IMPORTED	EQUIVALENT HEAD
January	1,153,364	5,766
February	737,593	3,688
March	835,279	4,176
TOTAL	2,726,236	13,630
Av. /Month	908,745	4,543

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Table 11.13 Imports by Companies in Haiti, March, 1987

COMPANY	CTN	WEIGHT	% OF TOTAL
HAMPCO	--	67,148	8
FAMEPAK	12,311	434,042	52
PLOMELEC	2,934	120,029	14
C. A. P. A.	2,542	120,054	14
Other	--	94,006	12
TOTAL		635,279	100

Table 11.14 Benefit/Cost Analysis of the Interim Swine Repopulation Project

Project Budget	Households	Incremental Income	Net Benefits
1 878	--	--	-878
2 1509	--	--	-1509
3 2085	--	--	-2085
4 2000	--	--	-2000
5 1333	31000	5,890	4557
6 1000 *	58000	11,031	10031
7 -	83000	15,770	15770
8 -	109000	20,710	20710
9 -	135000	25,650	25650
10 -	161000	30,590	30590

Internal Rate of Return is greater than 50 percent.

The increase in household affected by the project is estimated based on field survey of actual distribution of piglets from the brood sow herd established by project funds.

The estimate of benefit stream is based on estimates made in Table--.

* the amount proposed for amendment III.

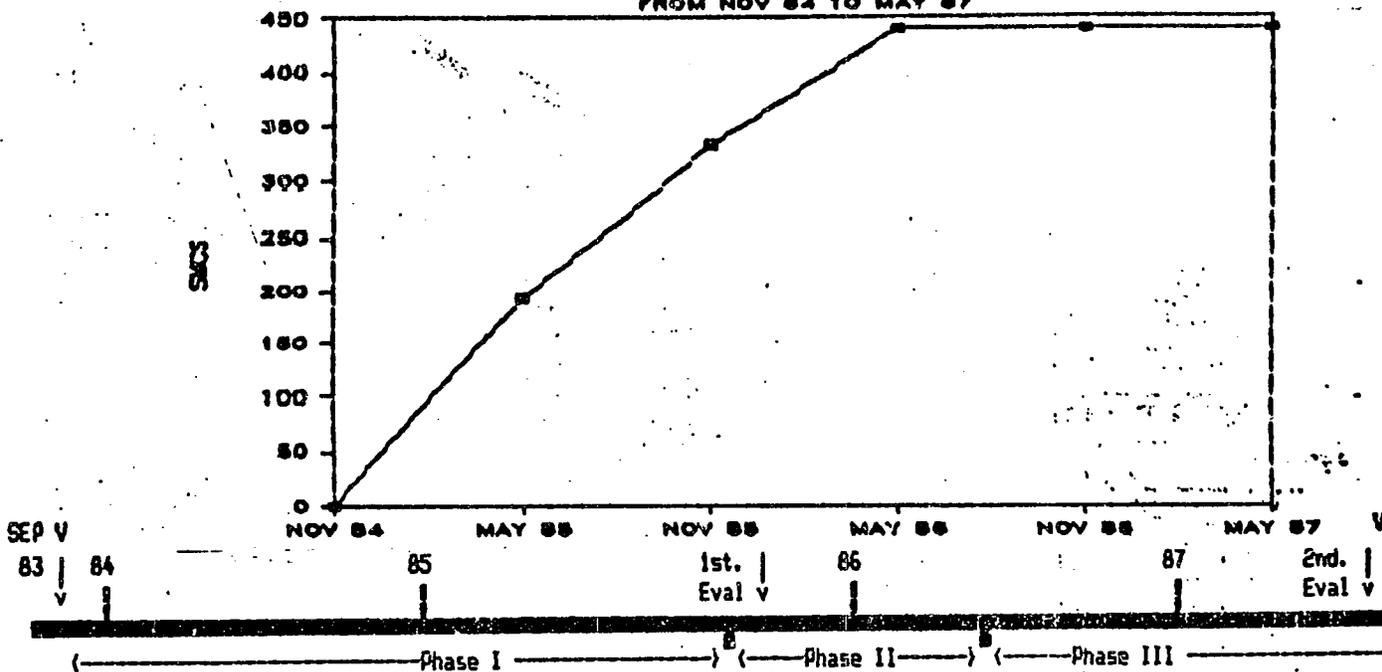
12. FIGURES

- 12.1 Map of Sites of Secondary Multiplication Centers and Peasants Interviewed by the Evaluation Team (Listing follows)
- 12.2 Veterinarians Associated with the IICA Interim Swine Repopulation Project Correlated with the Establishment of Secondary Multiplication Centers (SMCs)
- 12.3 Project Household Impact by Sows to SMCs Distribution
- 12.4 Time Line of Animal Health Activities under Project Extension
- 12.5 Work Plan for Cost/Benefit Study and Management Trial.
- 12.6 Time Line Extension Activities under Project Extension
- 12.7 Work Plan for Economic Analysis of Peasant Swine Operation

Figure 12.2

Veterinarians Associated with the IICA Interim Swine Repopulation Project Correlated with the Establishment of Secondary Multiplication Centers (SMCs).

No. SMCS
FROM NOV 84 TO MAY 87

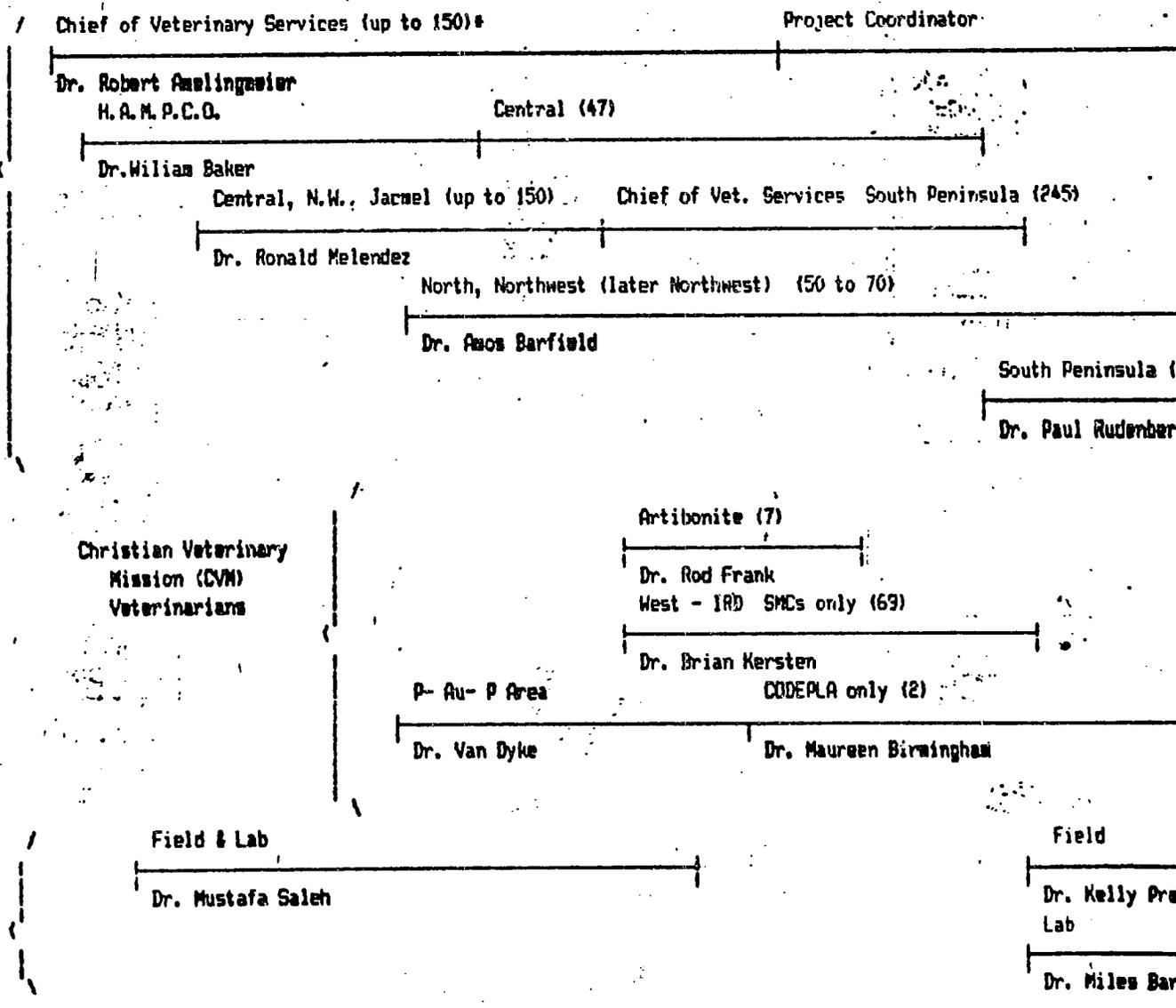


IICA EMPLOYEES

 SWINE REPRODUCTION AND REPOPULATION (SMCS)

 DISEASE MONITORING (NON SMCS)

 USDA EMPLOYEES



1234

Figure 12.3

Project Household Impact by Sows Distribution to Smcs.

