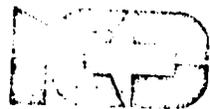


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Industry Council for Development

THE DEVELOPMENT OF A NATIONAL SEED SYSTEM IN
H A I T I

ICD Advisory Mission Report
3-10 May, 1986

Submitted to:

Chief - Rural Development Office
The United States Agency for International Development
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ICD Advisory Mission to Haiti

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I.

Introduction

A. Purpose of Advisory Mission

During the past 18 months, USAID has been promoting and supporting the development of a National Commercial Seed Industry in Haiti. Toward that end, it has engaged the technical and institutional assistance of the Industry Council for Development (ICD), a noncommercial international development organization.

Early in 1985, ICD was requested to assess the potential for the development of a commercial seed industry in Haiti. ICD concluded that the prospects for such an industry were excellent provided that:

- * a policy framework clearly delineating the respective roles of the public and private sectors was established and adhered to, and
- * adequate technical, financial and institutional assistance was made available.

ICD recommended that USAID assist the Haitian private agricultural sector and the Ministry of Agriculture undertake a joint public/private sector effort to build a national seed system around a vigorous commercial seed industry. ICD was then asked to propose a national seed system model appropriate to this task in Haiti.

In October, 1985 ICD submitted a report to USAID/Haiti which assessed the current Haitian seed system, presented a public/private sector seed system model for Haiti and provided detailed recommendations in the form of an action plan aimed at implementing the program for the private sector, the Ministry and USAID. USAID accepted these recommendations and distributed them to the ministry and key agricultural producers who had expressed interest in entering the seed business. Although - measured on the scale of agricultural development in Haiti - substantial progress was made, political turmoil and successive ministerial changes during the early months of 1986 worsened the agricultural investment climate and slowed implementation of ICD's recommendations. In order to recapture and sustain important momentum, an ICD advisory mission was requested to return to Haiti in May, 1986 to follow up on previous recommendations and to provide specific technical assistance to agricultural entrepreneurs interested (or already involved) in seed testing, production, processing and marketing.

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Annex III.* Protocol on maintenance and multiplication of basic seed (principally La Maquina from CIMMYT but also applicable to rice, sorghum and beans.

Annex VI.* List of small scale seed processing equipment manufacturers.

Annex V.* Guidelines for simple, non-laboratory seed vigor tests.

Annex VI.* Protocol on drying of maize and rice seed.

Annex VII.* Protocol on commercial maize and maize seed production.

- To follow under separate cover.

* * *

B. Terms of Reference

The ICD team consisted of:

Dr. Alexander Grobman - ICD Senior Associate and Seed Industry Expert Advisor, and

Mr. Michael Carella - ICD Program Officer.

Their terms of reference were to:

- 1) Brief the new Minister of Agriculture and his staff on the concepts, required policy framework, institutional changes and technical support required for the establishment of a joint public/private sector National Commercial Seed Industry.
- 2) Brief interested members of the private sector in the participatory role they should play in the testing, production, processing and marketing of high quality seed of improved varieties.
- 3) Secure the understanding on the part of the public and private sectors of the proposed action plan which was presented in ICD's report of October, 1985.
- 4) Through discussions with the Minister of Agriculture, private sector representatives and USAID develop follow-up actions facilitating implementation of the action plan.
- 5) Provide hands-on technical guidance to seed growers in the production and processing of maize seed material, specifically: a) equipment selection for planting, harvesting and processing, b) techniques for processing, treating and storage of seed material and c) simple but reliable tests for determining seed viability.
- 6) Develop (suggest) a program for training Haitian seed growers in all aspects related to the production of (certified) seed material including processing and treating techniques. Toward this end, a scope of work may be developed for a hands-on experienced seed producer who would be responsible for executing the training program.

C. Methodology Employed

The mission employed a system of interviews, briefings, discussions and field visits with ministry officials, members of the private agricultural sector, farmers and USAID officials in order to determine what had changed since the last ICD visit, and what must yet be done to facilitate implementation of the previous recommendations and action plan. These contacts were facilitated by the rural Development Office of USAID/Haiti.

At the end of its mission, the ICD team briefed the USAID Mission Director, his staff and the Minister of Agriculture on its findings. The mission report was then prepared in New York, and officially submitted to the chief, Rural Development Office USAID/Haiti.

D. Background on USAID/ICD Cooperation

The Industry Council for Development (ICD) is a non-commercial international development organization which assists priority economic and social development efforts by contributing, on a non-commercial basis, expertise from international industry to projects and programs of developing country governments and bilateral and multilateral development agencies. Members include some forty-three companies from fifteen countries which support the objectives and principles of ICD and agree to make managerial and technical expertise available to Council activities as a contribution to the development process.

In 1980, ICD received a grant from USAID to assist governments design commercial seed industry strategies and programs. ICD's principal resource in these activities has been the knowledge of executives and managers from established seed companies operating in the U.S., Europe and the developing world. In 1984 USAID expanded this grant to encompass a wider range of agribusiness development activities, and ICD has assisted governments of countries in Asia, Africa, the Caribbean and the Far East under this program. ICD is currently working directly with several USAID missions on a variety of seed industry and other agribusiness development activities.

E. Acknowledgements

Among the many individuals who assisted the mission, we would like to thank the Rural Development Office, USAID/Haiti and in particular, Abdul H. Wahab, Agricultural

Development Officer, RDO for the organization of the itinerary and the warm hospitality offered the mission by he and his wife. In addition, the mission thanks Minister of Agriculture Mr. Gustave Menager, for twice making time to meet with the mission; John Currelly of Agro Service, S.A. for providing the mission with round trip air transportation to Cap Haitien, and Marc Eddy-Martin, USAID/Haiti for facilitating the mission's assessment of conditions in the Artibonite Valley.

II. Executive Summary

ICD believes the recommendations and action plan (Annex II) presented in its report of October, 1985 continue to be entirely valid and appropriate. Although important progress has occurred in seed production and marketing since September, 1985 - particularly with maize seed - the mission feels that the greatest need is to facilitate the adoption of the overall plan while the momentum to do so remains strong. This especially applies to a policy statement from the Ministry, binding on future administrations, to the effect that the private sector will have the primary role in the production, processing and marketing of commercial seed.

The mission assessed the current situation for the establishment of a national commercial seed system in light of the changes which have occurred since ICD's last visit (section III). An account of the technical assistance which the mission provided private seed growers, the ministry and USAID is found in section IV. Below is a summary of the urgent action required to take advantage of the initial momentum in seed production in Haiti, and move the recommended program forward (section V).

A. Ministry of Agriculture

The present Minister of Agriculture must make a policy declaration on the roles which the public and private sectors are expected to play in the Haitian seed industry. The sooner this is accomplished, the more difficult it will be to alter the major tenet of the policy - that the private sector is the primary vehicle for the production and processing of commercial seed - in the future.

The Minister, or an assistant directly responsible to him, must maintain responsibility for the coordination of research and extension. Delegating this responsibility to the Faculty of Agronomy and Veterinary Medicine is unwise.

The Minister should work closely with SOFHIDES and USAID to establish specific lines of credit for the seed industry as access to sufficient credit is a major obstacle to new seed enterprise development.

The SECOSAM facilities require approximately \$5,000-10,000 of repairs and equipment in order to be operational for the next season. The Ministry must find a way to complete these repairs and make the plant available to private growers. A similar arrangement should be concluded for the ODVA rice milling and storage facilities in the Artibonite Valley.

B. Private Sector

Private agricultural producers in Haiti must draw a distinction between growing seeds under guaranteed contract, and taking the risks necessary to become a true seeds entrepreneur.

In order for producers interested in entering the seeds industry to secure the necessary credit from available sources in Haiti (SOFHIDES), they must submit more comprehensive proposals for credit-worthy ventures.

Potential seed entrepreneurs should be aware of opportunities in seed crops other than maize - i.e. beans, sorghum, pigeon peas, peanuts and rice in the Artibonite Valley.

C. USAID

A "hands-on" seeds expert to work full-time with Haitian seed growers is not needed at this time. Rather, short term infusions of technical and institutional assistance at key periods is the most effective way for USAID to utilize outside resources in assisting seed industry development in Haiti.

USAID should sponsor a joint ICD/CIAT Seed Unit (or M.S.U.) training course which will offer both technical and seed enterprise management training. This training should be followed up with a workshop on commercial seed industry management.

USAID should contribute the \$5,000-10,000 required to make the SECOSAM seed processing facility operational for the next processing season. AID should also suggest that the ODVA rice milling and processing facilities in the Artibonite Valley be made available - as with the SECOSAM plant - to private growers interested in producing rice seed.

USAID should work with the Ministry and SOFHIDES to develop special targeted lines of credit for the seed industry. In addition, AID can assist members of the private agricultural sector prepare and submit first-rate financial proposals in order to secure the necessary credit for seed enterprise activities.

USAID should take special care to promote better communication and coordination among donors and projects affecting seed industry in Haiti.

D. ICD

ICD should conduct two technical assistance missions similar to the most recent one, within the next twelve months to follow-up on implementation of the action plan submitted in October, 1985.

ICD, along with CIAT or M.S.U., should conduct a training course and accompanying workshop on seed industry technical and management training in Haiti.

ICD should also investigate the possibility of arranging short term internships for Haitian seedsmen in seed industry management training with U.S. seed firms.

Although much remains to be done, there is a great deal in the way of positive results which can be accentuated. As the following report will show, it has been proven that high quality seed can be profitably produced and marketed in Haiti. Demand for seed of the country's principal field crops far outstrips supply, and the prospects for building on the initial successes reported here must be considered very good.

III. Assessment of Current Situation for Promoting a Private Sector Lead National Seed System

Changes since ICD advisory mission September, 1985

A. Political/Economic Environment

Substantial shifts in the political/economic environment occurred following the change of government in February, of which many appear to have proven harmful to the overall business and agricultural climates in the country. Adjustment is slowly occurring. Disciplinary breakdowns were met with tolerance/inaction on the part of the provisional government. Mission contacts reported that incidents of social unrest, land seizures, crop stealing and inventory pillaging (generally not indiscriminate but directed at elements connected with the Duvaliers) have significantly depressed new agricultural investment. It appears that many companies with important agricultural holdings have experienced losses and are very hesitant to build up inventories (which are essential to seed enterprises).

In addition to this, burgeoning unemployment and potential food shortages have led to fears of further social unrest, especially in view of what is more and more perceived to be an ineffectual provisional government. Most actors in the Haitian economy have adopted a "wait and see" attitude, especially in regard to agricultural investment, prior to making any significant financial commitments.

B. Ministry of Agriculture (MARNDR)

The staffing patterns at the MARNDR have changed dramatically since the fall of 1985. Since that time there have been four Ministers of Agriculture, and the upper echelon staff underwent sweeping changes following the collapse of the Duvalier regime. By late March however, USAID felt that the situation at the ministry had stabilized sufficiently to permit follow up to ICD's recommendations for encouraging public/private sector cooperation in the establishment of a commercial seed industry.

The new Minister of Agriculture, Mr. Gustave Menager is determined to see the private sector push ahead with production and marketing of high quality seeds for the principal field crops in Haiti. He feels that increased production through the introduction of better maize varieties in the central plains and in the southwest around Les Cayes should be a priority. With regard to rice production in the Artibonite Valley, the Minister is undecided on what action to take following the pillage of the Organisation pour le Developpement de la Vallee Artibonite (ODVA) facilities. He appears however, to favor maintenance of the previous status quo in terms of the production and distribution of seed rice varieties presently grown in the valley (principally Madame Gougousse).

Although the Minister appears to have the full confidence of the provisional government, he is aware that his tenure may well be brief. For this reason, the mission feels that enactment of a policy framework for the seed sector - which would be binding on future administrations - is an urgent priority (see section V A). The minister requested that the mission's public sector recommendations be forwarded to him in writing as soon as possible.

Because of chronic instability within the Ministry of Agriculture, responsibility for coordinating research and extension, and for managing a basic seed testing and multiplication program has been transferred to the Agricultural Research and Documentation Center (CRDA), which is overseen by the Dean of the Faculty of Agriculture and Veterinary Medicine. The Dean and his staff have decided on two immediate projects: To establish a germ plasm bank containing genetic material for the major crops in Haiti prior to expanding experimentation, and to create an effective testing and production program for foundation and basic seed material. For guidance on the germ plasm bank, the mission referred the Dean to Dr. Williams of the International Board for Plant Genetic Resources (IBPGR), a member of the CGIAR network, c/o FAO, Rome.

It appears that through this transfer, the ministry has relinquished de facto responsibility for research, extension and a basic seed production program, and that there is no longer a clear accountability to the Minister for the coordination of policy objectives, projects, budgeting and reporting on progress and accomplishments (and failures).

The public sector extension program has become practically non-operational and morale is extremely poor. What innovative extension service exists is being provided by the private agricultural input companies as part of their own marketing efforts. The ministry is hoping to couple some of its agents with PVO's who are working with farm leaders in an effort to get more of them into rural areas of the country. The mission also discussed the appropriateness to Haiti of the "Training and Visit" extension system with the Dean of the Agricultural School faculty, who expressed interest in arranging visits for Haitian extension workers to successful programs in Costa Rica or Peru. The mission also referred him to its previous report, where the need for a "training and visit" extension system in Haiti was pointed out.

C. Private Agricultural Sector

Many members of the private agricultural sector are uncertain of what the governmental changes will mean for them. The Haitian economy has been regulated by strict protectionist measures for years, and many local businesses are wholly unaccustomed to competing in the international marketplace at international standards of quality. It is clear that a significant part of the local business community learned how to operate within the boundaries set by the previous regime, and are now unsure of how to proceed in the post-Duvalier atmosphere. As noted above, this atmosphere has been one of increased social strife and labor unrest. As a result, many businesses - particularly agricultural ones - have experienced substantial losses since the beginning of the year. Several enterprises have ceased operations.

Although many larger scale farmers and businessmen with agricultural holdings are quick to admit that opportunities exist for profitable production and marketing of high quality seeds, few of them appear willing to take the risks necessary to build a successful seed enterprise. Several of the agricultural producers with whom the mission met are willing only to act as contract growers, not as true seeds entrepreneurs. It is claimed that sufficient access to agricultural credit (particularly amounts required for establishing a seed enterprise and building an initial inventory) is not available, but it is unclear to the mission if this is so or if the lack of credit reflects a shortage of financially well-prepared, "bankable" project proposals (see part V B).

An Association of Agricultural Producers (APA) has recently been established. Most large agricultural producers participate in this trade organization (which meets weekly), although it is still unrepresentative of the large majority of Haitian farmers. The mission attended an APA meeting, presenting an overview of its findings to date on seed industry development, and addressing questions from individual businessmen. Most questions concerned the perceived lack of credit and the absence of a "guaranteed" market for seed. Several members of the agricultural sector were sharply critical of MARNDR, and of USAID, which they often perceived as supporting the ministry. Many producers feel that if USAID funding was made more directly available to the private sector - essentially by-passing the ministry - results in the production of high quality seed would be quickly realized. Privately, few of the members of APA appear to believe that the current Minister of Agriculture will hold office for an extended period; and fewer still are confident that his successor will continue to promote private sector leadership in seed production.

D. Seed Testing, Production and Marketing

As a result of the ICD advisory mission, the USAID-sponsored agribusiness workshop in August 1985 and continued USAID support and advice, the Haitian subsidiary of the American tobacco company Comme Il Faut produced approximately 50 metric tons of La Maquina 7928 maize seed on 15 hectares of northern coastal plain outside of Cap Haitien. Despite late planting and late harvesting, the seed is of good quality and the crop was a success. In fact, the entire crop was purchased by distributors prior to the completion of the harvest. Although the quantity is small in relation to the country's demand for maize seed, it is a very auspicious beginning.

Even more encouraging is the fact that several companies are field testing crop varieties for seed production:

- * Comme Il Faut: Soybeans, sorghum, peanuts, various beans, with an interest in testing rice varieties (aside from maize);
- * Agro-Service: Maize and sorghum, along with fertilizer rates;
- * Operation Double Harvest (ODH): Several varieties of maize, and
- * Agro-Technique: Alfalfa varieties.

Following this initial success, several companies have reiterated their interest in moving into seed production, and the mission feels there is an excellent chance that acreage planted with seed crops will increase substantially in the coming year. With ODVA activities curtailed in the Artibonite Valley, there is an excellent opportunity for the private sector to begin testing, producing and marketing seed of new rice varieties (see section V B).