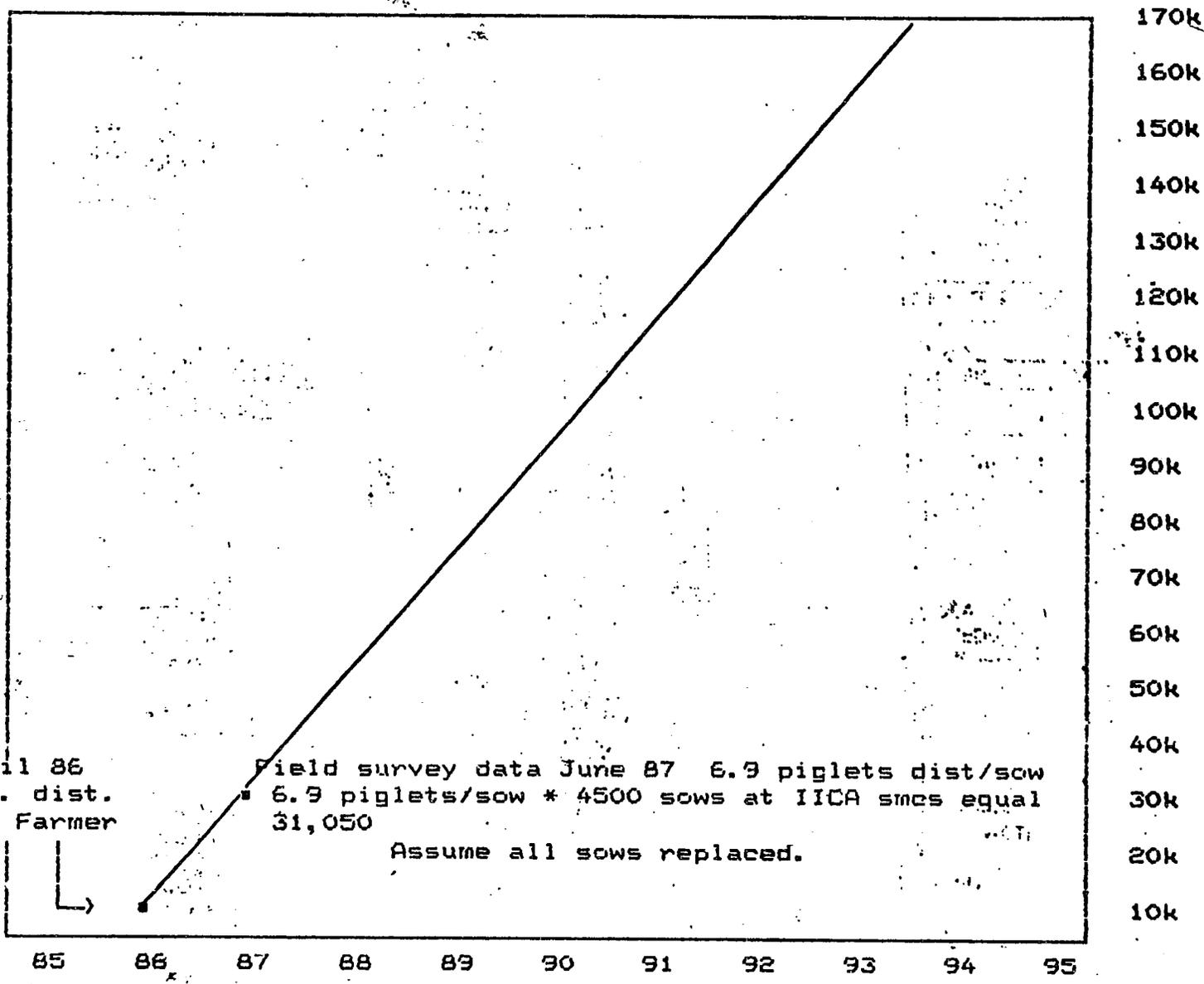
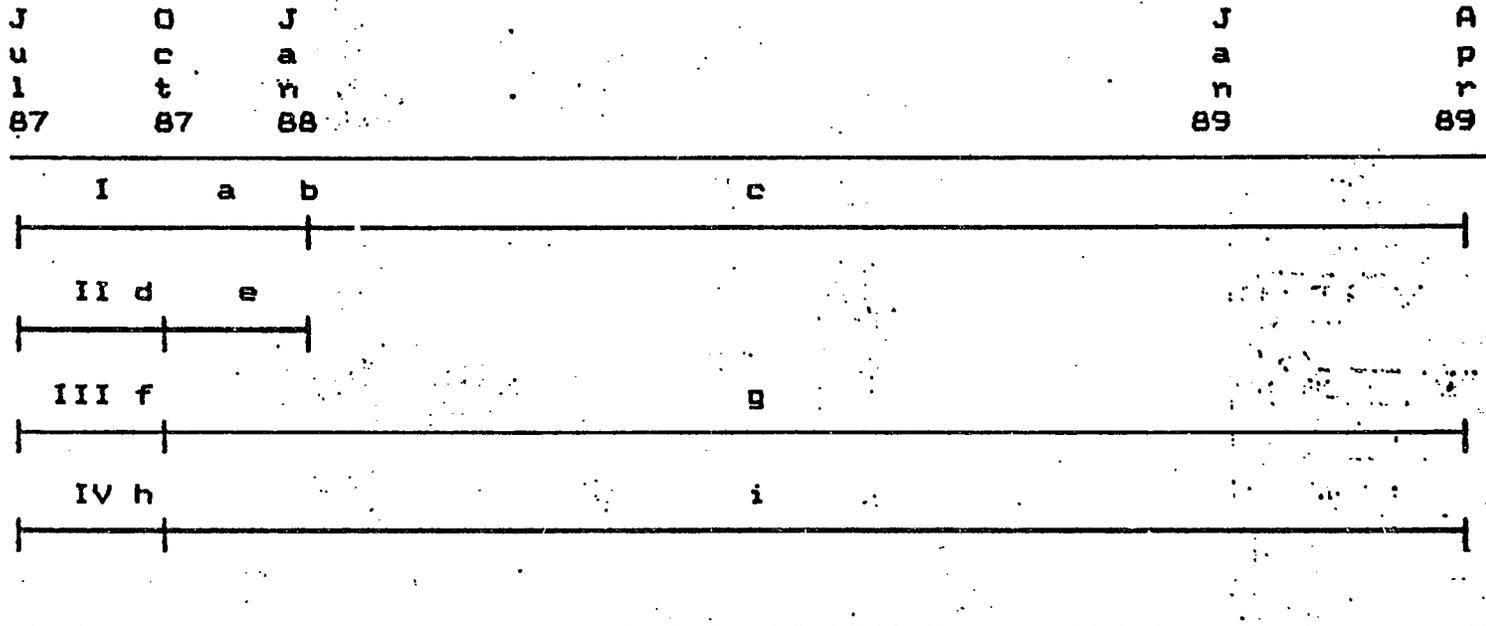


Figure 12.4

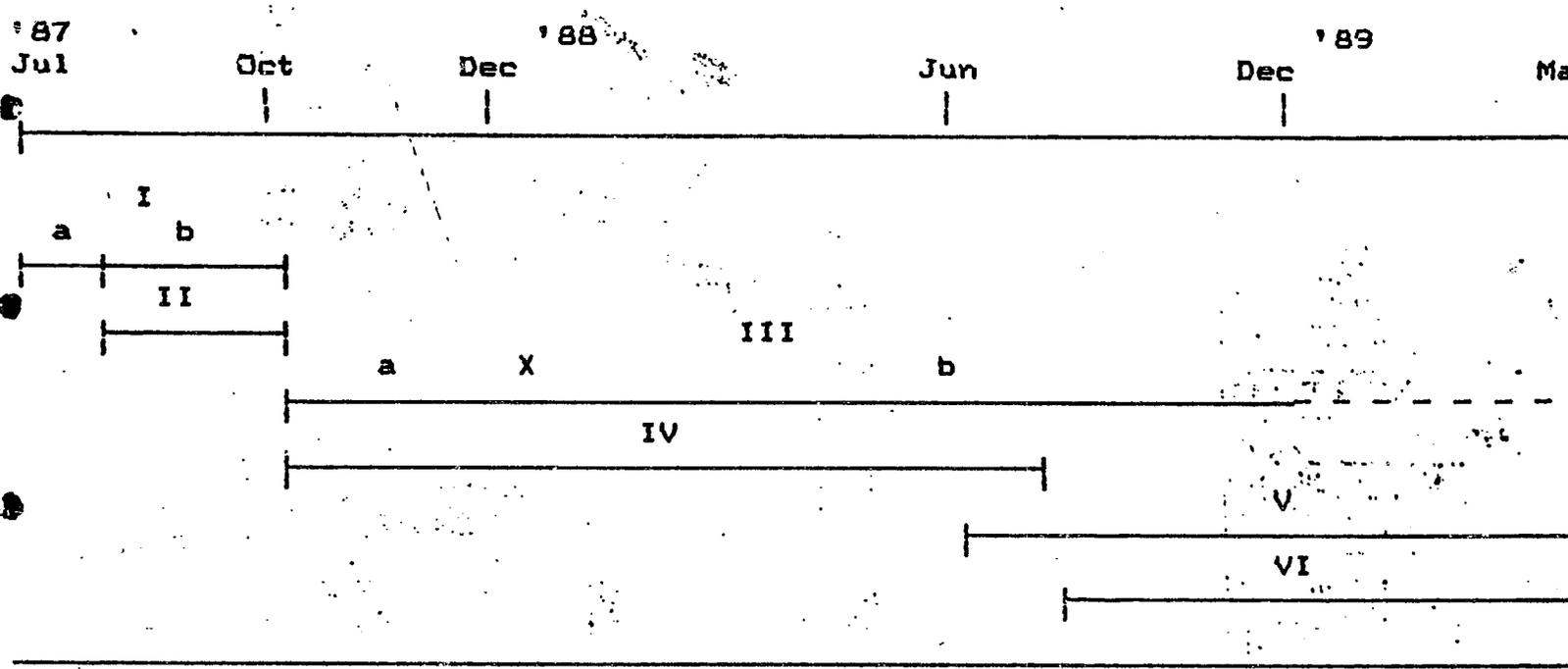
Time Line of Animal Health Activities under Project Extension.