E. USAID

In view of the political turmoil of the past several months, the USAID mission should be commended for steadily promoting and supporting commercial seed industry development in Haiti. Early USAID-supported variety testing programs have resulted in La Makina 7928 maize from CIMMYT, mosaic-resistant Tamazulapa beans from CIAT and sorghum M-5009 from ICRISAT (being produced by MARNDR staff).

USAID should take particular care in promoting cooperation among various donors and projects in the seed sector in Haiti. The mission learned at the end of its TDY that a team developing a targeted watershed management project for the southwest of the country was unsure of how it could encourage the requisite seed multiplication and distribution for an array of crops. This project should build on the progress already made by the USAID-supported seed industry development effort. In addition, an FAO seed expert is scheduled to arrive in Haiti later this year. It is essential to the progress of the seed industry promotion effort that this individual coordinate his assistance to the ministry (and/or to the private sector) with that of USAID. The mission discussed this point with the resident FAO representative who agreed that FAO and USAID assistance to the seed sector should not operate independently of one another (see part V C).

IV. Technical Assistance and Hands-On Guidance to Seed Growers

A. Comme Il Faut

1) Varietal testing, maize - Cul de Sac

The mission inspected research plots in the Cul de Sac area where Comme Il Faut is field testing some 25 varieties and hybrids with well-positioned ears and good husk protection

that appeared well-adapted and to possess good yield potential. These taller varieties would thus appear to limit losses from rodents and birds. They also provide a great deal of leaf cover, which retards weed growth. The stalks of some of these varieties are unusually sturdy, and they can be used as bean poles in an intercropping scheme which could be very beneficial to Haitian farmers. These varietal tests were on a relatively large scale for Haiti.

The mission also provided information on determining agronomic characteristics and testing methodologies on the subjects of planting patterns; herbicide and insecticide use; rates, timing and form of applying fertilizers; hilling; methods of harvesting maize, including regulation of the combine, etc. This was done in the field during combine-harvesting of seed maize at Limonade near Cap Haitien and at the site of test plots in the Cul de Sac (a recommended schedule on the production of maize and maize seed is attached as Annex VII).

2) Maize seed production - Limonade

On the coastal plain near Limonade outside of Cap Haitien, the mission inspected the remaining 5 (of a total of 15) hectares of La Makina 7928 maize seed produced by Comme Il Faut. The seed was harvested by combine, and the mission estimated that its moisture content was about 18% at harvest. Visual inspection revealed uniform, high quality seed, with an acceptable breakage percentage (3-5%) from combining. Breakage can of course be limited by harvesting with a mechanical picker or by hand, rather than combining. The mission observed some losses from rodents and birds due to the low positioning of the ears of the La Maquina maize plants, in addition to sporadic pilfering around the field's outer borders. In spite of this however, the yield was estimated at close to 3MT/hectare, and the mission felt that by optimizing the combination of inputs and pest control, Comme Il Faut should be able to obtain a yield of 5MT/hectare.

The mission recommended that Comme Il Faut hand pick some 200 of the best ears to be saved for maintaining the variety as provisional basic seed, prior to combining the remainder of the field. In addition, the new basic seed obtained from CIAT (La Maquina 7827 and 7928) should be used to build an inventory of basic seed both by Comme Il Faut and by the ministry at this time. USAID was correct to suggest that 1/2 of this seed be passed on to the ministry and the other half to Comme Il Faut, since they are already in the process of producing Makina seed (see annex II for production and maintenance guidelines for basic maize seed).

3) Varietal tests - beans - Cap Haitien region

The mission also inspected bean varietal tests (red, black, pinto) which Comme Il Faut is conducting outside of Cap Haitien. As noted in the October ICD report, mosaic virus (both common and golden) is the commonest problem afflicting beans grown in Haiti. The Tamazulapa varieties from Guatemala are proven to be mosaic resistant, and Comme Il Faut is correct to concentrate on such varieties in their field tests. Mosaic viruses are transmitted in two ways: Seeds and insect vectors (mostly aphids). Contaminated seed can be cleaned by removing viral nodules. When this is combined with insect control and the use of resistant varieties (and farmers are persuaded to adopt the same techniques in neighboring fields), mosaic can virtually be eliminated. If mosaic can be controlled, there is no reason why well-managed, properly irrigated Tamazulapa fields should not yield over 1500 lbs/h. (3X the national average of irrigated bean fields).

4) Inspection of tobacco drying facilities - La Chappelle region

The mission inspected the Comme Il Faut tobacco-drying sheds and facilities located at La Chappelle and determined that they could be easily and suitably converted to a seed drying bin arrangement and support a one meter deep bed for drying seed maize. The mission also reviewed the Comme Il Faut tobacco plant, equipment and warehouses indicating changes, adaptations and modifications where called for based on experience gleaned in tobacco growing and processing in South America.

B. Agro-Service, S.A.

Agro-Service has been conducting field tests with individual farmers comparing medium-tall Penta hybrids and open-pollinated La Maquina 7982 maize, in addition to testing fertilization rates for M-5009 variety sorghum. In regard to the maize tests, the mission suggested that population density be limited to about 55,000 plants/hectare. The current ratio of 100,000 plants/hectare is too high. The mission also visited a commercial sorghum field (M-5009) grown on contract with an individual farmer at Vaudreuil in the Cul de Sac. This field exhibited off-types, grain types, forage-types and sorghum-Johnson grass crosses. This latter is particularly dangerous because it is stoloniferous and may very easily

infest grain fields, sharply reducing the quality of the harvest.

Basic seed for M-5009 sorghum is now being produced by the Ministry of Agriculture, and the mission recommended that Agro-Service attempt to use it in the future. Present material should be carefully screened before it is used as seed, and fields infested with Johnson grass (sorghum halepense) should be scrupulously avoided.

C. Artibonite Valley

At the request of Vincent Cusumano, Chief - Rural Development Office, USAID/Haiti, the mission spent a day in the Artibonite Valley to assess the overall situation for rice production in view of the controversy surrounding the Artibonite Valley Development Organization (ODVA). The mission confirmed USAID's assessment that ODVA was strongly disliked by the valley's farmers.

ODVA was financed by the Inter American Development Bank (IDB). IDB has often financed similar development projects with independent regional authorities which end up less than directly responsible to a country's Ministry of Agriculture. The mission strongly disagrees with this policy, as it tends to undercut the authority of the Minister of Agriculture in the area administered by the IDB-inspired regional development organization. In this case, the mission feels that the IDB policy of encouraging a semi-autonomous development organization - the ODVA with little supervision from the Ministry of Agriculture - was at least partly responsible for the abuses later attributed to ODVA.

ODVA was, in principle, responsible for variety maintenance, seed quality control, maintaining a large part of the irrigation network and providing overall technical assistance to the region's rice farmers. In addition, it was to ensure that the results of varietal development generated by the Taiwanese technical assistance mission were transferred to farmers. ODVA was apparently unsuccessful in each of these endeavors and, in fact, was viewed by farmers as an income-generator associated with the Duvalier regime. (ODVA collected an annual payment, or amortization, roughly equal to 10% of the value of a farmer's seasonal rice crop in return for services it claimed to provide on land it controlled and parcelled out for farming. Most farmers appear to have considered this arrangement a "tax" on their crops which benefitted ODVA

personnel). In addition, the Taiwanese team appears to have been operating independently, having little contact with the local population. That the population perceived little benefit from their presence is illustrated by the violent pillaging of the Taiwanese facilities in the valley immediately after President Duvalier fled.

The mission noted that farmers are following their normal planting and harvesting routines, and there appears to be no shortage of rice seed for the varieties found in the valley (Madame Gougousse (or Dawn), Crete a Pienot, Quisqueya and CICA 8). In short, farmers are at best indifferent, and at worst hostile to the prospect of a revived ODVA. They may in fact be better off without it, but they are certainly no worse off because of its demise.