- I.
 - a. Extension services to all peasants on preventive veterinary medicine, and judicious use, and appropriate handing, and storage of drugs.
 - b. Administer survey questionnaire to access response.
 - c. Make changes in extension information as indicated.
- II.
 - d. Transfer of remaining ISRP medicines, and supplies to UNAPEL; nurture UNAPEL pharmacy network.
 - e. Continue to nurture UNAPEL.
- III.
 - f. ISRP field veterinarians design an interim animal health monitoring system.
 - g. Implementation of above system.
- IV.
 - h. Critically assess the feasibility of national veterinary diagnostic lab, and motivation of MOA personnel regarding it's establishment.
 - i. Support establishment of above lab.

Figure 12.5

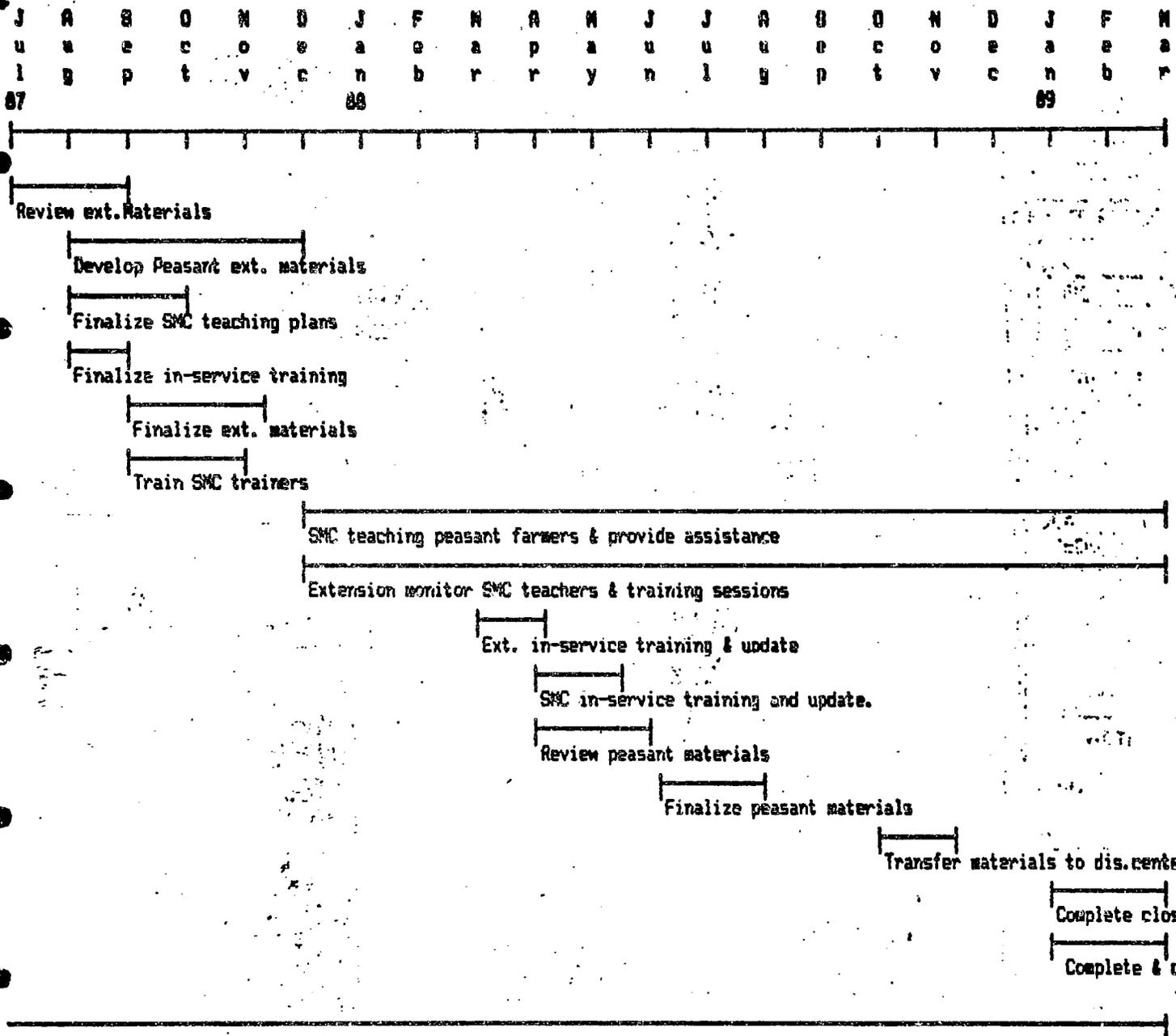
Work Plan for Cost/Benefit Study, and Management Trails.



- I. a. Agreement with IRD & CODEVA. Evaluation of Centers (2) facilities.
- b. Adaptation of facilities for feeding and demonstration trials.
- II. Identification, selection & agreement with SMCs (6) in each area.
- III. a. Observing and recording regular feeding and management at 2 Centers.
- b. One year (up to 15 months) work on feeding and management trials.
- IV. Data collection and periodic analysis of information (cost/benefit study).
- V. Demonstrations & dissemination of improved adapted technology.
- VI. Cost/benefit analysis. Final report and evaluation.

Figure 12.6

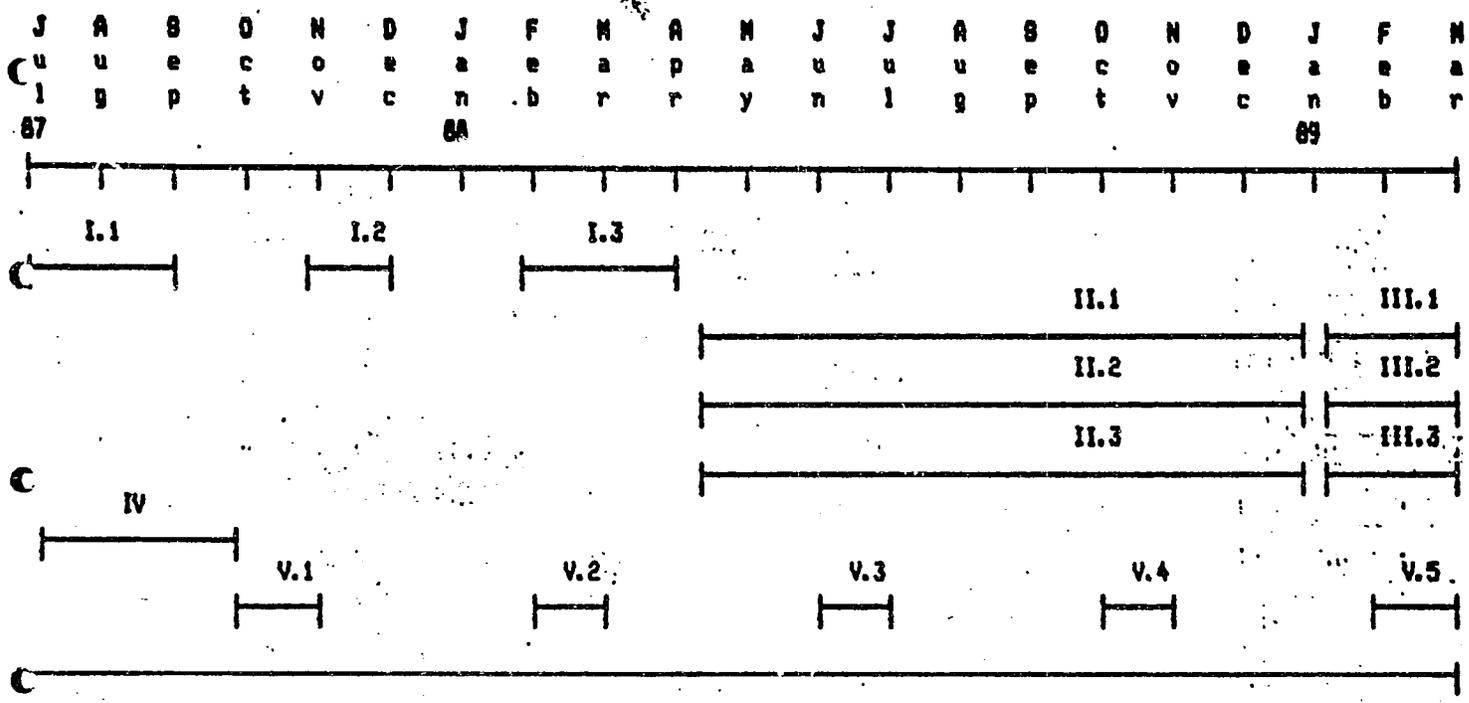
TIME LINE OF EXTENSION ACTIVITIES UNDER PROJECT EXTENSION.



127x

Figure 12.7

Work plan for Economic Analysis
of Peasant Swine Operation



- I.1. Establish field methodology for economic analysis of production marketing systems for peasant's swine operations. Benefit cost studies would be done in collaboration with nutritionists assigned to the project. Collection baseline economic data on peasant economy, and their interface with the market.
- I.2. Follow-up visits to peasant households, and key markets to obtain cross sectional data.
- I.3. Final follow-up visit to households, and markets. Conduct feasibility studies, and recommend pilot projects; II.1; II.2.
- II.1. Pilot project on establishment of feeder pig markets in two target areas; e.g. South and Southwest (see section 8.7 of report)
- II.2. Pilot project on meat processing, technology and marketing; target two or three demonstration sites (see section 8.7 of report)
- II.3. Pilot project on "country buying stations-contract marketing for slaughter hogs" in two or three site locations (see section 8.7 of report)
- III.1-III.3. Evaluation of Pilot projects
- IV. Macroeconomic studies of feed, pork imports and competition in processing industry.
- V.1-V.5. National market data collection.

13. APPENDIX

- 13.1 Scope of Work for Evaluation Team
- 13.2 Evaluation Team Work Plan
- 13.3 Revised Scope of Work for Harriet Paul
- 13.4 Trip Report by Harriet Paul,
"The Sociological Impact of Swine
Production on Public and Private
Sector Institutions."
- 13.5 Creole Language Extension Bulletins and
Booklets Published by ISRP
- 13.6 IICA/USAID Swine Repopulation
Evaluation Survey

I. BACKGROUND INFORMATION

The project was designed in 1983 to serve as a bridge between the eradication of the island's swine and the start of a national swine industry development project which was to be funded by the Interamerican Development Bank. The project has been amended two times and is in its fourth year of implementation. The main activities of the project are swine production, health, disease monitoring, extension, feed subsidy, and local feed development. The Interamerican Institute for Cooperation in Agriculture (IICA) is the implementing agency and works with private voluntary organizations to carry out the activities. The project is scheduled to terminate in September 1987, and an amendment to extend the project for two years is currently under Mission review.

II. OBJECTIVE

To conduct an in-depth evaluation that will identify and assess this activity's accomplishments, progress, problem areas, constraints, and recommend strategies for future activities. It is felt that an evaluation is warranted at this time in order to determine overall progress to date, particularly with regard to the SMC component, but also to review, assess and develop a strategy with regard to the increasingly important extension and nutrition aspects of the project which will receive major attention in the activity's new and expanded next phase.

III. SCOPE OF WORK

The evaluation team will consist of an Agricultural Economist, Animal Nutritionist/Production, Livestock Veterinarian, Anthropologist, and Rural Development Specialist. The Agricultural Economist will serve as team leader for the evaluation team. These specialists will work as a team with designated USAID/Haiti staff members. Dr. Raul Hinojosa, Livestock Advisor, AID/W, will also participate in the evaluation to provide background information and assist the evaluation team.

The evaluation team will carry out the following tasks in the course of the evaluation. The scope of work has been divided into specific areas to assist the evaluation team in developing their plan of action to carry out the evaluation.

A. Evaluation Team Workplan

Based on the review of the background documents and interviews with IICA, MARNDR, and USAID personnel, prepare a work plan on how the evaluation will be conducted.

D. General Scope of Work for Evaluation

1. Project Paper and Amendments.

- a) Determine whether the original project paper logframe components are still valid and whether current activities will allow achievement of project objectives. If necessary, develop new objectives and benchmarks which can be attained within the framework of the new project paper amendment.
- b) Assess whether the recommendations from the last evaluation were implemented and produced the expected results?
- c) Assess the effectiveness of the alternate feed development strategy developed under the project.
- d) Examine and evaluate the feed subsidy component. Provide information on its positive as well as negative impacts.
- e) Determine the extent to which the absence of the IDB swine project has had an impact on ISRP and National Swine Herd.
- f) Examine the Port-au-Prince feed mill with respect to its future role and impact on the SMCs.
- g) Since the Initial Environmental Examination (IEE) was negative assess the extent to which there were any significant impacts during project implementation? How were or are these impacts being dealt with?
- h) Determine if the rate of expenditure for project inputs is proceeding as planned.
- i) Assess whether the project's inputs objectives have been achieved/implemented as planned.

2. Project Components.

Assess progress to date in the achievement of project objectives b IICA.

a) Training:

- i) Assess in-depth the project's in-service training component. The assessment should include but not be limited to the following:
 - appropriateness of pedagogical materials and approaches developed under the project;
 - number of farmers who have received training;

- course content and approach;
- trained staff capability;
- future training requirements;
- effectiveness of training in terms of information transmitted to and retained by participants, and the extent to which such information has been retained and has had an impact on practice.

b) Extension:

- i) Identify and evaluate the effectiveness of extension activities at the SMC level. Possible areas to examine are:
 - staffing;
 - methodology;
 - production of materials, acceptance and application.

c) Commodities:

- i) Assess procurement and usage of commodities under the project. The assessment should include but not be limited to the following:
 - appropriateness of equipment, medicines and supplies;
 - storage facilities and equipment maintenance.

d) International IICA Technical Assistance:

- i) Examine the technical assistance component:
 - performance in accordance with terms of reference, significant contributions;
 - adequacy of staffing levels;
 - future T.A. requirements;
 - T.A. projections under Project Paper Amendment No. 3;
 - evaluate work plans and identify work priorities.

e) SMC Development:

- assess the success of overall SMC activity;
- reasons why some SMCs did not perform as expected;
- the future role of the SMC - in the project as well as outside the project;
- adequacy of SMC criteria;
- number of SMCs currently giving away or selling their piglets; reasons why in each case;
- arrangements whereby peasants receive pigs from SMCs; Is it an equitable system?
- are there requirements to the peasants that they build special housing or use special food?
- level of veterinary services and animal husbandry instructions provided to the farmers from the SMCs.

f) Relative satisfaction of peasant farmers to pigs and overall program; why or why not in each instance?

g) Estimate total number of pigs by September 87; by SMCs; by farmers; by private sector.

h) Estimate tons of feed mixed and distributed by project.

i) Examine alternate feed packages developed and extended. Describe and evaluate their efficiency.

j) Other developmental activities started as a direct result of the establishment of SMCs. What other linkages exist between SMCs and concurrent NGO development activities undertaken by the same organizations?

k) Miscellaneous.

- Assess extent to which women participated in the project and whether their participation or non-participation affected project achievements?
- Examine the current constraints to the long-term success of the project. These include national feed supply, national veterinary services, marketing of pork products, and contraband goods.

- Examine PP Amendment No. 3 under review by the Mission and provide recommendations whether this is the appropriate strategy to follow.
- Evaluate the organization and efficiency of the IICA project office.
- Assess the effectiveness of the Project Coordinating Committee, i.e., its performance in terms of facilitating coordination between USAID, USDA, IICA, and MARNDR.
- Evaluate the impact of the redesign work done during project implementation. Areas to examine are the continuation of the feed subsidy, the price and scarcity of wheat shorts, elimination of the regional feed mills, and the de-centralization of the SMCs.

C. Additional Specific Areas to be Examined by Individual Evaluation Team Members

1. The Agricultural Economist/Team Leader.

- a) Assess the data collected under the project, and its use by project management for project monitoring.
- b) Conduct a financial and economic analysis of pig raising at representative SMCs and at the peasant level. Compare the relative B/C and recommend adjustments which will assure that peasant producers will be able to compete with more commercial producers and potentially from the importations of pork into Haiti.
- c) Based on projected benefits and costs of section b above, estimate an IRR for the project as a whole.
- d) Examine current market conditions for piglets, castrates and pork, and determine the absorbing capacity of the Haitian pork market. Given the evaluation of the repopulation effort, what is the size of the herd required to meet national demand?
- e) Recommend marketing strategies that might be followed for maximizing on farm income demand from pig raising.

2. The Livestock Veterinarian

- a) Assess the impact of the veterinary services performed under the project and determine the average number of SMCs visited per week per veterinarian.
- b) Evaluate the health care received by the SMCs to determine adequacy.
- c) Assess whether the number of veterinarians assigned to the project has been adequate.
- d) Determine if diseases were diagnosed and investigated on a timely basis and remedies recommended and applied.
- e) Assess the extent to which the veterinarians carried out proper surveillance activities, i.e., oral or written methods, check lists, reports, documented visits to SMCs, etc. Provide recommendations as necessary.
- f) Assess the effectiveness and the appropriateness of on-the-job training given by the veterinarians to project staff, i.e., who received training - extensionists, SMC managers, peasants.
- g) Evaluate each veterinarian's past and current work plans and make recommendations.
- h) Determine whether medicines and veterinary supplies are ordered on a timely basis and whether they are accepted by the peasants and SMCs.
- i) Determine whether a qualified veterinarian was recruited to evaluate the veterinary services as a consultant per last evaluation recommendation.
- j) Assess working relations and coordination between the ISRP veterinarians, MARNDR veterinarians, and private and public sector veterinarians. Has it improved since the last evaluation?