The situation with regard to the quality of rice seed available in the valley is less clear. Seed of the principal varieties grown there is apparently mixed; and farmers are aware of this. Unlike maize farmers, rice farmers almost always save seed for the next crop and only introduce new seed onto 20% of their land each year. This means that it would be several years (5-7) before the genetic stock of the valley's seeds began to deteriorate. It is the mission's opinion however, that due to the fact seed stocks in the valley are now mixed, 5-10 metric tons of basic seed should be imported - either by the private sector or USAID. As a result of the failure of ODVA's variety maintenance and seed quality control programs, there is an excellent opportunity for a local agricultural supply company to begin producing rice seed in the valley.

The ODVA rice milling plant and storage facilities in the valley (which the mission inspected) could, with minor repairs and adjustments, be adapted to rice seed processing. These facilities could be rented or otherwise made available to private seed producers in the valley, much as the mission has proposed that the SECOSAM plant in Port-au-Prince be made available. In addition, the small mills operating throughout the valley employ single pass milling equipment which yields only 50% milled rice. Double pass milling equipment, such as that at the ODVA facility could save the country up to 25,000-30,000 MT of rice annually which is lost in the single hulling/polishing process.

The mission also feels that Haiti can no longer afford the "luxury" of relatively low-yielding rice varieties such as Madame Gougousse (a selection of Dawn developed in the U.S.). Several high-yielding varieties - crosses of Asian and long grain varieties - have recently been developed in the Phillipines and in Latin America. Many of these

varieties (including CICA-8, which has already appeared in the valley) combine the non-glutinous starch type which Haitian consumers prefer with the greater yields of the shorter, more tasseled plants typical of Asian varieties. USAID should encourage basic seed imports for these varieties in order to help get them established in the valley.

D. SECOSAM Seed Processing Facilities

The mission inspected the SECOSAM seed processing facility at Damien and found minimal damage to the plant and equipment. The laboratory requires a germinator, a laboratory-quality scale and general office equipment and materials. The plant should have a gravity table for seed separation by specific weight and air flow. The issue of the need for driers arose, but the mission felt that for the moment these are not an essential addition to SECOSAM's equipment. Beans, sorghum and rice seed can continue to be sun-dried in Haiti, or if they are harvested by combine they can be dried in metal drying bins such as those the mission observed along the coast road between the capital and St. Marc. Maize seed production would benefit from mechanical drying capacity supplemental to traditional methods. However, Comme Il Faut, the principal maize seed producer at present, already has a private arrangement in the north of the country. The subject of driers for SECOSAM should be reexamined once maize seed production increases substantially in volume.

The cost of these repairs/improvements should be no more than \$5,000-10,000. The Minister reiterated that the government is prepared to make these facilities available to private seed producers, and USAID may wish to assist the ministry make the plant operational again.

E. CCH Coffee Processing Facilities

The mission also inspected the coffee processing facilities of the Coffee Cooperatives of Haiti (CCH), which are supported by the Cooperative League of the U.S.A. (CLUSA). The equipment is extremely modern and efficient, and is easily adaptable to drying and separating seeds for maize and other field crops. If seed producers were to use this equipment (including the exterior drying areas) for seed processing, it would provide additional income to CCH. Two drawbacks however, are that the plant does not have a gravity separator and most of the equipment seems to be occupied 9-10 months of the year. These facilities potentially may provide back-up seed processing capacity, and the idea should be investigated further.

V. Action Plan for Moving Recommended Program Forward

As stated above, ICD supports its previous recommendations and believes that the action plan provided in the October, 1985 report is entirely valid and appropriate. In view of the changes within the Ministry of Agriculture and the disruptions to the business climate since late 1985, it is understandable that many of these recommendations - especially the establishment of a favorable policy framework - have yet to be acted upon. However, to maintain the momentum already generated in seed production in Haiti, and to ensure that future administrations respect the primary role of the private sector in seed production and marketing, certain actions must be taken immediately. The next section outlines the immediate follow-up on the part of the Ministry of Agriculture, the private sector, USAID and ICD which is required to implement the previous ICD recommendations, and move the sector toward the creation of a successful national seed system.

A. Ministry of Agriculture

1) Policy formulation/legislation

It is essential that the Minister of Agriculture enact a policy framework which very clearly states that the private sector is to be responsible for the production and marketing of seed for the commercial crops, and that the public sector will be responsible only for complementary measures such as sponsoring and coordinating research and extension, producing basic seed, quality testing, etc. This should be accomplished before the present minister leaves office, and in such a way as to be binding on future administrations. The private sector requires an assurance of stable government policy relating to the seed industry as an incentive to commit financing to seed production and marketing activities.

This is not to say that a comprehensive seed law is required in Haiti at this time. What is needed immediately is a governmental declaration followed by a decree (similar to the preamble of the sample seed law attached as annex III to the October, 1985 ICD report), which establishes that high quality seed is a unique and essential agricultural input, a stable supply of which is in the national interest. This decree should clearly state that it is the government's policy, approved by a Council of Ministers, to encourage private production, processing and

marketing of high quality seeds of improved varieties, while restricting government involvement to the complementary measures cited above.

Without a clear, unambiguous policy statement by government, the chances of building on the initial success of the efforts to establish a commercial seed industry in Haiti will be diminished.

2) Coordination of research and extension

Experience has shown that this is a function for which the Minister of Agriculture - or at least a department under his control - must maintain responsibility. ICD's previous report stressed that research by objectives cannot and should not be initiated and conducted by a university. The minister must set the goals, direction and expectations for government-sponsored research, with the university collaborating on specific projects.

Although the Agricultural Research and Documentation Center (CDRA) is a ministry organization, its management should not be relinquished to the Faculty of Agronomy and Veterinary Medicine. The staff managing CDRA must report to the Minister of Agriculture. The ministry's decision to cede management of CDRA to the university should be reviewed.

3) Credit for seed enterprises

The Minister of Agriculture should work with USAID on establishing specific lines of credit for seed industry development within an appropriate government-sponsored agricultural development bank (SOFHIDES). These lines of credit should be "seed industry specific," including such provisions as the acceptance of seed as collateral under a warrant system of bonded warehouses.

Credit is often the major obstacle to new seed enterprise development in countries with less-developed agricultural sectors and without sufficient access to it, entrepreneurs in Haiti will be unable to begin new seed enterprises. The mission was lead to believe that SOFHIDES is the correct channel for seed enterprise financing, especially in view of the recent change in its charter which should make more financing available to financially-solid agribusiness proposals. If this is so, the ministry, the bank and USAID should work together to establish the specific lines of credit which will ease the credit impasse facing new seed industry entrepreneurs.

4) Seed processing facilities.

The minister has confirmed that the government is still willing to make the SECOSAM seed processing facilities available to private seed producers, once the damage the plant sustained in February is repaired. Sufficient processing capacity becomes more and more important in view of the increasing seed production now under way and/or contemplated by members of the private agricultural sector.

As reported above (section IV D), the mission inspected the SECOSAM facilities and found them to be in need of \$5,000-10,000 in repairs and equipment additions. It is critical that this facility be available to seed producers for the next season, and therefore the Minister and USAID should conclude an agreement for financing the repairs as soon as possible.

As noted above (section IV E), the ODVA rice milling and storage facilities in the Artibonite Valley could easily be adapted to process, store and dry rice seed. The mission recommends that the government make these facilities available to any private firms wishing to begin rice seed production under terms similar to those eventually concluded for the SECOSAM facilities.

5) Agribusiness sector support proposal from USAID

The Rural Development Office of the USAID mission has proposed joint USAID/MARNDR sponsorship of qualified agronomists and other extension specialists to private agricultural input companies in Haiti. These individuals would demonstrate to rural farmers that food crop yields could be dramatically increased through the use of sound production techniques including the use of agricultural inputs such as high quality seeds, fertilizer, etc. Direct grants to participating companies would be made through the ministry's food crop production unit. The companies would be expected to contribute 1/2 of the costs of these extension workers for a two year period. It is assumed that the companies will retain the additional employees at the end of the two years if they generate enough new sales to warrant doing so. The mission feels this is an excellent proposal. The minister indicated he supports the idea, and hopefully implementation can soon begin.

B. Private sector

1) Conflict between seedsman/grower attitudes

Although most of the individuals within the private agricultural sector with whom the mission met believe that excellent opportunities exist in seed industry operations in Haiti, few of them are willing to venture beyond contract farming - producing seeds only under contract to a buyer or distributor.

A true seedsman is an entrepreneur who takes risks once he is convinced that a strong market demand exists for high quality seed of improved varieties. He incurs debt, invests in plant and equipment, produces seed and buys from others in building an inventory and a distribution network while competing for a share of a nonguaranteed market. Once a policy framework encouraging seed production is in place, the mission is confident that more members of the Haitian private agricultural sector will distinguish between contract farming and seeds entrepreneurship. The success which Comme Il Faut has experienced with its initial foray into the seed business should serve as a positive model.

2) Testing and extension capability

As noted above, it is extremely encouraging that several agricultural input companies are already field-testing seed crops. Most of this testing involves various maize varieties, although the mission has identified opportunities for private seed production of many crops other than maize, including: beans, rice, sorghum, pigeon peas, peanuts, etc. Potential seed producers should not neglect these opportunities.

Private seed producers should have the option of importing basic seed of the crop varieties which they may want to produce. For example, enough Tamazulapa basic seed could easily be imported allowing one to begin production of mosaic-resistant beans almost immediately. The same is true for new rice varieties. Where the volume is larger, as for maize and sorghum, it may be wiser for the government or USAID to begin importing the basic material. However, the private sector should be aware that it may also obtain basic seed of improved varieties and hybrids by associating with private foreign seed companies which have developed or have access to such material.

Another encouraging sign is the private sector's increasing employment of their own highly qualified extension agents to promote the correct use of their products among rural farmers. As noted above, USAID has offered to assist the ministry sponsor qualified agronomists and other extension workers with private agricultural firms for two years (see V A.5). This is an excellent proposal and the mission hopes that several firms take advantage of it.

C. USAID

1) Training

As part of its terms of reference, the ICD mission was asked to prepare a training program for Haitian seed growers in all aspects relating to the production of certified seed material, which would then be implemented by an experienced "hands-on" seed producer brought to Haiti via a USAID personal services contract.

It is the mission's opinion that such a "hands-on" seed expert to work full-time with Haitian seed growers is not needed at this time. Growers are not currently in need of such intensive full-time assistance, and most likely the advisor's talents would not be put to full use. In addition, a FAO seed expert is expected to reside in Haiti for about one year. Another resident technical advisor should certainly not be engaged until this man arrives and his impact on the program can be gauged, particularly in view of the FAO representative's stated desire to collaborate with USAID on seed industry development in Haiti.

ICD feels that current and potential seed growers in Haiti can best benefit from short-term, intensive technical infusions of a 7-10 day duration, similar to the mission described by this report. These may be supplemented with additional in-country or overseas training in the various technical and managerial aspects of the seed industry (see below).

The need on the part of current and potential seed growers in Haiti for technical training is well recognized. What is less-recognized, but no less important, is their need for a better explanation of what a seed business truly entails - i.e. training in seed enterprise management. Therefore the mission recommends that USAID sponsor a joint ICD/CIAT (or ICD/M.S.U. - as M.S.U. has already been under contract to USAID) training course combined with a seed

industry workshop. Such a training course would have three parts:

- * Technical training in testing, producing, processing and marketing high quality seed of improved varieties of the important crops in Haiti, and
- * Seed enterprise management training which would concentrate on the techniques for managing a successful seed enterprise - i.e. techniques for becoming a seeds entrepreneur. Inter alia, this part of the program would deal with administration and personnel, financing, planning, deciding how many varieties to produce, building and managing inventories, etc. This part of the course would also be designed to assist seeds entrepreneurs obtain and manage sufficient credit - i.e. preparation of solid, "bankable" project finance applications, a current weakness among agricultural entrepreneurs in Haiti.
- * A "train the trainers" program in which selected Haitian technicians would be trained to transfer techniques to rural farmers who may interested in growing seed crops. Individuals receiving this training would also be valuable extension agents for the ministry and/or the private sector in the future.

A budget for such a training program will be proposed at a latter date, once USAID and the ministry confirm they are interested in pursuing the concept.

2) Facilities

SECOSAM - USAID should contribute the \$5,000-10,000 required to render the SECOSAM seed processing facility operational by the next processing season. As noted above, the essential action is to replace stolen laboratory equipment and add a gravitational seed separation table.

ODVA - USAID should formally suggest that the ODVA rice milling and storage facilities located in the Artibonite Valley be made available to private growers interested in producing and marketing rice seed. In order to effectively process rice seed, smaller drying bins and one or two portable driers for seed should be added. USAID should consider assisting the ministry pay for these additions if it accepts USAID's recommendation not to revive ODVA, but rather to make its facilities available to private producers of rice and rice seed in the valley.

3) Seed industry credit lines

A proper mechanism is urgently needed to see that USAID funds (in the form of market rate loans) reach potential seed producers so they may get on with the business of producing and marketing better seed in Haiti. Toward this end, USAID should work with the ministry and SOFHIDES to develop, and if necessary, finance special targeted lines of credit for seed enterprises. These lines of credit would be handled by SOFHIDES, and would be governed by a unique set of rules applicable only to the establishment of seed enterprises. Interest rates would not be subsidized, at least not any more or less so than loans to other agribusiness ventures.

As mentioned above, many agricultural sector entrepreneurs are failing to secure credit not because of a scarcity of investment funds, but rather due to their unfamiliarity with preparing and submitting first rate financial proposals. Prior to a two-part seed industry training course such as the joint ICD/CIAT one suggested above, USAID can assist individual seed entrepreneurs secure credit by helping them apply for it in a businesslike manner, which the bank will find more readily acceptable.

4) Ensure effective coordination

USAID should take care to promote, whenever possible, better coordination among donors and projects affecting seed industry development in Haiti. Two examples immediately come to mind:

* USAID has engaged Development Alternatives, Inc. (DAI) to produce a project document for a proposed targeted watershed management project envisioned for the southwestern part of Haiti. This team had been seeking a short term solution to the lack of seed multiplication and production capacity which exists in the country, while ICD has been working on developing a permanent solution to this same problem - namely, the development of a national commercial seed industry for the principal field crops in Haiti. It seems highly probable that both efforts would have benefitted from closer contact with one another, yet they discovered each other nearly by accident - even though both are assisting USAID/Haiti.

In discussions with the FAO representative to Haiti, ICD and USAID learned that a previous Minister of Agriculture requested the services of a resident FAO seed expert for a period of one year. The FAO representative agrees that seed industry development in Haiti should be lead by the initiative of the private agricultural sector, and has expressed his desire to collaborate with USAID on the implementation of the recommended program once the FAO expert arrives. It is extremely important that USAID follow up this suggestion, if for no other reason than to ensure that the focus of the effort is not redirected from the private sector back to government.

D. ICD

1) Short term follow up assistance

ICD recommends that it conduct two short technical and institutional assistance missions, at six month intervals, to oversee the implementation of the action plan presented in the fall of 1985. These missions would be similar to the one just completed, and would provide technical assistance to current and prospective seed growers, both in the private sector and the ministry of agriculture, while assisting USAID maintain the momentum in seed industry development which is already evident in Haiti.

Because of its wide experience assisting the formation of seed industries in the developing world, and due to the varied network of active seed industry technical and managerial expertise it can call upon, ICD is probably the most cost-effective organization which can assist USAID promote commercial seed industry development in Haiti.

ICD feels that these additional short missions should be financed in the same way as the latest one, and their cost would, for estimating purposes, be approximately the same for roughly equal lengths of time. In any event, ICD's goal is to render assistance to USAID/Haiti on an "at cost" basis; and far below cost when the expertise of its member and cooperating companies are involved as their time is contributed to ICD activities. The specific cost of follow-up missions will be agreed upon in advance by USAID/Haiti and ICD/NY.

2) Training ✓

As mentioned above (see section V C.1), ICD recommends that USAID sponsor a joint ICD/CIAT or M.S.U. training course and accompanying workshop on seed industry development in Haiti. The training program would have three parts: Seed industry technical training which would be provided mainly by CIAT or M.S.U., but assisted by ICD experts and Senior Associates; seed industry management training, which would be provided principally by ICD; and a "train the trainers" program aimed at training a few select Haitian technicians in-country who can then transfer techniques to rural farmers interested in growing seeds - training which would be administered jointly by ICD and CIAT or M.S.U. Timing and a budget for this program will be provided once USAID interest is clear.