3. The Animal Nutritionist/Production

- a) Examine SMC management plans and assess their quality and application.

- b) Assess performance of the three breeds of swine chosen for production characteristics under the project. Did they perform as expected?
- c) Evaluate husbandry methods being implemented by the producers listed below, and provide recommendations:
- peasant farmers who comprise the majority of the swine farmers;
 - small commercial producers, e.g. SMCs;
 - large commercial producers, e.g. the HAMPCO types.
- d) Evaluate the commercial swine feed situation.
- e) Assess extent to which the high technology approach required at the SMC level to maximize pig production was successful and whether this technology has been transferred to the farmer?
- f) Recommend future actions in areas of animal husbandry.
- g) Evaluate the work being done on local alternate feed sources that the peasant farmer could produce himself. Assess extent to which the project has produced nutritionally acceptable diets from local by-product feedstuffs. If not, determine when they will be available.
- h) Determine what happens to the castrates. Are they sold, given away, etc. Give reasons why for each case. Determine market weight and production costs.
- i) Assess the impact on piglet production due to recent insufficient quantities of wheat shorts to the SMCs. Determine how the project has responded to this crisis.
- j) Assess the local swine feed resources, as to:
- the present and potential availability of local feeds, e.g. protein, feed grains, or alternative feed stuffs to sustain a reasonable size national herd;
 - the potential of augmenting the production of feed grains, such as: corn, sorghum, etc., that would not compete with human consumption;

- the present function of the Swine Repopulation Project's feed manufacturing system, such as:

- ration formulations (protein, grains, by-products);
 - mixing capacity of the project's feed mill in relation to the needs of the SMCs and farmers, i.e., how much mixed feed could the mill possibly supply? Are there enough raw feed stuffs available to operate at 100% capacity?
 - feed distribution system;
 - continuity of milling operations after the end of project, i.e., public or private sector, coops, etc;
 - should one, both, or neither feed mixers be kept in Port-au-Prince or in different parts of the country? Consider availability and transportation of feed stuffs to sites outside Port-au-Prince.
- the short and long term swine feed solutions within the Haitian environment, i.e., U.S. feed grain imports (positive and negative effects), stimulation of local commercial production (how would the cost of producing these grains compare to imported grains), stimulate Haitian pig farmers to produce some of their own feed stuffs.

4. The Rural Development Specialist and Rural Anthropologist.

These two individuals will work together to fulfill the Scope of Work listed below.

- a) Determine if training and extension materials have been accepted by project recipients.
- b) Evaluate the effectiveness of the publicity campaign and provide recommendations.
- c) Evaluate the pamphlets produced and distributed by IICA; their acceptance, usage, continued value, etc.
- d) Determine survival rates for ISRP pigs by interviewing farmers. Assess farmers preferences, dislikes and the level of management required for peasants to raise pigs. Please include the following:
 - describe and analyze the constraints to peasant pig production today, given local feed availability and husbandry requirements of the imported breed.

- characterize the level and dynamics of peasant demand for pigs today.
 - describe and analyze the beneficiary population and the benefits received under the project.
- e) What is the role of the pig in the Haitian economy? Is color an important factor? Are any other phenotypes characteristics considered important by the Haitian peasant? What is the cultural significance of any such preferences?
 - f) Determine whether the peasant farmer has 4 to 8 times more pork to sell or eat than in the past, as envisioned in the project design.
 - g) Assess extent to which project participants believe pig distribution has been equitable or inequitable. List reasons why for each case.
 - h) What further adjustments are appropriate for project pigs to adapt into the typical Haitian peasant farming system?

IV. SELECTION CRITERIA FOR TECHNICAL SPECIALISTS.

All personnel should possess the following:

1. Experience in developing countries.
2. Experience in the preparation, coordination and production of reports, studies, and evaluations.
3. Working knowledge of French or Creole desirable.
4. Extensive knowledge and experience in their respective fields of expertise.

V. REPORTS

An evaluation report following AID Evaluation guidelines is required. The report will include evaluation analysis, findings and recommendations in accordance with that requested in the Scope of Work presented in Section III, and other additions as may be deemed necessary by the USAID/Haiti Project Officer. The evaluation team is to submit three copies of their draft report to USAID/Haiti prior to their departure from Haiti. IICA will assist the evaluation team by providing the necessary logistics, i.e., typing and photocopy support.



MEMORANDUM

REPRESENTATION EN HAÏTI

No. AC/HT-0518
Date May 29, 1987

A : Cisco Ruybal, USAID/HAÏTI
Percy Aitken-Soux, IICA/HAÏTI

De : Gregory Sullivan

Sujet : Work Plan for Evaluation Team of Haiti Swine Repopulation Project

The following itinerary is planned for site visits to project sites of SMCs where pigs have been placed:

Friday, May 29th

- Morning: Team meeting in IICA
- Afternoon: Team meeting with USAID

Saturday, May 30th

- Field visit to SMCs in Cul-de-Sac and St-Marc

Sunday, May 31th

- Day off - prepare for travel on Monday

Monday, June 1st

- Morning: Leave Port au Prince at 7:00 A.M.
Visit 2 SMCs in Petit-Goâve
- Afternoon: Visit 2 SMCs in Fond-des-Nègres
Overnight in Les Cayes

Tuesday, June 2nd

- Morning: Leave 7:00 A.M. for the West to UNICOR's SMC's and visit
2 MSC's and peasants
- Afternoon: Visit 2 SMC's of UNICOR
return to Les Cayes, overnight

Wednesday, June 3rd

- Morning: Visit 2 SMC's and peasants of I.R.D.
- Afternoon: Visit 2 SMC's and peasants of I.R.D.
overnight in Les Cayes

.../2

INSTITUT INTERAMÉRICAIN DE COOPERATION POUR L'AGRICULTURE

DESTINATAIRE .G. Ruybal/P. Aicken-Soux..... FEUILLE No. CODE .. AC/HT-0518...

Thursday, June 4th

- Morning: Leave 7:30 A.M. for Jacmel
Visit to 2 SMC's and peasants - Jean Kern arrives
- Visit to 2 SMC's and peasants in afternoon
- Overnight in Jacmel

Friday, June 5th

- Morning: Visit 2 SMC's
- Afternoon: return to Port au Prince

Saturday, June 6th

- Morning: Personal visits to commercial operations on personal time to begin writing reports

Sunday, June 7th

- Day of rest

Monday, June 8th

- Morning: Leave at 7:00 A.M. for Gonaives to meet North team of Amos, Pierre and Matt
Travel to Gros-Morne and make visit to 2 SMC's and peasants
- Late afternoon: Travel to Port de Paix for night

Tuesday, June 9th

- Morning: Team splits and one group to East and 2nd group to West and make visit for 2 MSC's and peasants
- Afternoon: Reconvene and travel for Cap-Haitien
Overnight in Cap-Haitien

Wednesday, June 10th

- Survey SMC's in area of Cap-Haitien and Fort-Liberté
- Return to Hotel in Cap Haitien

Thursday, June 11th

- Leave for Gonaives and survey
2 SMC's around Ebenezer (Gonaives)
- Return to Port au Prince in Enery

.../3

INSTITUT INTERAMÉRICAIN DE COOPERATION POUR L'AGRICULTURE

DESTINATAIRE .. C. Ruybal/P. Aitken-Soux..... FEUILLE No. CODE .. AC/UT-0518..

Friday, June 12th

- Team convenes to discuss trip
- Personal time to write or make sites visits

Saturday, June 13th

- Personal writing and team meeting

Sunday, June 14th

- Day of rest

Monday, June 15th

- Team meetings and writing

Tuesday, June 16th

- Team meeting and writing

Wednesday, June 17th

- Team meetings and personal writing

Thursday, June 18th

- Morning: Briefing IICA
- Afternoon: " USAID

Friday, June 19th

- Team meeting and clean-up report

Saturday, June 20th

- Members of team depart



Memorandum

REPRESENTATION EN HAÏTI

13.3 Reviewed Scope of Work for Harriet Paul

No. AC/HT-0520
Date June 1st, 1987

A : Harriet Paul/Cisco Ruybal, USAID/Percy Aitken-Soux, IICA
De : Gregory Sullivan, Team Leader/Swine Repopulation Evaluation Project
Sujet : Change in Scope of Work for Harriet Paul

This Memo is a revision to Harriet Paul's Scope of Work for the Swine Repopulation Evaluation. The following duties will be performed:

1. Collect information on quantities of pork imported into Haiti for the period of 1980-1986 by product farms. Obtain prices for the products (C.I.F. prices).
Note: Kelly Preston is getting these data. Please coordinate with him.
2. Visit the Croix-des-Bouquets market and talk with sellers of pigs about marketing practices. Determine where pigs are coming from and estimate weight.
Determine price of piglets
" " " slaughter hogs
3. Make contact and visit the following:
HAMPCO, Cathy Larsen, Phone: 2-3862
FAMEPAK, Geo Francis
Get purchase prices for hogs and what problems they are having
4. Visit Ministry of Agriculture and determine what their feed policy for pigs will be. Quotas and allocation procedures need to be documented.
5. Give your analysis and thoughts regarding your original scope of work based on USDA contract and advise the team on your findings.
6. Visit two SMC's and farmers near-by using the team's questionnaire. One SMC should be in Cul-de-Sac and second in Kenscoff. Analyze results.
7. Brief Jean Kearns on her arrival.