3) Internships

As a follow-up to the program suggested above, or prior to and independent of it, ICD may be able to arrange short seed industry management internships with U.S. seed companies for Haitian seedsmen. ICD remains at the disposal of USAID/Haiti to discuss details regarding such internships.

ICD is currently inquiring as to whether the Cartagena Agreement Secretariat located in Lima, Peru would consider offering a course in seed production and technology for staff of Comme Il Faut and other growers active in Haiti who are becoming - or are interested in becoming - involved in the seed industry.

VI.

Conclusion

Over the past 15 months, USAID/Haiti and ICD have been working with the local private agricultural sector and the Ministry of Agriculture to encourage the establishment of a Haitian national seed system characterized by a dynamic commercial seed industry. In spite of the political and economic turmoil which has rocked Haiti during this period, there is much in the way of positive results which should be emphasized.

Although the climate for agricultural investments is admittedly poor, high quality seeds of improved varieties are being tested, produced, processed, distributed and

marketed by the private sector in Haiti. In the area of national seed industry development in less-developed countries, an individual or group of entrepreneurs must lead the way. We are now witnessing this in Haiti.

Demand for high quality seed for the principal field crops is far greater than the supply. As farmers have demonstrated, they are prepared to employ better agricultural inputs - including high quality seeds - once they are convinced such action will result in better yields and greater returns on investment. The small but growing agribusiness community is responding by increasing extension services aimed at educating farmers on the benefits of employing more and better inputs. A tangible momentum exists, which should be maintained and capitalized on by publicizing these opportunities throughout the Haitian agricultural sector.

Much remains to be done however, especially in making credit available to private seed entrepreneurs; training in seed enterprise management; limiting the public sector role (through legislation binding on future governments) to quality control, coordination of research and extension and production of foundation and basic seed; and in facilitating greater cooperation with other institutions and projects (SOFHIDES, FAO, CIAT, the USAID supported targeted watershed management project, etc.).

Once the initial inertia was overcome, it was proven that high quality seed can be profitably produced and marketed in Haiti. Despite all that has transpired, the prospects for building upon this initial success are very encouraging.

ITINERARY FOR INDUSTRY COUNCIL FOR DEVELOPMENT MISSION

Messrs. Alex Grobman and Michael Carella

Dates of TDY: May 4 - May 10, 1986

Purpose: One week visit to Haiti to follow-up on previous recommendations with respect to the development of a National Commercial Seed Industry. Also, to provide specific technical assistance in seed production, processing and marketing. Control Officer, Abdul H. Wahab - RDO.

<u>DATE</u>	<u>TIME</u>	<u>ACTIVITY</u>
5/4	10:00 PM	Arrival of Alex Grobman and Michael Carella (Hotel Montana)
5/5	8:30 AM	Vincent Cusumano - Chief/RDO
	9:00 AM	Ronald and Davie Lucas
	10:00 AM	Meeting with Minister of Agriculture ✓
	11:00 AM	William Saunders - Comme-Il-Faut ✓
	12:00 Noon	Lunch
	12:45 PM	Guy Chapond - FAO Representative ✓
	2:00 PM	Lesly Dominique - Agro-Technique ✓
	3:00 PM	Pierre Leger, Anne Hauge - AgriSupply ✓
	4:00 PM	John Currelly ✓
	5:00 PM	Visit Comme-Il-Faut test plots in Cul de Sac re: experimental maize varieties
7:00 PM	Gerard Boucard, Jr. - Boucard Pest Control (Hotel Montana)	
5/6	8:30 AM	Reynold Bonnefil - Haytian Tractor ✓
	11:30 AM	Wally Turnbull - Baptist Mission, Kenscoff
	12:30 PM	Lunch
	3:00 PM	Jan Turcan - USAID/PRE ✓
	6:30 PM	Raymond Kupiek - Cold storage capacity

<u>DATE</u>	<u>TIME</u>	<u>ACTIVITY</u>
5/7	6:00 AM	Leave for airport for flight to Cap Haitien to assist harvest of 5Ha seed maize plot and provide T.A. to Comme-Il-Faut's field staff (Currelly, Saunders and Wahab accompanied the Mission)
	5:30 PM	Return to PAP
	6:00 PM	APA (Association des Producteurs Agricoles) Attend regularly scheduled meeting. Present seed system concept, including progress to date and discussion
5/8		(Local Holiday - Ascension)
	7:00 AM	Depart PAP for field trip to assess rice situation in Artibonite Valley
	6:00 PM	Return to PAP
	7:00 PM	Bert Lemkis - Operation Double Harvest (ODH)
5/9	8:00 AM	M. Jaques E. Alexis - Director of Faculty for Agricultural and Veterinary Medicine
	9:00 AM	Review damages and estimate repair requirements for equipment at SECOSAM seed processing plant
	10:30 AM	Tour processing facilities of Coffee Cooperatives of Haiti (CCH) located at Drouillard
	12:00 Noon	Lunch with Mission Director and A.H. Wahab
	2:00 PM	USAID debriefing
	4:00 PM	MARNDR debriefing
5/10	8:00 AM	Terry Bongerant - Director of SOFHIDES
	9:00 AM	Meet with members of Development Alternatives, Inc. team on targeted watershed management project
	10:30 AM	Visit A.S.S.A. experimental maize plots and sorghum seed (M5009) fields in the Cul de Sac (accompanied by Phillipe Mathieu - A.S.S.A. Agronomist)
	4:00 PM	Depart Port au Prince

Annex II**Proposed Action Plan**

(This action plan is reprinted from the October, 1985 ICD advisory mission report and is presented here for reference purposes.)

A. Proposed Action by the Ministry of Agriculture**1. Development of a Policy Framework**

It is critical that a precisely defined policy statement be formulated defining a national seed system, including all its components and their characteristics and interrelationships. Once issued, such a document should be declared to be official Government/Ministry of Agriculture policy.

The policy document should explicitly state that it is in the national interest to establish a national seed system, and that as one of its major components, a vigorous private commercial seed industry will assume the major role in seed production and distribution in the country; and thus is worthy of special encouragement and a predefined set of incentives.

Incentives which the Ministry could offer to prospective seed firm investors might include the following (which could be expanded according to local experience):

- * Preferential Tax Treatment
- * Accelerated Depreciation of Assets
- * Interest Rates on loans for capital asset acquisitions, seed production and inventory creation which are equal to those for farm loans
- * Use of Ministry Seed Processing Facilities

There should be a similar policy directive clearly defining the relationship of the national seed system with the overall Agricultural Development Policy.

2. Seed Legislation

A Seed Law for Haiti should be composed of all pertinent legislation dealing with the following matters:

- a) Organization of the Ministry of Agriculture agencies dealing with the coordination of any and all aspects of seed system activities.
- b) Establishment of rights and obligations of natural and judicial persons wishing to enter into seed system activities.
- c) Establishment of the National Seed Council, a consultative body to the Minister of Agriculture on seed system matters with representatives of private industry and government members.
- d) Definition of terms relating to seeds and seed systems.
- e) That seed firms be registered.
- f) That seed firms be authorized to conduct research and introduce germplasm and seed of new varieties.
- g) That seed firms be authorized to produce, process, store, and market seeds.
- h) Regulations concerning import and export of seeds.
- i) Phytosanitary regulations with particular reference to import/export regulations for seeds.
- j) Establishment of Truth-in-Labeling legislation, along with control mechanisms.
- k) Precise definition of seed types.
- l) Seed certification to establish and maintain Genetic purity of seeds.
- m) Registration of crop varieties and recognition of ownership rights for development of new improved crop varieties and hybrids.

Seed legislation should be in concise, simple terms. It should address the various issues listed above in the most direct and clear manner, avoiding unnecessary complications.

It is preferable to have the legislature approve a core law to which regulations may be added and deleted than to have to amend legislation, which is always a more complicated procedure.

Details pertaining to specific matters (such as minimum seed quality requirements) should, whenever possible be dealt with in the regulations attached to the law and not in the law itself. The law is passed by the legislature and establishes principles and foundations; regulations can be modified from year to year by ministerial decrees as situations arise. Typical regulations are those which deal with minimum percentages, isolation requirements, and characteristics of various seed types. Regulations may be flexible on seed materials initially and then become more precise as seed companies acquire experience, and the market becomes more demanding.