.../2

OUTPUTS

1. Prepare a report (written) to be submitted before your departure. The report will be included in the team's final report to IICA and USAID.
2. Brief the whole team on Saturday morning at the IICA Office at 9:00 A.M.

TIME FRAME AND LOGISTICS

Work will begin on Monday, June 1st, and conclude on June 6th. Departure from Haiti on June 7th.

Logistics for travel will be provided by USAID. IICA has also offered a car and driver. Typing of report will be done at IICA.

The team is looking forward to your contributions because of your expertise in these important areas.

Thanks,

/fpd

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EFFECTS ON PUBLIC AND PRIVATE SECTOR ORGANIZATIONS

Programs For Reeducation Of The Haitian Swine Producers.

Training and Extension

Over the past four years of the "Interim Swine Repopulation Project", IICA's team of extensionists have offered a variety of seminars within their districts to SMC managers/guardians and also to the small swine producers who received swine through their local SMC. Among the training seminars were sessions on: animal health, heat detection & breeding, general production practices, feeding and farrowing/castration.

Of the SMCs and small swine farmers visited during this evaluation, the SMC managers/guardians have displayed varying levels of production proficiency which can be directly correlated to the type and number of training sessions they have attended. In some cases where the SMC manager/guardian had been trained at HAMPCO or subsequently by IICA's visiting extensionists through seminars and follow up individualized training, in spite of piggeries in varying states of disrepair, high temperatures and a growing dependence on local feed sources, the manager/guardian has learned ways by which he/she can overcome general production obstacles.

All of the farmers interviewed during this evaluation say that they have benefited from the training sessions they have attended. The SMC managers who have been through several training programs are more efficient managers. Data collected during this survey indicates that trained managers/guardians have sows farrowing larger litters, with good weaning averages. The farmers who have been through some of the training sessions, performed better during the recent dry conditions and the current feed shortage.

Specific examples of the impact training has had on swine production is sighted in the section on "Evaluation of SMCs and Small Farmers" of this report.

Educational Publications

The educational materials IICA has developed has gone through several stages of improvements. The initial pamphlets were in French, this they soon came to find, was inappropriate for their targeted beneficiary group. The next publications were produced in Creole and subsequently the Creole was revised to be more representative of the Creole spoken in the rural areas. They are currently making better utilization of graphic material which can greatly increase comprehension and retention of the educational materials. This is an excellent approach when working with a population which has a high rate of illiteracy.

Constraints to Swine Production Among the Peasant Population

One of the major constraints to swine production among the peasant

population, at this point in time, is the street price and instability of the imported feed supply while local feed sources have not been systematically developed. The small farmer's dependence on imported swine feed will ultimately limit his ability to successfully raise swine in this current market environment.

Some of the misconceptions that the new breeds must have a special pig pen and imported feed must be dispelled. One of the greatest benefits of the feed crisis has been, that it has begun to change the old concept of greatly relying on imported feeds. Slowly the farmers are beginning to realize that there are many local sources of feed for the new swine herd and sometimes constructing very basic shelters of local materials can be just as productive or more productive for the animal.

Another great constraint the farmers must cope with is the lack of an available water supply on the farm. Not only could the availability of water improve sanitary conditions of the piggeries, but it could also be very helpful in reducing heat stress among the large sows in the Cul-de-sac region. Heat stress can cause breeding problems and can also cause the sow to lose entire litters due to the lack of milk let down. Something as simple as washing the sow down several times during the day could make the difference between successful breeding and farrowing/weaning.

The Role Of The Pig In The Haitian Economy

Haiti has historically been a pork producing country, with its fried pork pieces called griot, a national dish. Traditionally, swine production has been a small farm enterprise among the rural peasant farmers. A peasant farmer's swine, not only provided a major protein source in the diet of the farm family, but it has also been the only form of security or savings account available to peasant farmers.

After the completion of the eradication program in Haiti, many farmers found themselves without this major protein source and equally as devastating, they no longer had that traditional form of security. For some of Haiti's rural peasant population who had used the creole pig in religious rites, the loss has also been felt.

Today, with the repopulation program well underway, swine farming among the peasant population is taking on much the same traditional role as it relates to their diet and the family's security.

During the course of this evaluation, some small rural farmers have expressed a desire to have a black pig. However, they have begun the process of rebuilding their swine herd with the breeds available to them now and this is addressing the pressing economic needs of his family and rural community.

An Evaluation Of SMCs And Small Farmers In The Cul-De-Sac Region

During this evaluation, I have visited an SMC in the locality of Tremble. The piggeries is constructed of plam boards with a cement floor and it has a thatched roof. This piggeries, made of these local products is in need of repairs. It has no special farrowing facility, nor does it have any special provision within the individual sow stalls to address the farrowing needs of a sow and her litter. The cost for constructing the total facility, piggerie and storage room, was a little more than \$2000. Water must also be brought in by hand from streams in the locality. An additional obstacle to successful production in this area is the high temperatures with limited vegetation in the area of the piggerie. In spite of these constraints, this SMC manager, who is not paid, has the desire and the training to be successful in this swine production.

Of the nine sows including hamsphires and mixed breeds, in addition to one boar, the average litter size of 11. They are weaning an average of 6-8 pigletts per litter. This last farrowing of 11 pigelts, took place within 24 hours of my visit, therefore, the weaning rate can not be determined.

The nine sows and one boar were received on June 21, 1985 and since that time the SMC has given out a total of 50 pigs to members of the cooperative.

This manager clips teeth, eat knotches, provides umbilical cord care, keeps them dry and clean, at the first sight of weight loss the piglets are given serum oral to prevent diaherra. The manager uses local grasses and leaves to make a dry bed for the new piglets.

The sows are fed twice a day. During gestation and non-gestation periods, they are given daily a total of 2 marmites of a combination of IICA feed, petit mil bran and IICA concentrate. During periods of lactation, 4-8 marmites are given daily and they are always given local feeds, including mangos, patate, bois domme and other tree leaves, ect.

This SMC is supported by a 135 member local cooperative. The cooperative members each donated some kind of building material to construct the SMC facility. The piggerie is also supported by the Church of God. Each member of the cooperative and other persons in the area of the SMC comes, from time to time, to work in the SMC and receive hands on training by helping to care for the animals. There fore, on a daily basis, the manager provides instruction to everyone who comes to the SMC and the village is benefiting from these practices. By the time the cooperative member receives his/her piglet, they have already been trained in general swine production practices.

Now on the other hand, lets examine a SMC in the locality of Damien. It is in no way involved with the Ministry of Agriculture. This SMC is supported by a 100 member cooperative of which each of the members had to initially pay \$12 as a membership fee. Now the membership fee has increased to \$15 per person because of the feed crisis. Only members of the cooperative are eligible to receive a piglet. The president of the cooperative is a primary school teacher who lives and works in the area of the piggerie.

The manager/guardian now working at this SMC has replaced the original manager who was fired. This new manager is paid a small salary. He has had very little training and he is not seeking any technical assistance advise. In the area of this piggerie, he can find a number of technicians, whether through IICA, the M.O.A. or HAMPCO.

This piggerie is constructed with cement blocks, it has a cement floor, a tin roof with fair ventilation. The construction allows for two farrowing compartments. Water is readily available through a main pipe with a hose system. This piggerie is constructed beneath a canope of trees and natural vegetation. Crops have been planted around the piggerie and the residue could be used as a local feed source. In spite of these assets, this SMC manager who is paid, does not have the desire or interest to become better trained so as to improve his swine production.

Of the eleven crossbred sows and two boars, the average litter size is between 9-11 piglets, with the most recent farrowing with a litter size of 11. They are weaning an average of 4-5 piglet per litter. Of this last farrowing which took place, 11 piglets were born, six have already died as a result of diaherra and other undetermined causes and the remaining 5 have not been weaned yet. This SMC received these animals on Nov. 1985 and they have established no breeding schedule.

A total of 36 piglets have been distributed to members of the cooperative and a total of 5 sows have been distributed to neighboring farmers who are cooperative members under the decentralization plan.

Also to be pointed out, this SMC has been feeding only IICA feed and wheat bran. The sows are fed 2 marmites twice a day, during gestation and non gestation periods and 3 marmites twice a day during periods of lactation. They do not utilize local feed sources.

With all of the resources this SMC has, it is obviously under producing, with the pigs in different levels of poor health, including diarrhea in the piglets and a skin disease in one of the sows.

Now, lets observe a farmer, picked at random, who received one of the sows that had been distributed through the decentralization plan. This farmer is a female and she lives in the same locality no more than an 1/8 of a mile from the SMC. The pig pen were she keeps the sow is made of a concrete and block construction and it has no roof. The natural vegetation around the pig pen creates a canope effect. At different times during the day, partial sunlight comes through the

vegetation into the pig pen. Water has to be brought in by hand and the pen has no special farrowing facilities. This sow was brought to this farmer two months ago while still gestating.

The sow is fleshy, her coat is shiny and appears to have good general health. She has farrowed, with a litter size of 10 born, one died at the time of birth and the remaining and well cared for.

On this farm, she has sow and one boar. She feeds her sow one marmite os IICA/wheat bran twice a day and she gives the sow a variety of local feed, i.e.; sweet potato, tree leaves, mangos, everything she can find during gestation and non-gestation periods. During lactation, she continues to give the local feeds and she increases the IICA/wheat bran feed to 2 marmites twice a day.

Her piglets are given iron at 3 days and 10 days and she cleans the pig pen of manure twice a day. This farmer had already received training in swine production prior to receiving this sow from vets in the area and at HAMPCO. Swine production for her appears to be off to a good start.

Therefore, for those SMC managers/guardians and small farmers interviewed, who had received training through the IICA program previous to them receiving their animals, their swine production has been considerably more successful.

The Ministry Of Agriculture's New Feed Policy For Swine

In recent months, the imported feed, which many farmers had learned to raise their new swine on was in scarce quantities. This crisis grew more severe as the availability of the imported feeds remained low and the prices rose from less than \$3 a sac for wheat bran to \$12 a sac on the street.

During this evaluation, I have had the opportunity to discuss with the Ministry's officials, their plans for a new feed policy for swine. They are currently in the process of formulating and finalizing this plan and document which will ultimately be submitted to the Interamerican Development Bank (IDB) in Washington, D.C. sometime during the first week of July. However, in the interim, they discussed with me with their new swine feed strategy.

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O.C.P.s Eligible For Swine Feed Subsidies

Under the new feed program, the MOA will provide a subsidy program to approximately 800 O.C.P.s for the purchase of a balanced commercial feed. These O.C.P.s will be working under the supervision of the Agricultural Districts. The O.C.P. member would provide for 1/3 of his feed needs, through the use of local feed sources and the MOA would in turn contribute 2/3 towards the farmer's total feed needs through subsidizing the purchase of a balanced commercial feed. Some of the ingredients will continue to be imported, however, local feed sources will be tapped to provide a percentage of the total mix.

Once the farmer markets his hog, he will repay the local peasant community organization the cash amount of the subsidy he received for that animal. In this way, the O.C.P. will have a continuous reserve of funds available to the members for subsidies. This program will be financed through IDB funds.

Expansion in the Development of Local Feed Sources.

The Government will also help in developing tubers, cereals and pseudo-cereals in volume. Units will be established to determine how these feed sources may be used in the animal's diet.

The acute problem for the MOA at this point is defining means to supply the protein and minerals which will still have to be imported. Through the identification of local mineral resources, they will be examining oyster shells, lambi shells, hoofs, etc. as possible sources of minerals.

A program of collection of cassava leaves, pois congo leaves, manioc and some legumes, i.e., velvet beans-(seasonal) and Kudzu-(a perennial, a good soil conserver and a high source of protein) will be initiated.

School children in the rural areas will be enrolled in a program of collection of avocado and mango nuts. These nuts will be used as energy suppliers. The children will be paid some small fee, perhaps \$.20 a sack for their collection work.

Another program which will be encouraged, but not financed by the IDB funds, is the cultivation and processing of the Tilapia into fish meal as a protein source. The tilapia, blood meal and cotton seed meal production will be further developed to curtail the importation of soy bean meal.

Municipal Slaughter House Improvements.

The municipal slaughter houses found in the communes near the market places are out dated. Under the proposed IDB funded swine repopulation project, these slaughter house's hygienic standards will be improved and will be subject to scheduled inspections. They hope to use these outlets as a good source of pork by products. Other by products such as manure and blood, etc., will all be recycled for other livestock and agricultural needs.

The Association Of Agricultural Producers (A.P.A.)

At the peak of the feed crisis, a committee was formed, represented by 21 agricultural associations and a representative from each of the Ministries of Agriculture and Finance. The Comite de Gestation Coordination et Distribution des Aliments Pour Betail (C.O.G.E.C.O.D.A.B.) was charged with the distribution of swine feed coming from the Minotrie.

One of the 21 agricultural associations interviewed during this evaluation was the Association Of Agricultural Producers (A.P.A). A.P.A. is an organization of local peasant cooperatives with its administrative direction lead by the Haitian private sector producers.

To fill the feed demands of A.P.A.'s small farmer and commercial needs, they calculate that 12,000 - 100lb sacs of wheat bran is needed daily. Currently, A.P.A.'s daily quota from the Minotrie is:

2,000 sacs of wheat bran -- leaving the Minotrie at --	\$2.00@
3,000 sacs of rice bran -- imported	-- \$5.70@

Many of A.P.A.'s small farmers have found the rice bran unaffordable.

This organization encourages the continued importation of commercial feed and the further development of local feed sources.

Mr. Bertrand Roy, has provided me with a copy of A.P.A.'s last distribution report which I have enclosed as Appendix #1.

The Commerical Meat Packers

Marketing of Haiti's new pork supply is key to the overall success of the restoration of the nation's pork industry. Therefore, I have discussed with Haiti's two commercial meat packers their pricing standards for purchasing local hogs and general marketing problems that exist.

HAMPCO

HAMPCO's purchase price for hogs has varied from an exceptional low of \$.55/lb. to a seasonal high of \$1.00/lb. HAMPCO's manager, Cathy Larse states that her average purchase price is \$.75/lb. This she feels is fair for both parties.

Their weight requirements range from a minimum of 190lbs - 250lb. maximum. Hogs at this weight, she says, are usually around 7 months of age. She prefers this weight and age because the meat is tender and better for processing. The only other consideration she observes is the general health appearance of the hog.

The question of imported pork products was of course raised during this interview. This is HAMPCO's position: Local pork meat, as it is currently marketed, is only for the rich. Local retail market prices for pork are as high as \$4.50/lb. If a hog

is purchased at \$.75/lb live weight, after slaughtering, an automatic 30% loss is incurred. Therefore, if the hog is purchased at \$.70/lb. or \$.80/lb. live weight, then HAMPCO sells it to the retail markets a \$1.40/lb and \$1.60/lb respectively. Any meat that the poor masses buy must be less than \$1.00/lb. For this reason, they continue to import the pork by products at a price that the masses can afford.

HAMPCO's purchase of local hogs is still very limited. Larsen states that more farmers come who want to sell their hogs than she is interested in buying. If the local supply of pork exceeds the demand at this juncture, then serious marketing problems lay ahead for the small producers.

William Kentor, the owner of HAMPCO has two major concerns: (1) Security of a stable feed supply and (2) Security from diseases entering the country.

HAMPCO is developing 50 acres of land with sweet potatoes, corn and sorghum crops. These crops are being utilized as local feed sources.

FAMEPAK

FAMEPAK's purchase price for hogs is stable at \$.80/lb live weight for hogs between 240lb - 300lb. For hogs between 300lb - 400lb, FAMEPAK pays \$.60/lb live weight. They do not buy hogs over 400lb.

Geo Francis of FAMEPAK feels that there will continue to be a need for imported pork products for the following reasons: (1) Currently, local hogs are not raised by standards, hogs can come to him with one inch back fat, 1/2 inch back fat, etc. (2) There is no established feeding program for the swine. It is difficult to find meat that has the same taste. He says that this is a problem for the meat processors working with standard chemical measurements and ending up with meats tasting very differently. He suggests that a quota system be established on the volume of imported pork products a processing company can import which would be determined by the amount of local pork the company is buying.

Mr. Francis supports the idea of expanding local feed sources and reducing the national dependence on imported feed. He wants to see the pigs back in the hands of the peasants who traditionally were the swine producers.

He advocates the expansion of extension and vet services to the peasant farmer so that they can develop healthy herds utilizing local feeds.

Recommendations

Extension and Training

The data collected during this evaluation from randomly selected small swine producers indicates that there is a continued need for strong extension services. Greater efforts should be initiated towards reeducating the small swine producer as to the variety of production styles which can be employed in raising his new herd and the flexibility he/she has with regard to expanding the local feed possibilities for this herd. IICA's training services have been helpful to the population they serve and their participant feeding program has been cost-effective.

Development Of Rural Water Systems And Reserves

Greater coordination of USAID limited resource projects designed to address some of the rural areas need for water sources through wells, pumps, etc. Also expanded communication with the MOA on development of new water reserves and welling systems. It will certainly improve the human standard of living in those rural areas and it can also serve to improve the efficiency of the repopulation of the national swine herd.

Marketing Research Initiated

A marketing study should be initiated, to determine Haiti's market capacity for local pork products and if there is a realistic export market.

Study Of Overall Swine Performance

In coordination with the marketing study, data should be collected on the overall performance of the new swine under representative production conditions. This two phased approach will provide the donor organizations and their satellites, in addition to public and private sector Haitian organizations, with the ability to realistically project the future of successful repopulation and the development of a Haitian swine industry. No such data is available to date.

Coordination Of All Existing Programs Involved In Haitian Swine Nutrition

There are a number of organizations involved in studying different aspects of swine nutrition which need to be coordinated. These organizations should be working together to maximize the effort to develop a balanced diet for swine from local feed sources.