Experience in other countries has shown that unnecessarily complex legislation in developing economies can do more harm than good. Good legislation stimulates action, lays down ground rules, and protects both producers and consumers.

Care should be exercised to ensure that legislation is directed towards the promotion of production and distribution of high quality seeds. Some legislation has, in the past, been oriented toward punitive measures rather than toward incentives that stimulate action, and thus has failed to achieve its stated objective - creation of private seed firms. The former type of legislative approach is often favored by officials in restrictive seed systems (and even by some international agencies) who have had little or no experience in establishing viable national seed systems.

3. Investment legislation and promotion

A legal device like the Haitian Industrial Investment Code should be established to support the development of a private seed industry. It might be enough to develop a short set of articles that would situate the seed industry within the code. As it is, the Industrial Investment Code does not promote the seed industry, since this industry does not qualify as a manufacturing process. Although seeds require research, testing, processing, storage, and marketing, they do not transform products.

Seed legislation should also consider the seed firm as an agricultural producer for the purpose of credit classification. This does not mean that a seed firm must own land in order to qualify as a producer. It can produce its

seeds under contract with farmers and still qualify as an agricultural producer. Advanced legislations in Chile and Peru contain this interpretation (for references see the Seeds Legislation of Peru, 1978, and Legislative Decree No. 2, 1980 of Peru defining who is an agricultural producer, and identifying the incentives developed for seeds, agro-industries, and service companies in the agricultural sector).

Investment promotion should be based on a clear and positive understanding of the respective roles and goals of the public and private sectors. Periodic Workshops bringing together private entrepreneurs and government officials can help analyze problems confronting the establishment and operation of a national seed system, including its relationship to the agricultural development program. Government announcements of new policies and incentives can also be used to promote the seed industry.

4. Coordination of Research, Extension and Marketing

It is recommended that the Ministry of Agriculture develop a National Agricultural Research and Extension Institute, to coordinate research and transfer agricultural production technology to farmers throughout the country. This would be a semi-autonomous institution, with its own budget allocated directly by the legislature at the request of the Minister of Agriculture. The Minister would dictate policy for the Institute, and define its objectives and yearly goals in coordination with the Institute's director. Its Board of Directors would include representatives of the Ministry, the University, and of the private agricultural sector. This type of institute now exists in nearly all Latin American countries, and has proven its value over the past 50 years in a region where neither centralized Ministry of Agriculture control of research and extension, nor the US Land Grant university model has worked.

There are several models for dealing with the rural marketing function. The marketing board concept, which has been successful in some African countries, was developed by the former British colonial administration and is retained to this day in several countries. A multiple or single crop marketing board can define prices, intervening only when market forces are in disequilibrium as a result of extreme scarcity or extreme abundance, to provide a cushioning effect. A rural marketing function is important for farmers, seed producers, and above all, for consumers.

In Haiti the rural marketing function is already served

through the "Madam Sara" system for purchasing and distributing agricultural commodities. The stabilizing influence of a marketing board could be added to avoid extreme price fluctuations. Storage facilities presently available could be leased to service companies that could manage the drying, storage, and shipping functions for a marketing board.

5. Organization of a Basic Seed Unit

A Basic Seed Unit should be created under the jurisdiction of the Ministry of Agriculture Seeds Authority. This Unit would be responsible for multiplying basic seed from breeder seed obtained from the Research Institute of Haiti, or from other breeder's or basic seed obtainable from any reliable source outside the country and imported into Haiti.

The Unit would have a full time staff and have no activities other than the multiplication of basic seed. The production itself could be carried out on Ministry land, or it could be contracted out to seed companies or farmers, to be conducted under strict control and supervision of the Basic Seed Unit. The basic seed would be stored in proper storage conditions, and it would be sold to commercial seed producers for the express purpose of multiplying it to the level of commercial seed, in authorized and certified categories.

Operating examples of government Basic Seed Units can be found in the U.S., in the U.K., in Peru and in Brazil. The concept of a Basic Seed Unit is a new one in developing countries, but it has been proposed by ICD and accepted by governments of a number of countries over the past two years such as Turkey, Ivory Coast and Thailand.

6. Supervised Credit with a Risk Sharing Component

Technology transfer assumes not only knowledge of the technology but the ability to acquire it. Every technology has a cost of acquisition. To facilitate the acquisition of improved seeds, it is proposed that a supervised credit system, covering up to 50% of the value of added inputs in the case of loss due to climate or disaster, be established for farmers without access to normal credit.

In order to bypass the cumbersome credit approval process which often requires farmers to travel far from their fields, spending precious time away from their crops, it is proposed that village credit committees be established. These committees, sanctioned and organized by the Banque de Credit Agricole (BCA), would be composed of well known and

reputable persons from the communities served; they would thus have intimate knowledge of farmers' histories and credit worthiness. Such a system has proven effective to the point of 98% loan repayment rates in some Latin American countries, and it would provide a method of getting credit to worthy farmers to meet crop production and input acquisition expenses.

In order to induce farmers to purchase additional production inputs, the risk of losing the cost of these inputs during years of drought or other natural disaster must be offset. This could be accomplished by compiling statistical data on precipitation levels, and conducting actuarial studies on the costs of insuring the inputs against loss due to drought for up to 50% of their value, measured against the increased production expected in good years.

7. Phasing Out the Present Seed Plan

The present seed production and distribution scheme is based on providing farmers with seed of improved varieties free of charge, on the condition that they return twice the amount of seed given to them. This system is admittedly effective for small scale demonstration purposes. However, for programs designed to effectively increase adoption of high quality seed of improved varieties on a massive scale, as is recommended for Haiti, the system would soon fail because of the difficult logistics required after the second or third season, and because in all probability, farmers would return poorer and poorer seed of essentially unknown origin, worthless for multiplication purposes, or even for direct use as seed by other farmers.

It therefore is proposed that the present seed production and distribution scheme be immediately abandoned. It has a high external energy component that is not accounted for in the price the farmer pays for the seed, that potentially could lead to dangerous distortions in the future market structure for seeds. Instead, a commercial seed production and distribution system should be established at no direct cost to the Ministry of Agriculture or to supporting international agencies, and capable of viable self supporting operations and growth on a long term basis.

8. Utilization of the SECOSAM Plant

The SECOSAM seed processing plant is capable of handling the processing needs for maize seed, and with some additional equipment, for other seed, during the initial development stages of the private seed industry. It can also handle the processing of basic seed for the Basic Seed Unit. It is

proposed that the GOH lease the plant to private seed firms in their initial stages of activity, and use the income to support other seed activities proposed in the present plan (the Minister of Agriculture has indicated his agreement with this proposal).

9. Development of Seed Storage Facilities

It is proposed that four major seed storage facilities be established for rental to private seed companies. They would be located at Kenscoff, Central Plateau, the northern coast near Cap Haitien, and near Beaumont.

These storage facilities could be set up at higher altitudes to take advantage of the cooler environment. They could be partially fitted with dry chambers for longer-term storage for carryover seed. The size and other specifications of storage units would be defined by market requirements; they could be constructed on a modular basis to allow easy expansion.

The timing of their construction and size of the storage units will depend on the pace of seed industry development in Haiti. This is the kind of issue which can be resolved through consultations among the Ministry, seed industry representatives, and USAID/Haiti.

B. Proposed Action Plan for USAID

1. Development of a Seeds Project, with Action Plan

ICD recommends that USAID consider supporting a Seeds Project intended to facilitate the development of a National Seed System in Haiti as conceived in this document.

The goals of the proposed Seeds Project would be:

- a) To support Ministry of Agriculture institution building efforts in the areas outlined in this project.
- b) To demonstrate official support for the development of a National Seed System and the strategies required for its efficient operation.
- c) To provide support particularly to the development of a private commercial seed industry in Haiti.
- d) To provide technical assistance in the area of seed

production technology - specifically concerning variety introduction, variety testing and research on production techniques with emphasis on variety introduction/production management for the principal crops and different agricultural systems in Haiti.