13.5. CREOLE LANGUAGE EXTENSION BULLETINS AND BOOKLETS PUBLISHED BY THE ISRP

From Nov. 1984 - March 1987

No. of Extension Bulletin and/or Book	Title	No. distributed/ month
17	Building Plan and Estimate of Porcherie	50
20	Disinfection of a porcherie	200
21	How you can clean	300
22	How to give feed to pigs	150
23	When to give water to pigs	150
24	Quantity of water needed by a pig in Haiti	150
31	Earnotching system for pigs	200
32	Female's heat detection	300
33	Breeding of a pig	300
34	Female's gestation period	300
35	Puberty	300
36	Selection of males	300
37	How to weigh a pig without a scale	400
63	How to prepare drinking water for pig	300
64	Disinfection of the pen with clorox	150
66	Different types of feed prepared by the Swine Repopulation Project	65
67	The plan for the breeding of the pigs	300
105	Female syndrome Mamit Metrit Agalaksi	200
106	How to take blood from a pig	200
107	How to give a pig liquid medicine which has to go in its digestive system through its nose	200
108	Piglets diarrhea	200
39	Ways to preserve pig meat: Smoking	100
123	Let's plan Amaranth	400
124	Here's the way you can preserve pig meat: Salting	100
125	With Rami, we can take a break on pig feed	400
126	Alimentary source of protein for pigs	50

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127	An alimentary source with protein for pigs: Rami	300
128	Importance of water	175
129	Consanguinity problem - blood mixture	150
130	Maternity Pen	150
131	Chat between a clean pig and a dirty pig	200
132	Tips about cleaning	200
133	Age of breeding	200
134	Maternity - Another model	100
135	What to do when piglets have diarrhea	200
139	Here is local medicine- Medicine for diarrhea	300
140	Here is local medicine- Medicine for worms	300
141	The importance of keeping a piglet warm, clean, and dry	300
142	Local Energy Sources to feed pigs	300
A2/HT 86-39 (129)	Other energy sources in Haiti to feed pigs	400
71	How you can use local feed for pigs	400
72	How to take care of a pig	100
145	Tips on breeding	300
146	Sows without milk	300
147	Pustular Dermatitis in pigs	100
149	The Sorghums	30
A2/HT 87-008 (135)	Other plants that contain protein for pigs in Haiti	400
148	Infection Atropic Rhinitis	100
A2/HT 87-011 (138)	Tips on good care of pigs	500
150	Methods of anesthesia for pigs in the field	100
151	Sorghums	400
152	Kidney Trauma	100
153	hemoragic Gastro-Enteritis in pigs	100
A2/HT 87-013 (140)	Final Report on Activities within the Swine Repopulation Project	50

11750 average per
for past 8 months si
October 1986.

INSTRUCTIONS: The team will conduct interviews of SMC's and peasants who have received pigs from the IICA program. Before starting the interview it is necessary to have the extensionists inform the person of the nature of the interview. The interview is confidential and is to be used by the visitors to learn about problems producers are facing in raising pigs.

The team will make visits to SMC's in various locations chosen by the team in consultation with IICA staff. The team wants a cross-section of SMC's. After an initial visit with the SMC manager, then the team will proceed to visit peasant households who have received pigs from the SMC.

If a household is visited that has received a pig and a person is not at home to interview, the team will record farm observations only. It is hoped that the team will interview at least two or three peasants.

For the benefit of the other team members, general notes about conditions and impressions of the site can be made in the space at the end of the questionnaire.

I. GENERAL INFORMATION (Do not ask interviewee--only observe)

Date of the Interview _____
 Name of SMC _____, Sponsor _____, Locality _____
 If this is a peasant interview, please check _____

Location: On paved road _____, on a dirt road _____
 If not on road, how long a walk? _____ min.
 Sex of owner of pig? Male _____ Female _____
 Terrain of the farm? Mountainous _____, flat land _____, dry _____
 irrigated _____, rocky soil _____,
 fertile soil _____
 Amount of natural vegetation? none _____ moderate _____ excell _____

Observe Pig Facilities:

Construction of building: ventilation of the building good _____ poor _____
 concrete block _____ tin roofs _____ thatch roof _____ palm boards _____
 concrete floors _____ other (list) _____

Facilities Inside building:

water container _____ water present in container _____
 feed container _____ feed present in the container _____
 farrowing compartment _____, separate farrowing shed _____
 pigs tethered _____ corralled _____ other notes _____

Rate Condition of the Pigs:

Fleshiness: heavy _____ moderate _____ thin _____
 Appearance of coat: shiny _____ dull _____ dirty _____
 General health: good _____ fair _____ poor _____ WHY? _____

II. PRODUCTION QUESTIONS (begin interviewing here)

1. How many Creole pigs did you have before the ASF? _____ no.
2. When did you receive your new pigs? (date) _____
3. How many sows do you have now? (ask number or observe) _____ no.
4. How many sows do you want? _____ no.
5. How many sows can you take care of? _____ no.

PICK OUT A SOW AND ASK.

6. When this sow last farrowed, how many piglets were:
born? _____ died? _____ weaned? _____
If some died, ask why? _____
7. Record the number of sows to the number of boars? _____
8. At what age do you breed your sow? _____ (months)
9. What kind of feed do you give your sows? (may check more than one)
IICC feed _____ local feeds? What? Sweet Potato _____
only wheat shorts _____ Rame _____
only rice bran _____ tree leaves _____
mangoes _____
Other feeds? (list) _____
- 9a. Ask list of local feed in dry seasons _____
10. How many times per day do you feed your sows? 1 __, 2 __, 3 __, 3+ _____
- 10a. How often do you give water to your pigs? 1 __, 2 __, 3 __, 3+ _____
11. FOR SMC'S, how much feed per day during gestation? _____ lb./marmite
12. FOR SMC'S, how much feed per day during lactation? _____ lb./marmite
13. What care do you take for the sow during farrowing? (don't read)
clip teeth _____, ear marks _____, umbilical cord _____
other? _____
14. Do you provide extra care of piglets during lactation? Yes ___ No ___
What? _____
15. At what age do you wean your pigs? _____ weeks or _____ days
16. Do you keep records of your litters? Yes ___ No ___

III. SOCIOLOGICAL QUESTIONS

17. FOR SMC, How many piglets have you distributed? _____
18. FOR SMC, How many sows have you distributed? _____
19. FOR SMC, How do you decide who gets pigs? _____

- 19a. Has distribution of pigs been fair?
no _____, why not? _____

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yes ____, why? _____

20. What physical characteristics do you prefer in your pigs?

Ask: Color? _____ Why? _____

Probe: Others Characteristics? _____

21. What kind of training have you had? (For SMC's and peasant)

	<u>no. of sessions</u>	<u>For SMC only, No. of Farmers</u>
Animal health	_____	_____
Heat Detection/ Breeding	_____	_____
Production	_____	_____
Feeding	_____	_____
Other (list)	_____	_____
	_____	_____
	_____	_____

21a. Have you received any extension bulletins/manuals on swine production/issues? No ___ Yes ___; if yes, list topics and numbers of each: _____

Have you used these materials? Yes ___ No ___

If no, why not? _____

Have other people (family, neighbors) used them? Yes ___ No ___

Try to determine the number of others? _____

Do you still have the material? Yes ___ No ___

If no, why not? _____

21b. Is your life better since you got these pigs? Yes ___ No ___

If yes, why? _____

If no, why not? _____

21c. What does having a pig mean? _____

Do you eat more pork now? Yes ___ No ___

Do you have more money? Yes ___ No ___

If they have extra money, how do they use it?

(Probe if person cannot remember) Check one: housing ___,

clothing ___, festivals ___, more pigs ___, more feed ___

other (what?) _____

- 21d. Has the diatribution of pigs been fair?
 if Yes, why? _____
 if no, why not? _____
- 21e. Ask if person has benefitted in other ways by now having pigs
 and being trained in pig raising? _____

IV. ECONOMIC QUESTIONS

22. FOR SMC, How many people work at this facility?
 full time _____ (includes mgr.)
 part-time _____
23. FOR PEASANT, How many people assist you daily in pig raising?
 family? _____ How many hours per day? _____ hrs./min.
 other? _____ How many hours per day? _____ hrs./min.
24. In the month of May, how much have you spent on:
- | | | |
|------------|-----------|-------------|
| medicine? | GDS _____ | or \$ _____ |
| feed? | GDS _____ | or \$ _____ |
| Shelter? | GDS _____ | or \$ _____ |
| Labor: | | |
| hired? | GDS _____ | or \$ _____ |
| SMC-mgr? | GDS _____ | or \$ _____ |
| part-time? | GDS _____ | or \$ _____ |
25. What was the cost 'to build your piggerie? \$ _____
26. Have you incurred a debt related to having your pigs? Yes ___ No ___
 If yes, ask how much? \$ _____
 To whom? Neighbor _____ Sponsor _____ Bank _____
27. Have you sold any pigs? Yes ___ No ___ Number? _____
 What type of animal sold?
- | | | |
|----------|----------|---------------|
| Piglets | \$ _____ | or GDS. _____ |
| Gilt | \$ _____ | or GDS. _____ |
| Sow | \$ _____ | or GDS. _____ |
| boar | \$ _____ | or GDS. _____ |
| castrate | \$ _____ | or GDS. _____ |
28. Where did you sell your pigs? village ___ market ___
 If at the market, ask how far to the market? _____ time
29. Do you have any problems in selling your pigs? Yes ___ No ___
 What? _____

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