- e) To assist management development and training for the seed industry.
- f) To support and provide training in all of the above areas within and outside Haiti.
- g) To finance loans for capital investments in the seed industry.
- h) To finance loans to the BCA to make short term credit available to farmers and investors interested in the seed industry.
- i) To conduct or commission a study of crop failures and climate changes in past years in order to determine funding required for a risk sharing program to encourage farmers to use additional agricultural inputs. The study would also determine the amount of foreign exchange saved through increased agricultural output due to different levels of increased inputs with the goal of identifying an ideal level of inputs. Such a plan would then be recommended to the Ministry of Agriculture.
- j) To finance loans for the construction of seed storage facilities by the Ministry of Agriculture and the private sector.
- k) To finance loans for the construction of seed processing facilities and the acquisition of other equipment.
- l) To study the feasibility of establishing an agricultural commodity marketing board to help stabilize agricultural prices in times of extreme volatility; and to recommend such action to the Minister of Agriculture if warranted.

The Seeds Project would have a duration of 5 years. It might be immediately funded as an emergency project for the first year, and later be established as a permanent project starting in the next operational FY.

USAID project funds should be considered grants when dealing with organizational aspects of the Ministry of Agriculture's part of the program; and as loans for the private sector components. Special collateral treatment should be considered to enable the private sector to readily participate in the project. Companies should, however, bring sufficient technical experience to partnerships created to form seed companies.

The project would be managed by an administrative officer in the Ministry of Agriculture with corresponding support within the USAID/Haiti mission. It would be ideal if this activity could be kept separate from other projects currently being administered by agricultural program officers.

The project would require additional funds for training and other activities. An indicative budget, to be adjusted according to USAID/Haiti experience is attached as annex V.

2. Technical and Managerial Support

Because of the concentration of effort required in these two areas, ICD recommends that USAID establish in its seeds project a special component for technical assistance. This could be supported through direct contracts using USAID Mission funds, or through international funds allocated to service activities as indicated below:

- a) Seed technology support: Mississippi State University.
- b) Seed project policy and seed industry management support: ICD.
- c) Training in seed industry management in and outside Haiti: ICD.
- d) Training in seed technology, basic seed production, commercial seed production, and commodities such as beans, cassava, and rice: CIAT.
- e) Alternative training in seed technology: Mississippi State University with USAID contract and local mission funds.
- f) Training in maize production: CIMMYT.
- g) Training in phytosanitary and seed quality control: FAO.
- g) Legislation development support: ICD.

3. Loan Financing for Public/Private Storage Facilities

Based on expressions of interest to date the mission estimates that 4 or 5 private seed companies could be operating in Haiti within one year. As a minimum, they will

require provisional storage facilities. These could be built by the companies themselves, or they may wish to rent space from the Ministry of Agriculture's programmed and newly-built facilities in mountainous areas. The issue will be settled by comparing several financial factors: the cost of leasing space; how legislation will promote accelerated depreciation of seed company fixed assets; size of the market for high quality seeds of improved varieties and growth opportunities and financing available (and its cost) for stocking seed inventories.

The mission proposes that financing be made available for at least 1000 metric tons of seed storage in 1986, for 2500 metric tons in 1987, and for 4000 metric tons in 1988. These figures and the rate at which they would grow would be subject to evaluation and possible revision beginning in 1986.

4. Loan Financing for Initial Seed Inventories of Seed Firms and the Basic Seed Unit

This is perhaps the most critical of all items in developing a viable seed industry in Haiti. The mission estimates that the seed industry may require about US\$ 400,000 in short term inventory credit in 1986, rising to US\$ 1,600,000 per year three years later.

It is proposed that USAID loans be made available to the BCA or other appropriate lending institutions for use by the seed industry, at interest levels compatible with those available to farming operations. The seed, when properly stored in cool long-term storage facilities, should be used as its own collateral in bonded warehouses.

5. Support for Complementary Ministry of Agriculture Activities

The mission believes an integrated approach must be used in encouraging the development and modernisation of Haitian agriculture. A seeds project, as critical as it is to Haitian agriculture, remains but one of several components. Others include:

a) the development of the parallel activities of restructuring the research and extension capabilities of the Ministry of Agriculture, while coordinating the seed project with other ongoing efforts, especially those related to irrigation and hillside agriculture.

b) the creation of a supervised credit cum input risk

sharing program.

c) the establishment of an agricultural commodity marketing project (marketing board).

It is proposed that specific support activities, including funding, be considered on a simultaneous or progressive basis for the other projects whose general outlines have been presented in this document. These were treated peripherally as they are not part of ICD's terms of reference. They are, however of such major complementary importance, that they have been frequently referred to in this report.

C. Action Plan for the Private Seed Sector

1. Market Survey

Entrepreneurs interested in establishing seed companies usually start by conducting their own confidential market surveys. However, it would greatly facilitate seed investor action if USAID/Haiti could develop on its own or commission a market survey covering the major grain commodities and providing basic economic data for use by all seed companies, financing institutions etc.

2. Formation of Private Seed Enterprises

Private seed companies could be formed in Haiti by entrepreneurs with similar experience and interests. Some companies may have already established links with foreign seed companies, acting as their distributors in Haiti. Some companies may have export capabilities, while others might have good distribution systems, or experience in contracting with and assisting farmers; and still others would have good farming experience, important land resources and equipment. Interested businessmen may wish to consider forms of association in order to better use the resources at their disposal.

3. Establishing Affiliations with Foreign Seed Firms

Seed firms established in Haiti should consider the benefits of associating with foreign firms. The following types of association are envisaged:

a) Equity joint ventures.

b) Licensing agreements for proprietary products to

facilitate their production and marketing in Haiti.

c) Management contracts.

d) Seed import/export contracts including provisions for seeds produced in Haiti.

The advantages of establishing links with foreign firms include the transfer of technology, management know-how and access to new genetic materials. Such contacts could be facilitated by ICD.

4. Development of Company Seed Production and Marketing Systems

The management of seed production and marketing must be carefully geared to the conditions and realities of Haiti, and should draw heavily from local experience and foreign associations. According to their relative strengths and experience, each seed firm will develop its own style of operation. One characteristic of seed companies worldwide is their willingness to cooperate and assist each other within competitive, free market environments. Through its experience in seed system development, ICD has found that workshops and group meetings of individual entrepreneurs can help improve the capabilities of seed firms to deal with common problems.

5. Financing Crop Production, Inventories and Sales

Seed firms in Haiti, as elsewhere will have to plan ahead to set goals for market share, production targets, variety introduction and to determine related financing needs. The procurement of stock, inventory funding, and financing "carry-over" stock are essential elements of such planning for seed companies. Additional funding will also have to be made available for crop supervision and marketing activities

6. Development of a National Seed Industry Association

When several seed companies have been established it is important that they be represented by an officially recognized organization. Such organizations, known as National Seed Industry Associations or Seed Trade Associations, exist in many countries in Latin America and the Caribbean. Copies of the charters of such organizations are available from ICD.

D. Action Plan for ICD

ICD has had a wide range of experience in advising developing countries on seed system development and thus has a number of ways to offer assistance to the development of a national seed system, including the commercial component, in Haiti. They are mostly advisory in nature, but some of them would have an active component, such as training programs.

ICD's comparative advantage is the managerial and technical expertise available to it through its membership, its network of supporting companies and its senior associates. ICD also enjoys the additional advantage of having successfully advised developing countries in the parallel areas of agribusiness systems assessments for individual commodities, management development and training, small and medium size enterprise development, market development and investment promotion.

ICD has been particularly successful in providing action frameworks for policy change resulting in agricultural enterprise development and the generation of investment activity.

Specific areas where ICD could provide follow up support - through continued Ministry of Agriculture/USAID/ICD cooperation - to the recommendations in this report, include:

- a) Advice on the development of individual phases of the national seed system such as legislation, basic seed unit, financial needs, etc.
- b) Assistance in developing training programs and internships for seed industry managers (both public and private), in Haiti and elsewhere.
- c) Assistance in identifying potential foreign seed companies willing to invest in the Haitian seed industry and advice on forming commercial partnerships.
- d) Organization of a series of enterprise development workshops/seminars on basic aspects of seed industry development in Haiti once implementation of ICD recommendations has been initiated. ICD's Advisory Group of seed industry executives and entrepreneurs who have successfully pioneered new seed enterprises in developing countries would be available to guide Haitian businessmen and government officials through such seminars.
- e) Provide information on the by-laws of seed trade associations active in other developing countries and assistance in forming a National Seed Industry Association of Haiti.